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The US Agricultural Act of 2014

Overview and Analysis

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Contents

Acknowledgments	vi
Abstract	vii
Abbreviations and Acronyms	viii
1. Introduction	1
2. The Evolution of US Farm Policy	4
3. Risk as a Rationale for Farm Assistance	11
4. The Agricultural Act of 2014	16
5. Potential Costs of ARC-CO and PLC	36
6. WTO Considerations	42
7. Summary and Conclusions	45
Appendix: Early Proposals	49
References	52

Tables

2.1	Spending by type of US crop program, fiscal years 1961–2012	4
3.1	Share of per acre average annual farm revenue loss systemic with county revenue loss, selected revenue loss levels, Illinois and Kansas farm management association farms, 1977–2012	13
4.1	Summary of safety net programs, US 2014 farm bill	22
4.2	Selected acreage attributes, US crops receiving direct payments, 2012 crop year	23
4.3	Comparison of parameters of 2014 farm bill new Title I crop programs	24
4.4	Comparison of parameters of ARC (2014 farm bill) and ACRE (2008 farm bill) revenue programs	25
4.5	Comparison of price parameters for Title I crop programs, major program crops	27
4.6	Comparison of parameters of Title XI SCO and STAX county insurance programs	29
4.7	Overview of Title II conservation title, US 2014 farm bill	32
5.1	USDA WASDE price projections for 2014 crop year, August 2014	37
5.2	Estimated total cost of ARC-CO and PLC in million dollars, 2014–2018 crops, using August 2014 WASDE US yield and low-, midpoint-, and high-price projections and assuming all base acres are in the program that pays the most in 2014	40
A.1	Comparison of selected farm assistance proposals, as of February 1, 2012	49
A.2	Comparison of crop programs, House Agriculture Committee bill and Senate bill, July 2012	51

Figures

2.1	Share of all insured acres in yield insurance contracts, all crops, United States, 1996–2013	5
2.2	Net indemnity payments from US crop insurance, 2004–2013 (billion dollars)	8
2.3	Share of insurance premiums paid by farmers, United States, 1990–2013	9
3.1	Ratio of crop insurance indemnity payments to total insurance premiums, United States, 2004–2013	12
4.1	Estimated outlays by title (title number in parentheses), US 2014 farm bill, fiscal years 2014–2023 (billion dollars)	18
4.2	Estimated change in outlays relative to baseline by title (title number in parentheses), US 2014 farm bill, fiscal years 2014–2023 (billion dollars)	19
4.3	Estimated change in outlays relative to baseline, US 2014 farm bill Title I (commodities), fiscal years 2014–2023 (billion dollars)	19
4.4	Estimated change in outlays relative to baseline, US 2014 farm bill Title XI (crop insurance), fiscal years 2014–2023 (billion dollars)	20
4.5	Direct payment per base acre, United States, 2012	30
4.6	Insurance net indemnity payment to farms per insured acre, United States, 2004–2013 crop years	31
4.7	Share of net insurance payments to farms minus share of direct payments, states whose shares differ at least 2 percent, 2004–2013 crop years	31
5.1	Estimated ARC-CO and PLC payment per acre, 2014 crop, using August 2014 WASDE US yield and midpoint price projection	37
5.2	Estimated ARC-CO and PLC payment per acre, 2014 crop, using August 2014 WASDE US yield and low-price projection	38
5.3	Estimated ARC-CO and PLC payment per acre, 2014 crop, using August 2014 WASDE US yield and high-price projection	39

Boxes

2.1 Primary US crop farm programs by period	5
2.2 Brief description of 2014 farm bill crop safety net programs	6
2.3 Parameter fixity among US crop safety net programs, US 2014 farm bill	7
4.1 Schematic of new crop programs in the US 2014 farm bill	21

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ABSTRACT

After a contentious three-year debate, Congress passed the Agricultural Act of 2014 and it was signed into law February 7. This new US farm bill eliminates fixed direct payments made to farmers since 1996. In place of those payments, the 2014 farm bill strengthens protections against downside price and revenue risks. Crop insurance is enhanced as a pillar of the US farm safety net. In addition, new programs are enacted to address two types of loss: shallow losses that coincide with the deductible on individual farm insurance and losses resulting from multiple years of low prices or declining revenue that are not covered by insurance. Because of the lack of consensus on the design of assistance programs for such risks, farmers are given choices among several program options. The strengthened safety net will result in less certain annual support payments to farmers, with spending that could prove lower or higher than had the 2014 farm bill not been enacted. This paper summarizes the evolutionary trends in US farm policy that have culminated in the 2014 farm bill, describes the new farm bill programs in depth, and highlights the key policy issues that arise and will play out over its planned five-year duration.

Keywords: Agricultural Act of 2014; US 2014 farm bill; crop insurance; shallow losses; multiple-year losses; conservation programs; farm subsidies; World Trade Organization (WTO); WTO Agreement on Agriculture

JEL Codes: Q17, Q18, Q28, K33, N52

ABBREVIATIONS AND ACRONYMS

ACRE	Average Crop Revenue Election
AMS	Aggregate Measurement of Support
A&O	administration and operation
APH	actual production history
ARC	Agriculture Risk Coverage
ARC-CO	Agriculture Risk Coverage, County Option
ARC-IC	Agriculture Risk Coverage, Individual Option
ASCM	Agreement on Subsidies and Countervailing Measures
CBO	Congressional Budget Office
CRP	Conservation Reserve Program
CSP	Conservation Stewardship Program
EQIP	Environmental Quality Incentives Program
ERS	Economic Research Service
FSA	Farm Service Agency
FY	fiscal year
MPP	Margin Protection Program
NAP	Noninsured Assistance Program
NASS	National Agricultural Statistics Service
OTDS	Overall Trade-Distorting Support
PLC	Price Loss Coverage
RCCP	Regional Conservation Partnership Program
RMA	Risk Management Agency
SCO	Supplemental Coverage Option
STAX	Stacked Income Protection Plan
SURE	Supplemental Revenue Assistance
USDA	United States Department of Agriculture
WASDE	<i>World Agricultural Supply and Demand Estimates</i>
WTO	World Trade Organization

1. INTRODUCTION

After more than three years of oft-times tumultuous positioning, posturing, and negotiating among different interest groups and their political representatives, the US Congress passed a new five-year farm bill in February 2014 and the president promptly signed it into law. The Agricultural Act of 2014 (P.L. 113-79 and hereafter referred to as the 2014 farm bill)¹ reaffirms through 2018 the longstanding US support for its farmers and retains the permanent legislation that likely ensures further support beyond this date.

The 2014 farm bill was framed by a federal budget deficit that had soared due to deep economic recession in 2008–2009 and slow subsequent recovery. A contentious national debate about deficit reduction, entitlement programs, taxes, and policies to stimulate employment and growth dominated the domestic political dialogue. Given the record or near record crop prices and agricultural incomes that occurred concurrent with this period of broader economic stress, it might have seemed a propitious time to lessen the role and reduce the fiscal cost of US farm policy.

Nevertheless, maintaining public assistance remained a keen objective of farmers and their congressional allies. Despite the prosperous times for agriculture, production costs had increased and the price of farmland had risen. Moreover, in 2009 crop prices had dipped sharply, in 2012 a drought caused heavy crop losses and record insurance payments, and in 2013 a production rebound caused another sharp drop in corn and other feed grain prices. These events brought the systemic risks of farming into sharp relief and demonstrated that farm-sector prosperity remained uncertain.

At the time the 2014 farm bill was enacted, the Congressional Budget Office (CBO) projected a 10-year cost of around one trillion dollars. Nearly three-fourths of the projected outlays were attributed to nutrition programs for low-income households (Title IV of the bill). Farm support was projected at \$134 billion, of which \$44.5 billion was attributed to commodity programs (Title I) and \$89.8 billion to crop insurance (Title XI). Outlays on conservation (Title II) were projected at \$57.6 billion. All other titles totaled \$8.1 billion.

The farm safety net that emerged in this context is complex, but its core components can be abstracted to a few basic points. The new law eliminates US fixed direct payments to farmers of about \$4.5 billion annually, thus ending a program in place since 1996, or for nearly two decades. This policy decision contrasts sharply with the dominant role annual fixed direct payments of nearly 40 billion euros continue to play in the farm support policy of the European Union (Laborde, Bureau and Orden 2013).

In place of the fixed direct payments the 2014 farm bill offers greater protection against low prices or declining revenue. This results in less certain annual expenditures but more protection of farmers against downside risk. It is a shift back toward countercyclical support that has a long precedent in US farm policy. Farm organizations largely accepted such a trade-off and came to promote this shift early in the farm bill debate. The CBO budget score at the time the 2014 farm bill was enacted projected a somewhat reduced total cost of farm subsidies over coming years. Nevertheless, nearly 80 percent of the savings from eliminating direct payments was retained in projected spending on various farm safety net programs. Anything can happen over the coming five years—from spending much lower to spending much higher than if direct payments had not been eliminated and the risk safety net strengthened.

The 2014 farm bill enhances public assistance via crop insurance for individual farm, production-period (pre-planting to harvest) risk, a trend that dates to the early 1980s. Crop insurance operates over the growing season, insuring against losses at harvest compared with expectations before planting. Its yield and price components are reset each year. In each of the last three crop years (2011 through 2013), net insurance payments to farmers (insurance indemnities minus farmer-paid premiums) exceeded the fixed direct payments. Although the 2014 farm bill enhances insurance programs, our assessment is that US crop insurance is oversubsidized even if a systemic risk rationale for public intervention is accepted.

¹ Full text of the 2014 farm bill is at <http://www.gpo.gov/fdsys/pkg/BILLS-113hr2642enr/pdf/BILLS-113hr2642enr.pdf>.

Beyond strengthening crop insurance, the debate over further strengthening the downside risk safety net centered on two types of losses: shallow losses, or losses that coincide with the deductible on individual farm insurance, and multiple-year losses, or losses associated with sequential years of low prices or declining revenue that cannot be addressed by production-period insurance. Reflecting the persisting disagreement among farm groups on what is effective assistance for such losses, the 2014 farm bill authorizes two shallow-loss programs and two multiple-year-loss programs. In addition, price supports (known as “loan rates”) are continued from the Food, Conservation, and Energy Act of 2008 (2008 farm bill) and previous legislation, extending a safety net against very low prices.

The shallow-loss programs are a new insurance Supplemental Coverage Option (SCO) and a moving-average revenue benchmark program, Agriculture Risk Coverage (ARC), which is a revision of the Average Crop Revenue Election (ACRE) program in the 2008 farm bill. Key differences between SCO and ARC include the type of price component, levels of loss coverage, eligible acreage, and whether a premium is paid or payment limits apply. Each of these differences reflects an issue over the most effective policy design for protection against shallow losses, including the amount of integration or overlap with individual farm crop insurance.

The multiple-year-loss programs in the 2014 farm bill are ARC and Price Loss Coverage (PLC). ARC provides multiple-year-loss protection because its moving-average revenue (yield times price) benchmark changes more slowly than market revenue can in a given year. PLC is a revision of the price countercyclical program enacted in the 2002 and 2008 farm bills. Target prices (now termed reference prices) are generally 30 to 50 percent higher under PLC than in the previous legislation. The reference prices are fixed for the length of the 2014 farm bill and apply to a fixed payment yield per acre.

Both ARC and PLC cover only a fixed acreage. Because of the fixed payment acreage (and for PLC, fixed payment yield) regardless of the crops grown each year, payments made by these two programs are partly decoupled from current planting decisions. For this reason, the payments have the character of contingent income transfers rather than incentives for production. However, options to reallocate program acreage and to update payment yields per acre (for PLC) in the 2014 farm bill temper the decoupling argument.

Farmers will have to choose between ARC and PLC (with SCO an option if enrolled in PLC) by the end of March 2015. The decision is irrevocable for the duration of the 2014 farm bill through the 2018 crop year. Key differences are that (1) ARC but not PLC can make payments at prices above the reference price; (2) ARC’s maximum possible payment per acre is smaller than PLC’s possible payment maximum; (3) ARC payments will move with the market, subject to a minimum constraint on its price component at the PLC reference price; and (4) low prices will lead to high payments by both programs, but especially by PLC if low prices persist. While much of the farm bill debate focused on the revenue-versus-price differences between ARC and PLC, the more important policy issue is the trade-off between a lower cap on downside risk protection in exchange for assistance at higher price and revenue levels.

Conservation programs have been associated with farm safety net commodity programs since the 1930s. The 2014 farm bill retains the Conservation Reserve Program (CRP) of long-term land retirement. It reduces the maximum acres permitted in CRP, but the cap is still 24 million acres in 2018. Thus, both the 2008 and 2014 farm bills have continued a program whose elimination could have addressed concerns over high crop prices. The 2014 farm bill also maintains an environmental focus by extending conservation cross-compliance requirements to crop insurance premium subsidies.

In addition to the changes in the main crop and conservation programs, the 2014 farm bill sharply alters the support program for cotton. It has no ARC or PLC program. Instead the 2014 farm bill authorizes a heavily subsidized, within-year insurance product named the Stacked Income Protection Plan (STAX), which is similar to SCO. This policy shift from the traditional cotton countercyclical program to a crop insurance program was intended to resolve the World Trade Organization (WTO) dispute settlement ruling in favor of Brazil against past US cotton support programs. It accomplished this objective when Brazil and the United States agreed to terminate the cotton case October 1, 2014 (Hagstrom 2014). The cotton industry supported replacement of the traditional cotton programs by STAX quite early in the farm bill debate, both in anticipation of fairly high net indemnities and as necessary to

seek resolution of the case with Brazil. The US sugar support program, in contrast, is continued essentially unchanged, an outcome sought by sugar producers.

Dairy support policy is also sharply altered by the 2014 farm bill. A new voluntary dairy Margin Protection Program (MPP) replaces the traditional milk price and countercyclical income support programs. Participating dairy farmers receive a payment if margins between milk prices and feed costs fall below \$4 per hundred pounds for two consecutive months, with an option to pay a premium for margin coverage that can be as high as \$8 per hundred pounds. Producers can cover 25 to 90 percent of their historic milk production. A proposal to include supply control measures to manage MPP costs proved controversial and was not adopted.

To inform discussion about these and other aspects of the Agricultural Act of 2014, the next sections of this paper are organized around five topics:

- A brief history of US farm policy, with a focus on evolutionary trends important to assessing the 2014 farm bill.
- An examination of risk as a rationale for farm policy with attention in particular to whether crop insurance is oversubsidized even if systemic risk is accepted as a basis for public subsidies.
- A description and assessment of key safety net and conservation programs included in the 2014 farm bill.
- An examination of potential costs of the 2014 farm programs based on August 2014 expectations of the range of prices likely for the 2014 crop year.
- An assessment of the new farm bill through the prism of the WTO rules and US commitments on agricultural domestic support.

The final section of the paper provides a summary of the key aspects of the new US farm programs and some concluding remarks about the direction of US policy, the benefits and costs associated with the design of US farm risk programs, and their implications. Overall, we conclude that enactment of the Agricultural Act of 2014 indicates continued political strength of the US farm support lobby and of the traditional coalitions that arise to enact farm bills.

2. THE EVOLUTION OF US FARM POLICY

Three long-term but incomplete evolutionary trends in US farm policy are particularly important to understanding the 2014 farm bill. One is the trend away from programs that provide support tied to low prices and toward programs that require a demonstrated revenue loss. When US farm policy first emerged during the 1920s and 1930s, key features were a floor on prices achieved by limits on production or marketing and the accumulation of public stocks at the floor price, known as a loan rate.² The trend away from a focus on low prices began with the enactment of disaster assistance programs in the mid-1970s, followed by the decision in the early 1980s to increase the role of crop insurance within the growing season. The Federal Agriculture Improvement and Reform Act of 1996 (1996 farm bill) continued the trend when it initiated fixed direct income payments and eliminated annual acreage production control programs and most public stocks programs.

Table 2.1 summarizes the amount spent on US crop price support programs, fixed payments, and programs dependent on yield or revenue losses (disaster and insurance) since fiscal year (FY) 1961. Data for earlier years are inconsistent and therefore not included. Of these three farm program types, essentially all spending was on low-price programs from FY 1961 through FY 1973. In contrast, during the most recent period of FY 2007 through FY 2012, low-price programs accounted for only 12 percent of spending while programs based on yield and revenue declines accounted for nearly half of all expenditures. The small share of spending on low-price programs in the most recent period is due in part to the high market prices of this period, but the declining role of low-price programs is evident in earlier periods. Box 2.1 lists the primary farm programs in each of the four periods from Table 2.1.

Table 2.1 Spending by type of US crop program, fiscal years 1961–2012

Time period	Low-price-required	Fixed payment	Yield or revenue decline required		Total
			Disaster	Insurance	
-----Billion dollars (annual averages)-----					
1961–1973	\$1.7	\$0.0	\$0.0	\$0.0	\$1.7
1974–1995	\$6.7	\$0.0	\$0.6	\$0.3	\$7.5
1996–2006	\$7.1	\$5.0	\$1.0	\$1.3	\$14.5
2007–2012	\$1.4	\$4.6	\$0.9	\$4.7	\$11.6
-----Share of total-----					
1961–1973	100%	0%	0%	0%	100%
1974–1995	88%	0%	8%	4%	100%
1996–2006	49%	35%	7%	9%	100%
2007–2012	12%	39%	8%	41%	100%

Sources: Various budget reports of US government; Council of Economic Advisors (various years); USDA (2014b, 2014e).

Notes: *Low-price-required* programs include nonrecourse loan, marketing loan, target price deficiency payment, payment-in-kind, market loss, oilseed payment, and countercyclical programs; as well as net purchases by the Commodity Credit Corporation. Support can be for a fixed base of output or cover output at the margin.

Fixed payments do not vary with market conditions. They are based on a fixed per unit rate and historical yields and acres. They include production flexibility contract payments and direct payments.

Disaster programs include ad hoc disaster assistance enacted by Congress to address losses from specific weather events, Agricultural Disaster Relief Trust Fund enacted in the 2008 farm bill, and Noninsured Assistance Program.

Insurance net payments equal indemnities paid to farmers for losses minus premiums paid by farmers. ACRE payments of \$0.43 billion and \$0.11 billion are included for FY 2011 and FY 2012.

² For historical discussions of US farm policy see USDA (1984a), Robinson (1989), Tweeten (1989), and Orden, Paarlberg, and Roe (1999). The market-floor support prices were called loan rates because farmers could forfeit crops to the government rather than repay nonrecourse loans taken out at these rates.

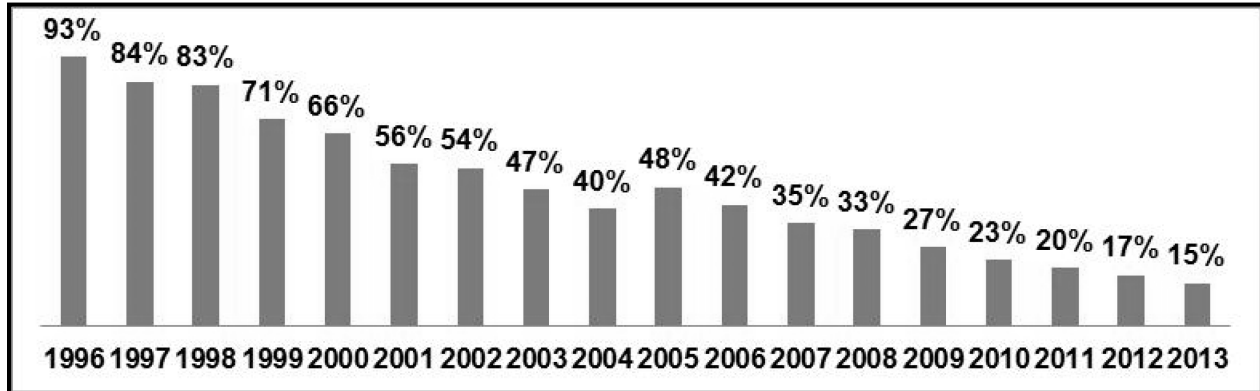
Box 2.1 Primary US crop farm programs by period

FY 1961–FY 1973	Annual acreage set-asides to control surplus production and public stocks accumulated by the government as a result of the nonrecourse loan program.
FY 1974–FY 1995	Target price deficiency payments, annual acreage set-asides, public stocks, payment-in-kind to reduce planted acres, and marketing loans; disaster assistance began and crop insurance began to grow.
FY 1996–FY 2006	Fixed payments, marketing loans, market loss payments, oilseed payments, price countercyclical payments, disaster assistance, and yield and revenue insurance.
FY 2007–FY 2012	Fixed payments, price countercyclical payments, marketing loans, revenue countercyclical payments, yield and revenue insurance, and disaster assistance.

Source: Created by authors.

The growing role of insurance in the US crop safety net reflects in part a shift from yield loss to revenue loss insurance. (Figure 2.1 shows the declining share of acres enrolled in yield insurance.) Revenue insurance was not offered until the 1996 crop year but now accounts for 85 percent of insured acres. Moreover, both the 2008 and 2014 farm bills authorized revenue loss programs in addition to crop insurance. The 2008 farm bill authorized the Supplemental Revenue Assistance (SURE) program, which is often described as a disaster assistance program, and ACRE as an optional program choice. The 2014 farm bill authorized ARC, a revised version of ACRE. Box 2.2 contains a brief description of the 2014 farm bill’s crop safety net programs, which are discussed in greater depth later in the paper.

Figure 2.1 Share of all insured acres in yield insurance contracts, all crops, United States, 1996–2013



Source: Original calculation using data from USDA (2014e).

Note: Yield insurance contracts include actual production history (aph), Group Risk Plan, and Yield Protection.

Box 2.2 Brief description of 2014 farm bill crop safety net programs

Title I: Commodity Programs	
PLC (Price Loss Coverage)	Price commodity program. Payment made if price is below reference price fixed by Congress. No premium is paid but payment is made on a fixed historical payment yield and only 85 percent of historical program (base) acres.
ARC (Agriculture Risk Coverage)	Revenue commodity program. Two versions exist (county and individual). Revenue benchmark changes with yields and market prices subject to a minimum price equal to the PLC reference price. Payment received for revenue losses between 14 and 24 percent of benchmark level. No premium is paid but payment is made on only 85 percent (county) or 65 percent (individual) of historical program acres.
Marketing Loan	Price commodity program. Payment made on current output if price is below loan rate fixed by Congress. Loan rate is less than PLC reference price.
Title XI: Insurance Programs	
Crop Yield and Revenue Insurance	Yield or revenue insurance program. Programs exist at the farm enterprise and smaller unit level as well as at county level. Coverage elected by farmer. Farmer pays part of actuarially fair premium, but all planted acres are covered. Public subsidizes remainder of premium as well as reinsurance and administrative costs.
SCO (Supplemental Coverage Option)	Yield or revenue insurance program. Insurance indemnity payment received if county yield or revenue is between 86 percent and coverage level elected for underlying individual farm insurance contract. Farmer pays 35 percent of actuarially fair premium; public subsidizes remainder as well as reinsurance and administrative costs.
STAX (Stacked Income Protection Plan)	Revenue insurance program for upland cotton only. Insurance indemnity payment received if county revenue is between 90 percent and coverage level elected for underlying individual insurance contract or can be purchased on stand-alone basis. Farmer pays 20 percent of actuarially fair premium; public subsidizes remainder as well as reinsurance and administrative costs.

Source: Created by authors.

The second, related evolutionary trend in US farm policy is the movement away from fixed support targets set by Congress to a more flexible orientation with targets that adjust to market outcomes. This trend reflects decisions made at three key points in the history of US farm programs. Each decision adjusted price supports downward to reflect market conditions and introduced flexibility when setting some farm policy parameters:

1. In the late 1940s debate began over whether to continue the high, fixed price supports implemented during World War II to encourage production. After intense debate that continued throughout the 1950s, Congress decided to replace high fixed supports with supports that could vary within a range and somewhat by crop compared with benchmark levels. In addition, support levels, which had been tied to a fixed 1910–1914 period, were benchmarked to the most recent 10 years. These decisions resulted in lower support rates. For example, corn's price support loan rate was \$1.06 in 1960 compared with \$1.60 in 1952.
2. Despite lower support prices, public stocks continued to build due to rapid yield increases that exceeded the growth in demand even at lower prices. The debate over how to control the quantity and cost of stocks centered on two options: high price supports with mandatory acreage controls or lower price supports with voluntary acreage controls. The debate was resolved when the Agricultural Act of 1964 and the Food and Agriculture Act

of 1965 extended to wheat and cotton the lower-price, voluntary acreage control program that had evolved for corn since World War II.

3. Surpluses emerged again in the early 1980s because of large crops, slow global economic growth, and the appreciation of the US dollar. Price supports were reduced in the Food Security Act of 1985 even though it meant lowering the higher support prices enacted during the inflationary 1970s. The secretary of agriculture also was allowed to vary acreage controls (known as set-asides) by crop within a range established by Congress. For example, set-asides for the 1987 crops ranged from 20 percent for corn (feed grains) to 35 percent for rice. Associated with lower loan rates was an increase in payments to farmers when market prices fell below certain target levels above the loan rate. In addition, farmers could take a cash payment covering the difference between the loan rate and market price instead of forfeiting their crops.

The trend of US farm policy toward market orientation increasingly involves new farm programs that adjust assistance targets with changes in the market. Such programs include crop insurance, SURE and ACRE in the 2008 farm bill, and ARC and the SCO and STAX insurance programs in the 2014 farm bill. Despite this trend, fixed price and other parameters remain a feature of US crop programs. Reference prices, payment yields, and payment acres are fixed in PLC; payment acres are fixed in ARC, which also has a floor on its price component; and loan rates are fixed in the marketing loan program. Box 2.3 ranks the crop safety net programs authorized in the 2014 farm bill by the degree of fixity in their parameters. PLC has the most degree of fixity while crop insurance has the least.

Box 2.3 Parameter fixity among US crop safety net programs, US 2014 farm bill

Most fixed	Program	Fixed parameters
	PLC (Price Loss Coverage)	Reference price fixed by crop. Payment yield fixed by farm and crop. Payment acres fixed by farm and crop.
	ARC (Agriculture Risk Coverage)	County or farm revenue benchmark adjusts with changes in yield and price but subject to a price floor. Payment acres fixed by farm and crop.
	Marketing loan	Loan rate (price) fixed by crop.
	Crop insurance, SCO (Supplemental Coverage Option), STAX (Stacked Income Protection Plan)	None.
Least fixed		

Source: Created by authors.

From an economic perspective movement away from fixed price support levels misaligned with market conditions has reduced the distortionary effects of US farm policy on domestic and world markets. This has been complemented by introducing a different type of fixity that separates support from planted acreage or actual yields at the margin by limiting payments to a fixed percentage of historical base acres planted to each crop and to a predetermined historical yield. The 1996 farm bill went further by introducing new flexibility that separated the payments on base acres from the crop actually planted, along with switching (in a period of high prices) from support dependent on low prices to fixed direct payments. The 2014 farm bill eliminates direct payments and moves US farm support back toward its historical countercyclical structure, while retaining planting flexibility.

The third evolutionary trend in US farm bill programs is the increasing importance of conservation programs. Using the same time periods as in Table 2.1, spending on farm bill conservation programs as a share of total spending on US crop programs has increased from 12 percent in FY 1961

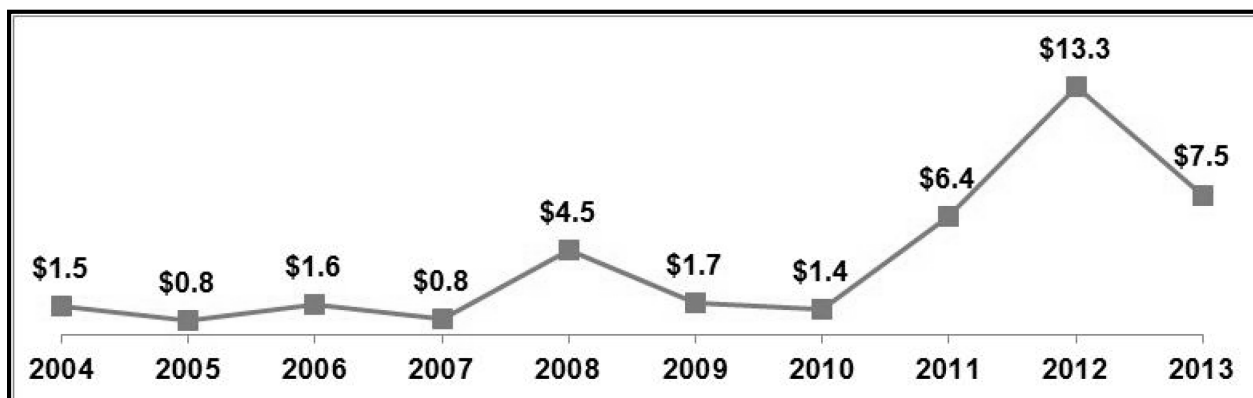
through FY 1973 to 38 percent in FY 2007 through FY 2012. The types of conservation programs have extended beyond land retirement to include a portfolio of conservation objectives, such as improved environmental performance on working lands, grassland and swampland preservation, farmland preservation, and public-private partnership programs to address regional environmental issues.

While conservation has been a feature of US farm policy since the 1930s, until the 1985 farm bill it was often a by-product of policy designed to control supply. Since 1985, US farm policy has trended toward greater emphasis upon environmental goals in and of themselves. Both the 2008 and 2014 farm bills chose only to reduce, not eliminate, CRP in the presence of worldwide concerns over high crop prices. CRP's acreage cap is reduced in the 2014 farm bill from 32 million acres but will still be 24 million acres in 2018. In contrast, during the 1970s agricultural price run-up, long-term land idling that had reached 28 million acres in the 1960s was completely phased out and essentially no acres were removed from production under conservation programs from 1978 through 1984 as a fence row-to-fence row planting mentality dominated. The so-called recent food-versus-fuel policy debate is more accurately the food-versus-fuel-versus-environment debate. In 2014, the US continued an emphasis on the environment, a decision that confirms a change in farm policy. Extension of conservation cross-compliance requirements to crop insurance premium subsidies further confirms that policy shift, as well as the emergence of crop insurance as a pillar of the farm safety net.

Increased Role of Crop Insurance

Since 2004 payments for insured crop losses have exceeded the premiums paid by farmers by at least \$1 billion in every year except 2005 and 2007 (Figure 2.2). Moreover, net insurance payments to US farms exceeded \$6 billion, and thus were larger than direct payments, in each of the 2011 through 2013 crop years.³

Figure 2.2 Net indemnity payments from US crop insurance, 2004–2013 (billion dollars)



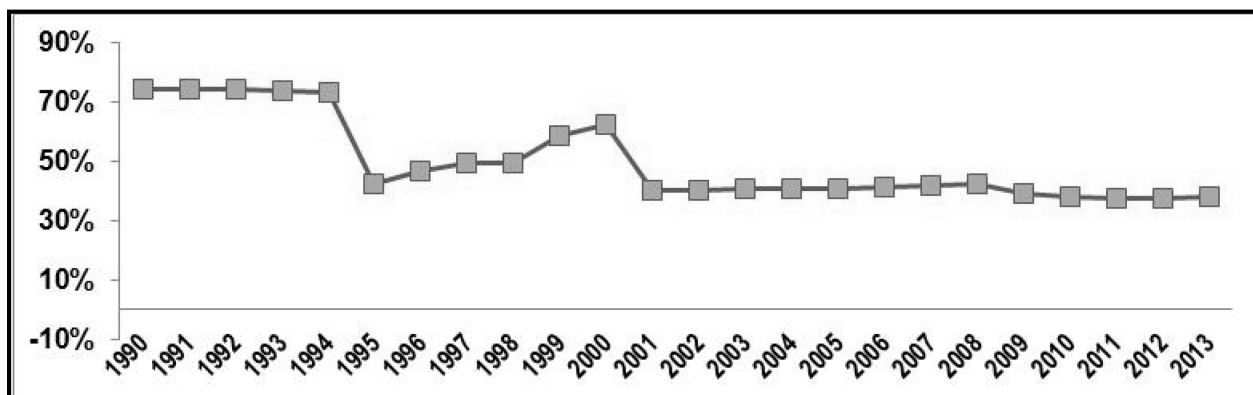
Source: Original calculation using data from USDA (2014e).

Note: Net indemnities are total indemnities paid to farmers less farmer-paid premiums.

Higher net insurance payments reflect in part higher public subsidy rates. The share of premiums paid by farms declined from 74 percent in the early 1990s to around 38 percent in recent years (Figure 2.3). Major changes in subsidy rates occurred in the Agricultural Risk Protection Act of 2000 and the 2008 farm bill. The latter made the subsidy rate as high as 80 percent on some coverage levels for enterprise insurance (an enterprise is all acres of a crop of a farm operation in a county).

³ Even though insurance payments exceed farmer-paid insurance premiums for all US farms, insurance payments do not exceed premiums paid by each US farm that buys crop insurance. An individual farm receives an insurance payment only if it experiences a loss greater than the deductible it elected.

Figure 2.3 Share of insurance premiums paid by farmers, United States, 1990–2013



Source: Original calculation using data from USDA (2014e).

The higher subsidy rate, combined with an expansion in eligible crops and types of insurance, has resulted in more farms buying insurance on more acres. Total insured acres grew from 100 million in the early 1990s to 296 million in the 2013 crop year.

A third reason for higher net insurance payments since 2006 is higher crop prices. Higher prices translate into higher expected revenue and thus a greater dollar amount of insurance indemnity payments for a given percentage loss.

Net insurance payments to farms are only part of the cost to the public of farm insurance programs. Other costs include government reinsurance that USDA's Risk Management Agency (RMA) provided to private insurance companies and government reimbursement to private insurance companies for administration and operation (A&O) costs. Reinsurance costs (net underwriting gains and losses) plus private company A&O expense reimbursements averaged nearly \$1.9 billion annually for the 2009–2013 fiscal years (Shields 2013).

Changed Program Mix Reflects a Changed Farm Sector

To summarize, US farm policy has evolved away from programs to address low prices with targets fixed by Congress toward programs that address revenue loss with targets that move with the market. In particular, crop insurance has emerged as a second pillar, along with Title 1 farm commodity programs, of the US crop safety net. This change is not complete as the 2014 farm bill continues to utilize various fixed parameters in Title 1 farm programs.

Part of the explanation for this evolution of US farm policy lies with changes in the economic condition of US farms and farm families. The following were cited as rationales for creating farm programs to counteract low prices in the 1930s:

1. Importance of the farm sector to the US recovery from the Great Economic Depression that began in 1929—more than 20 percent of all gainfully employed Americans worked on farms at that time (US Bureau of the Census 1954).
2. Dire economic situation of farm families—in 1934, per capita farm income was only 33 percent of nonfarm per capita income (USDA 1984b).
3. Food security—the Great Economic Depression and droughts of the 1930s raised concerns about access to adequate food for many Americans, which led to public stocks being a component of farm policy.
4. Risk in farming—the limited availability of private insurance for crop production was underscored by the droughts of the 1930s, notably in 1934 and 1936.

In comparison with the 1930s, the contemporary setting for US farm policy includes that:

1. farms now employ less than 2 percent of Americans (USDA 2014a [data ends in 2002]);
2. average principal farm operator household income for 2008–2012 is 127 percent of average US household income (USDA 2014a); and
3. food security is addressed by food assistance programs administered by the USDA Food and Nutrition Service with a total enacted budget authority of \$114 billion in FY 2012 (USDA 2014f).

In short, of the original rationales for farm policy related to price and income support only risk still resonates as a potential basis for US farms receiving support from the public. Another contemporary rationale for payments to farmers is environmental concerns.

3. RISK AS A RATIONALE FOR FARM ASSISTANCE

Risk is an inherent factor in business. Most farms use a variety of tools to mitigate and manage risk, including production technologies, diversification, forward contracting, and savings. Publically subsidized insurance and farm programs are thus additions to a farm's private risk management toolkit.

Public subsidies for crop insurance rest upon the argument that the cost of providing private insurance exceeds the willingness to pay for it. If cost exceeds the willingness to pay, private crop insurance will not exist. Thus, an incomplete private market exists. Incomplete private markets are a commonly used economic justification for public subsidies. However, economists do not agree if any economic rationale exists to justify public subsidies for crop insurance, as highlighted in recent articles by Goodwin and Smith (2012) and Coble and Barnett (2012).

Following Coble and Barnett's (2012) discussion of the components of insurance premiums, the high cost of private crop insurance is usually attributed to the presence of high reserve load costs resulting from the existence of large systemic losses from widespread weather events and to the presence of high administrative costs due to the site-specific nature of yield, including the cost of monitoring moral hazard and adverse selection. Therefore, in this section, we discuss whether crop insurance is oversubsidized even if systemic risk is accepted as a rationale for public subsidies and what subsidies are justified if moral hazard and adverse selection are accepted as a rationale. We also discuss the impact of publically subsidized crop insurance on production, management, and the environment.

Oversubsidization of Crop Insurance?

The high level of recent spending on crop insurance, along with the policy changes enacted in the 2014 farm bill, has led to increased debate over the cost of crop insurance. This debate is framed in part by five observations:

1. Other than private hail and fire insurance, US farmers (and farmers around the world) have only bought crop insurance to any notable extent when public subsidies exist (Wright and Hewitt 1994; Tweeten and Zulauf 1997). This situation stands in contrast to the development of private futures and options markets for price risk.
2. The higher the subsidy rate the more insurance farmers buy (see discussion in the previous section).
3. The US Congress has demonstrated a willingness since the 1980s to increasingly subsidize crop insurance (see discussion in the previous section).
4. Economists are divided over the rationale, if any, for crop insurance subsidies, as noted above.
5. No objective-based rationale exists for the current matrix of subsidies by product and coverage level—it is a political equilibrium matrix negotiated by Congress.

In assessing crop insurance subsidies, it is useful to start with the question, why is fire and hail insurance unsubsidized? Fire and hail risk events can substantially reduce yield and revenue but occur infrequently on a given acre of land. Hail events can affect more than one field in a local area and thus can be spatially correlated. Nevertheless, fire and hail approximate idiosyncratic risks or risks with little correlation across potential insurance units. A lack of correlation allows the law of large numbers to be invoked, in turn allowing an actuarially fair premium to be determined and charged. As reflected by the lack of public subsidies for fire and hail insurance, no economic justification exists for public subsidies for idiosyncratic risk. Private markets can cost-effectively deliver insurance for such risks.

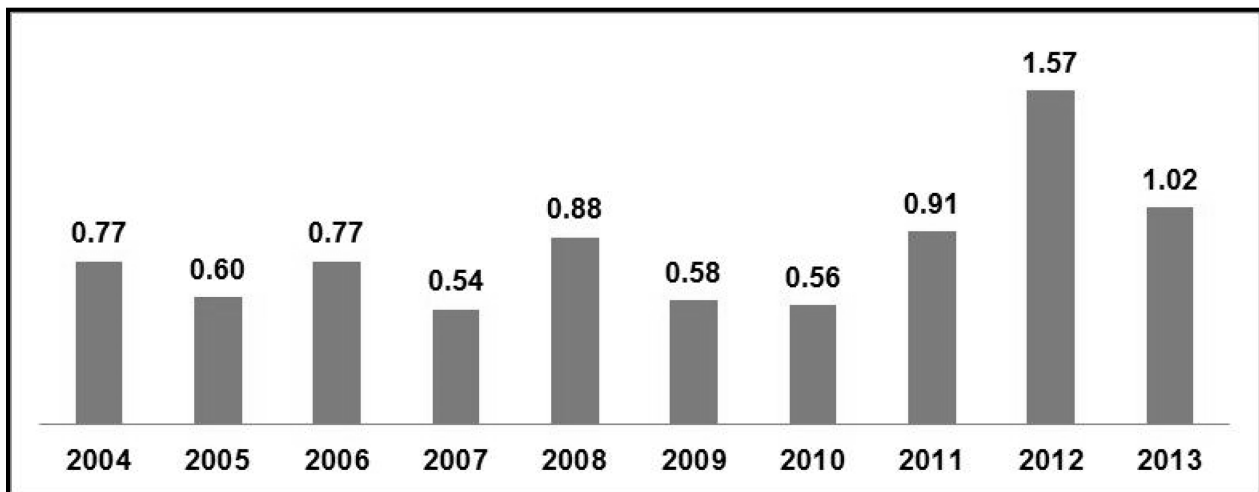
Disagreement arises over systemic risk or risk that is correlated or held in common by a large number of potential insurance units. Occurrence of a systemic risk potentially affects enough insured units to cause insurance companies to go bankrupt, which in turn may lead to underprovision of, even lack of, private insurance.

Crop farms are subject to considerable systemic risk. Systemic yield risk arises from widespread natural events such as frost, drought, and excess moisture affecting contiguous geographic regions. Systemic price risk arises from both market demand factors and national and international weather conditions. Miranda and Glauber (1997) find that the portfolios of US crop insurers are 20 to 50 times riskier than if yields are stochastically independent across farms. They also find that their portfolio risks are 10 times larger than private insurers offering more conventional insurance lines.

The counterargument against providing subsidies for crop insurance when systemic risk exists is that the international reinsurance market is large enough to handle the systemic risk associated with crop insurance (for example, see Goodwin and Smith 2012). However, reinsurance can be expensive and may not be available. Currently, the US government provides a considerable share of reinsurance for companies offering crop insurance to US farms.

The disagreement over the validity of the systemic risk justification for public subsidy of crop insurance should not cloud the agreement among economists that idiosyncratic risk should not be subsidized. This observation implies an important policy question: How much risk in US crop production is idiosyncratic? Perspective on this question can be gained by examining the share of crop insurance premiums paid out as indemnities for losses in various years. The US crop insurance program operates with the goal (codified in the 2008 farm bill) of equating crop insurance premiums (including the public premium subsidy and the farmer-paid premium) with expected crop insurance indemnities. Over the last 10 crop years, a period in which revenue insurance was the dominant insurance product (Figure 2.1), the ratio of insurance indemnity payments to total premiums was lowest in 2007 (0.54) and 2010 (0.56), as Figure 3.1 shows.

Figure 3.1 Ratio of crop insurance indemnity payments to total insurance premiums, United States, 2004–2013



Source: Original calculation using data from USDA (2014e).

Note: Total premiums include the public premium subsidy and farmer-paid premiums.

Systemic risk was likely low in those two years. Corn, rice, sorghum, soybeans, upland cotton, and wheat accounted for 70 and 79 percent of insured acres in 2007 and 2010, respectively. In only two of the 12 combinations involving those two years and six crops was US average insured revenue per planted acre at harvest (harvest insurance price times US yield per planted acre) less than pre-plant expected revenue (measured as the pre-plant insurance price times the average US yield per planted acre for the 10 preceding crop years). The two exceptions were only -5 percent for corn in 2007 and -3 percent for rice in 2010.

If all losses in 2007 and 2010 are assumed to result from idiosyncratic risk, then idiosyncratic risk is 55 percent of all risk in US crop agriculture. Using as a heuristic argument that idiosyncratic risk should not be, and given the assumption that 2007 and 2010 had minimal systemic risk, the 2007 and 2010 observations imply that the average US crop insurance subsidy rate should not exceed 45 percent. In contrast, the average subsidy rate for crop insurance purchased by US farmers in 2013 was 62 percent.

In a different approach that provides a cross-check on the aggregate US results, Zulauf et al. (2013) calculated the share of crop revenue loss that is systemic with revenue loss at the county level for Illinois and Kansas management association farms over the 1977–2012 crop years. The losses were generated by yield and price risks that occurred between the months in which the pre-plant and harvest insurance prices were determined. Insured revenue loss per acre for the farm and the county in which the farm is located was calculated as follows:

$$(\text{pre-plant insurance price}_t \times 5\text{-year average of past yield}_{i,t} \times \text{coverage level}) - (\text{harvest insurance price}_t \times \text{yield}_{i,t}),$$

where t = year, i = farm or county, and the insurance coverage level is 85, 70, or 50 percent, which correspond to covering losses greater than 15, 30, and 50 percent, respectively. The highest level of individual insurance a farm can buy is 85 percent while the lowest is 50 percent. Crops examined were corn, soybeans, and wheat for both Illinois and Kansas, as well as sorghum for Kansas. Share of farm loss systemic with the county was calculated as the minimum of farm loss or county loss as a share of farm loss.

Across the crops, the share of farm loss systemic with county losses averaged 46 percent for Illinois and 50 percent for Kansas for farm losses greater than 15 percent (Table 3.1). The average share declines to 29 and 11 percent for Illinois and 42 and 30 percent for Kansas for losses greater than 30 percent and 50 percent, respectively. Again, these systemic risk shares are less than the current average subsidy level for US crop insurance. Moreover, the average subsidy level of enterprise insurance, a commonly purchased insurance product, is 80 percent at the 50 percent and 70 percent coverage levels but only 53 percent at the 85 percent coverage level. Thus, oversubsidization increases as the level of loss increases. In additional analysis, Zulauf et al. (2013) find that the systemic portion of farm risk is lower when evaluated at the state or national level, which might be more relevant to systemic risk causing large losses to private insurers.

Table 3.1 Share of per acre average annual farm revenue loss systemic with county revenue loss, selected revenue loss levels, Illinois and Kansas farm management association farms, 1977–2012

State and crop	Loss > 15%	Loss > 30%	Loss > 50%
Illinois			
Corn for grain	43%	29%	23%
Soybeans	43%	15%	0%
Wheat	51%	42%	10%
Average	46%	29%	11%
Kansas			
Corn for grain	48%	38%	27%
Sorghum	48%	39%	29%
Soybeans	56%	46%	29%
Wheat	48%	43%	35%
Average	50%	42%	30%

Source: Zulauf et al. (2013).

Cooper et al. (2012) also provide evidence on the subsidy issue. They find individual farm yield histories are preferable to current methods used by USDA's RMA to set premium rates. That finding is consistent with observations made by Goodwin (1994) that individual yield histories allow premiums to reflect risk attributes that are idiosyncratic to the operator and land. In contrast, the methods RMA currently uses largely reflect county-level risk. Using a simulation model incorporating a stylized version of current RMA methods, Cooper et al. (2012) find an average subsidy rate of approximately 35 percent is needed so that 80 percent of land is insured. Their dataset is seven county-crop combinations with enough farm-level data from the Illinois and Kansas farm management datasets to complete the analysis.

In conclusion, all three investigations suggest that the average US subsidy rate is too high given the conceptual policy notion that the share of risk that is idiosyncratic should not be subsidized. Specifically, an average subsidy rate no higher than 45 percent is suggested instead of the current 62 percent—a 28 percent decrease in the current subsidy rate.

Moral Hazard and Adverse Selection as Arguments for Crop Insurance Subsidies

Moral hazard exists when a risk management option alters decisions of the insured so as to increase the probability of collecting a payment. Adverse selection exists when potential users of the risk management option know more about their losses than the provider, allowing them to choose a risk management option only when its payout ratio is favorable. Thus, moral hazard and adverse selection increase the cost of private market options for managing risk, including insurance. If the costs associated with moral hazard and adverse selection are high enough, the availability and type of private-market risk management options may be affected.

Moral hazard and adverse selection are especially likely in a complex process such as crop production. Farmers make numerous decisions from planting through harvest that includes consideration of risk. Thus, the potential is high that participation in publically subsidized insurance could influence farmers' decisions and that farmers will know more about their risks than providers of these programs.

Moral hazard and adverse selection are less likely when the determinant of payments by risk management programs is outside the control of the insured (Halcrow 1949; Miranda 1991). Hence, area-wide insurance, such as county insurance, is often championed as a way to reduce moral hazard and adverse selection. However, during the 2013 crop year, county insurance products accounted for only 1.4 percent of insured US acres (USDA 2014e).

Even for individual farm crop insurance contracts, moral hazard and adverse selection can be managed by having information about the riskiness of production by individual field and individual farmer. Thus, moral hazard and adverse selection are a rationale for public subsidies only until adequate data exist on individual field and farmer yields to manage these effects. It is not certain how many observations are needed to address the issues of moral hazard and adverse selection, but data for many fields and farmers in the United States now exceed 10 years. This ever-growing dataset might allow the use of statistical techniques to combine county- and farm-specific data to calculate field- and farmer-specific insurance rates, with an associated reduction in the cost of moral hazard and adverse selection.

Production, Management, and Environmental Impacts of Subsidized Crop Insurance

Even if the systemic risk and moral hazard/adverse selection arguments for publically subsidized insurance are accepted, they are not a full rationale for adopting policy. Adoption depends upon all costs and benefits of a policy.⁴ Publically subsidized insurance affects production, management, and the

⁴ Tangermann (2011) makes a similar point. He divides risk into three categories. His "catastrophic risks," which "can be considered the market failure level," correspond most closely to what we describe as systemic risk. Tangermann, following OECD analysis, articulates three principles for risk management programs: (1) that public policy should leave as much space as possible for private risk management activities (in particular, government programs should not absorb risks that farmers can manage themselves); (2) that a holistic approach should be taken to evaluating the efficacy of insurance programs within the full complex of farm support policies; and (3) that the distinction should be clear between providing risk management assistance versus providing support more generally. Tangermann concludes that "it is highly questionable whether subsidies to crop

environment. The assessment of those impacts that follows is similar in part to the review in Sumner and Zulauf (2012).

Publically subsidized insurance may encourage production and suppress price for three reasons (Nelson and Loehman 1987). First, because farmers do not pay the full cost of insurance and because financiers may reduce the cost of operating loans due to a lower chance of default, expected income is higher. Higher net income increases the incentive to plant insured crops, especially crops with higher premium subsidy rates. This impact is similar to that of a price subsidy. Second, risk-averse farmers may plant more acres with insured crops in areas of significant production risk because insurance reduces the financial consequences of large yield losses. Third, because the need to manage large losses is reduced, farmers may focus on increasing average productivity.

Based on a simulation analysis, LaFrance, Shimshack, and Wu (2002) conclude that insurance will not affect land use only when it is actuarially sound and unsubsidized. Lubowski et al. (2006) conclude that based on empirical analysis of crop insurance participation and land use, the increase in insurance subsidies during the mid-1990s caused an estimated 2.5-million-acre (0.8 percent) increase in cultivated cropland in the 48 contiguous US states in 1997. Goodwin, Vandevener, and Deal (2004) found that a 30 percent decrease in premiums caused less than a 1 percent increase in Midwest corn acres and about a 1 percent increase in Northern Plain barley acres. Young, Vandevener, and Schnepf (2001) also find positive but small production effects. Last, both Babcock and Hennessey (1996) and Smith and Goodwin (1996) report that yield insurance has a small, positive impact on input use.

Risk compensation is another set of distortions resulting from publically subsidized insurance. Risk compensation, which has gained increasing recognition in recent years, is the replacement, in part or whole, of one risk by another risk. For example, publically subsidized insurance may reduce a farmer's incentive to use other risk-mitigating practices, such as crop diversification and risk-reducing production practices. Both Horowitz and Lichtenberg (1993) and Babcock and Hennessey (1996) find that farmers with insurance use less risk-reducing chemicals. A risk compensation impact widely discussed by farmers is that some farmers use subsidized insurance to increase land rents and bids. If risk compensation occurs, the policy question becomes, what is the net benefit of subsidized crop insurance to farmers and society?

Last, because risky production areas can overlap with environmentally sensitive areas, the environmental impact of crop insurance is a policy issue. In the most extensive study to date, Lubowski et al. (2006) found that subsidized crop insurance increased wind and water erosion by an estimated 1.4 and 0.9 percent in 1997.

As a group, these studies suggest the distortions resulting from US crop insurance are not large. A possible explanation is that the insurance price is reset each year to reflect existing market conditions. Thus, insurance does not put a floor under market signals, which mitigates its impact on production. A second possible explanation is the existence of production-related constraints. For example, the ability to expand cropland in the US Midwest is limited. Crop rotation considerations and availability of insurance for most alternative crops in many parts of the United States also likely temper the impact of crop insurance on planting decisions. A third possible explanation is that the studies cited above predate the large increase in both insured acres and subsidy level for US crop insurance. A fourth possible explanation is that previous studies have missed certain channels by which publically subsidized insurance may affect crop production (Henneberry 2014). Those include risk compensation.

In summary, the limited distortions found by existing studies of US crop insurance may or may not be applicable to the current policy and market environment, depending on which of the four proposed explanations are valid and dominant. New studies using contemporary data are clearly needed.

insurance are really appropriate" especially in the context of large direct income transfers as occur in the EU. The shift from direct income support to strengthened risk protection in the 2014 US farm bill will intensify a debate over EU versus US forms of support and their effects on domestic producers and world markets.

4. THE AGRICULTURAL ACT OF 2014

Discussion of the 2014 farm bill in this section begins with a brief review of its legislative history. A summary of CBO's projected changes in spending follows. Next, changes in the US farm safety net programs are described in depth, including commodity programs (Title I), insurance (Title XI), and conservation (Title II). Key issues that emerge from the authorized safety net are discussed, with specific focus on the potential impacts on the distribution of payments among crops and states with the shift from direct payments to strengthened risk management programs, the program enrollment decisions farmers will make, and the potential for overlap in payments by the different crop safety net programs.

Legislative History

The 2014 farm bill was framed by a federal budget deficit that had soared to 10 percent of gross domestic product due to a deep economic recession in 2008–2009 and slow subsequent recovery.⁵ A contentious national debate about deficit reduction, entitlement programs, taxes, and policies to stimulate employment and growth dominated the domestic political dialogue. In contrast, the US farm sector had experienced a remarkable six-year period of high prices and net farm income. Prices had spiked upward after enactment of the 2008 farm bill. Although prices and income dipped again in 2009, markets turned upward in 2010 as the farm bill debate got under way. Subsequently, despite a severe drought in 2012, the farm sector experienced high net income during the three-year period of farm bill debate. Net farm income averaged \$121 billion during 2011–2013, compared with \$74 billion during 2008–2010. Prices received for corn and cotton averaged more than 40 percent higher during the latter three years, while soybean and wheat prices averaged 27 percent and 14 percent higher, respectively.

Within this context, the programs enacted in the 2014 farm bill were evident in proposals put forward early in the debate. Ten policy proposals made by farm and industry groups, their congressional supporters, and the Obama administration during late 2011 and early 2012 are summarized in the appendix (Table A.1). All 10 retained the crop insurance program. Nine eliminated direct payments, continued the marketing loan program, and introduced new risk management programs to complement crop insurance. Only three retained the price countercyclical program from the 2008 farm bill, but they were from members of Congress (Senators Conrad/Baucus/Hoeven and Representative Neugebauer) and the administration. Retention of the countercyclical program in these proposals suggested support from advocates for at least some crops and thus foreshadowed divided opinions over the future program to address multiple years of low prices or revenue.

As a group, these proposals reveal widespread acceptance by US farm groups early in the 2014 farm bill process of trading direct payments for strengthened downside risk protection. That trade-off reflected the difficulty of defending the fairness of large government payments when farm incomes were at or near record high levels, especially when farmers were also receiving high crop insurance net indemnity payments. Eliminating direct payments freed up money to address their top priority of enhanced assistance against risk even when disagreement existed over the type of risk assistance.

In July 2012, the full Senate, under Democratic control, and the House of Representatives Agriculture Committee, under Republican control, passed farm bills (S. 3240 and H.R. 6088). While considerable agreement existed within the commodity and crop insurance titles, significant differences also existed, particularly over shallow losses not covered by existing crop insurance products, the safety net for multiple years of low prices or revenue, and assistance for dairy. Appendix Table A.2 contains a summary of the crop program provisions of these two alternative farm bills. The full House of Representatives did not act on the Agriculture Committee's July 2012 bill, and the 2011–2012 session of the 112th Congress ended with a stop-gap measure to extend most provisions of the 2008 farm bill by one year through September 30, 2013.

⁵ Novoa, Cororaton and Orden (2014) provide a chronology of the fiscal and farm bill debates. Orden and Zulauf (2015) provides further assessment of the political economy of the 2014 farm bill.

The Senate remained in Democratic control while the House remained in Republican control after midterm elections in November 2012, but the farm bill process had to be restarted with the seating of a new Congress in January 2013. The full Senate again approved a farm bill in June 2013 (S. 954). While similar to its July 2012 bill, changes were made that moved its provisions closer to the House version of commodity programs, notably higher reference (target) prices for southern crops and inclusion of a fixed minimum price in its revenue program. In the House, a conservative caucus raised voracious objections to the farm bill, over both farm support and nutrition assistance. The full House defeated a version of the Agriculture Committee bill in June 2013 (H.R. 1947). In July 2013, the full House passed a bill that largely retained the Agriculture Committee's farm safety net proposals but contained no nutrition assistance title (H.R. 2642). In September 2013, the full House passed a separate bill on nutrition programs (H.R. 3102). It reduced projected expenditures on nutrition assistance programs by about \$40 billion (5 percent) over 10 years versus a reduction of \$4 billion called for in the Senate bill. The two separate House bills were merged in late September (House Resolution 361) and provided the basis for a conference with the Senate.

The legislative dynamics of the farm bill played out against a backdrop of a divided Congress and the broader debate between the Republican House and the Democratic Senate and administration over the federal budget deficit. Particularly germane to the farm bill was the debate over the role of spending cuts, especially for entitlement programs, in reducing the fiscal deficit. The Budget Control Act of 2011 (August 2, 2011) laid out a sequester of across-the-board cuts that would occur if an agreement over a budget could not be reached, and established a congressional super committee charged with finding such agreement. Key deliberations about the level of funding for the farm bill took place in this context, but the super committee disbanded in November 2011 without reaching an accord.

By November 2012, another round of bipartisan negotiations over a grand budget bargain was launched. Leaders of the Senate and House agriculture committees met informally to seek a compromise in lieu of a formal conference committee since the House still had not passed a farm bill. The bipartisan budget negotiations failed again, but in January 2013 the sequester cuts were temporarily put off by enactment of the American Taxpayer Relief Act. Later that month Congress also acted to postpone a shutdown of the government over breaching the federal debt ceiling.

Farm bill negotiations were expected to be postponed until midyear 2013, but early in the year Senate Majority Leader Harry Reid (D-Nev.) singled out proposed cuts to farm spending over 10 years of \$27.5 billion matched by a similar cut to defense spending as an alternative to the general sequester. However, the budget debate subsequently turned more divisive. With no alternative proposal able to secure bipartisan House and Senate support, the sequester cuts went into effect March 1, 2013. Funding of the government through FY 2013 was nonetheless assured in late March under the Consolidated and Further Continuing Appropriations Act, 2013. An additional six months of further contestation failed to achieve even short-term agreement, and the federal government was forced into a partial shutdown at the start of FY 2014. That shutdown lasted 16 days, but led to a medium-term fiscal truce with enactment of new continuing appropriations acts (October 17, 2013, and January 16, 2014) and a further debt ceiling extension (February 11, 2014).

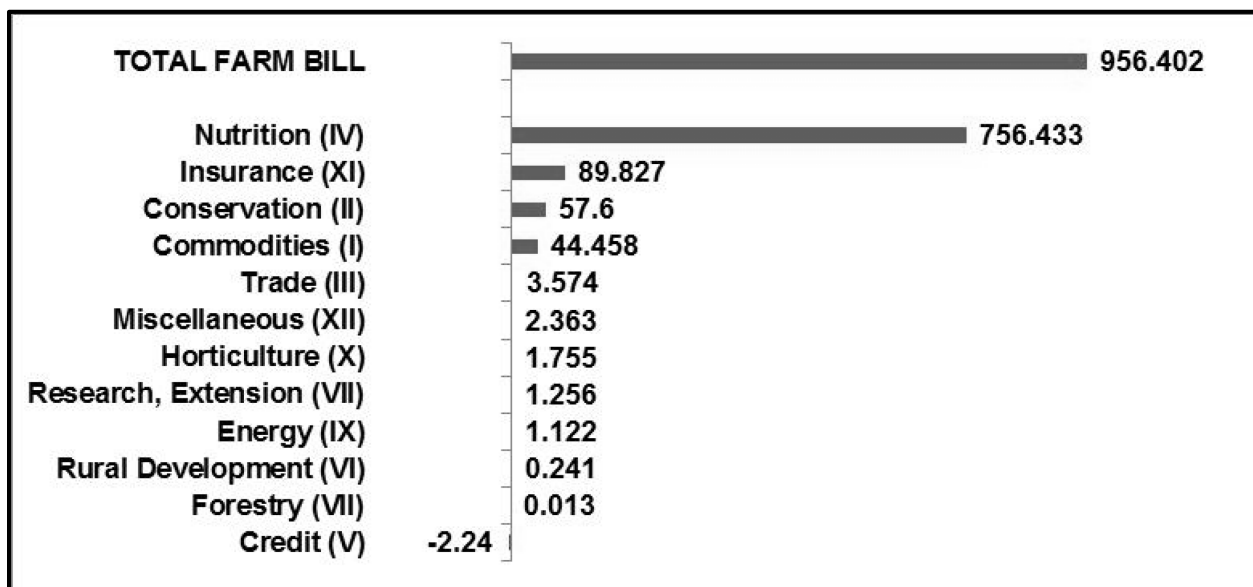
Prior to this truce, another one- or two-year extension of the 2008 farm bill was widely expected. But in its wake, the Agricultural Act of 2014 became one of the few major bills to be passed by the 113th Congress.⁶ In the end, this legislation received overwhelming bipartisan majorities in both the House of Representatives (251–166) and the Senate (68–32). It was signed into law February 7, 2014.

⁶ Gridlock has characterized both the 112th and 113th Congress since the November 2010 election brought divided control. As of July 30, 2014, the 113th Congress had passed 142 laws. The 112th Congress had passed 151 laws at the same point in 2012. The original so-called “do nothing” Congress passed 906 laws in 1947 and 1948 (Jonathan Weisman and Ashley Parker, “Congress Set to Make Exit, But Few Cheer,” *New York Times*, August 2, 2014, pp. A1 and A12).

Projected Spending by Farm Bill Title⁷

At the time the 2014 farm bill was enacted, CBO projected 10-year total spending of \$956 billion over FY 2014 through FY 2023 (Figure 4.1). As noted widely, the nutrition title dominates farm bill spending with a projected share of 79 percent. Crop insurance and conservation were the second and third largest titles with projected shares of 9 and 6 percent, respectively. The title most associated with farm bills, commodities, accounted for 5 percent of projected spending.

Figure 4.1 Estimated outlays by title (title number in parentheses), US 2014 farm bill, fiscal years 2014–2023 (billion dollars)



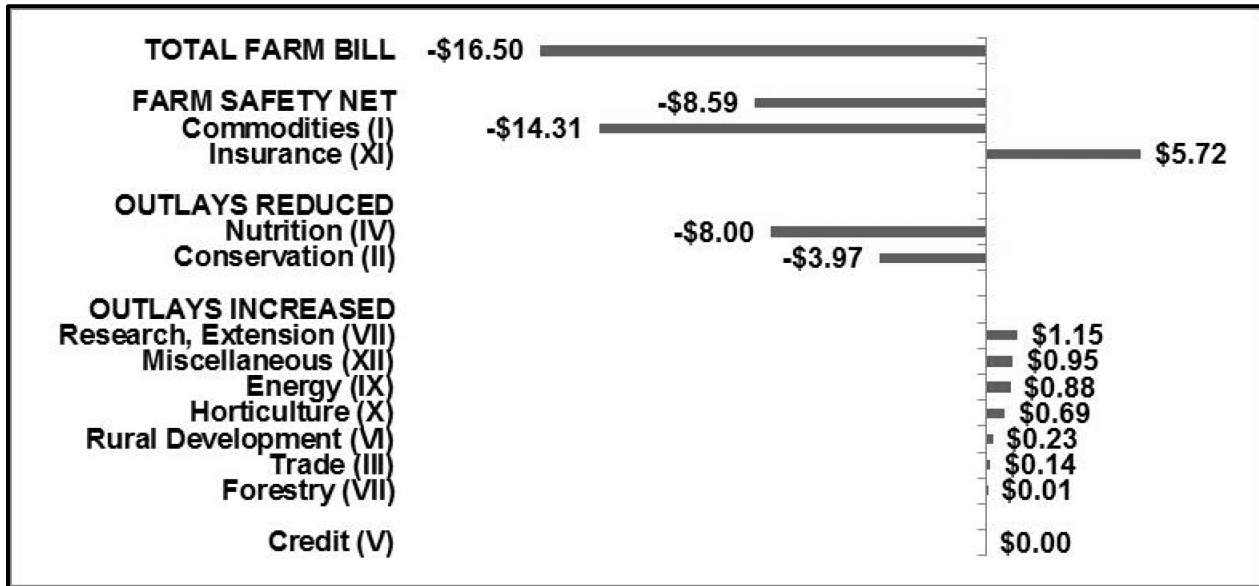
Source: CBO (2014).

CBO projected the 2014 farm bill would cost \$16.5 billion less over 10 fiscal years than an extension of the 2008 farm bill programs, the so-called baseline spending (Figure 4.2). Relative to the baseline, spending for the commodities, nutrition, and conservation titles was projected to decline \$14.3, \$8.0, and \$4.0 billion, respectively, while spending on the insurance title was projected to increase \$5.7 billion.⁸ Expressed as a percentage of projected spending, the declines are 32 percent for commodities, 7 percent for conservation, and 1 percent for nutrition, with an increase of 6 percent for insurance.

⁷ This section uses and extends Zulauf (2014a).

⁸ The CBO baseline already incorporated reductions in projected spending resulting from farm bill related sequester cuts. These reductions totaled \$6.4 billion over 10 years; primarily \$4.1 billion from commodities (Title I) and \$2.1 billion from conservation (Title II).

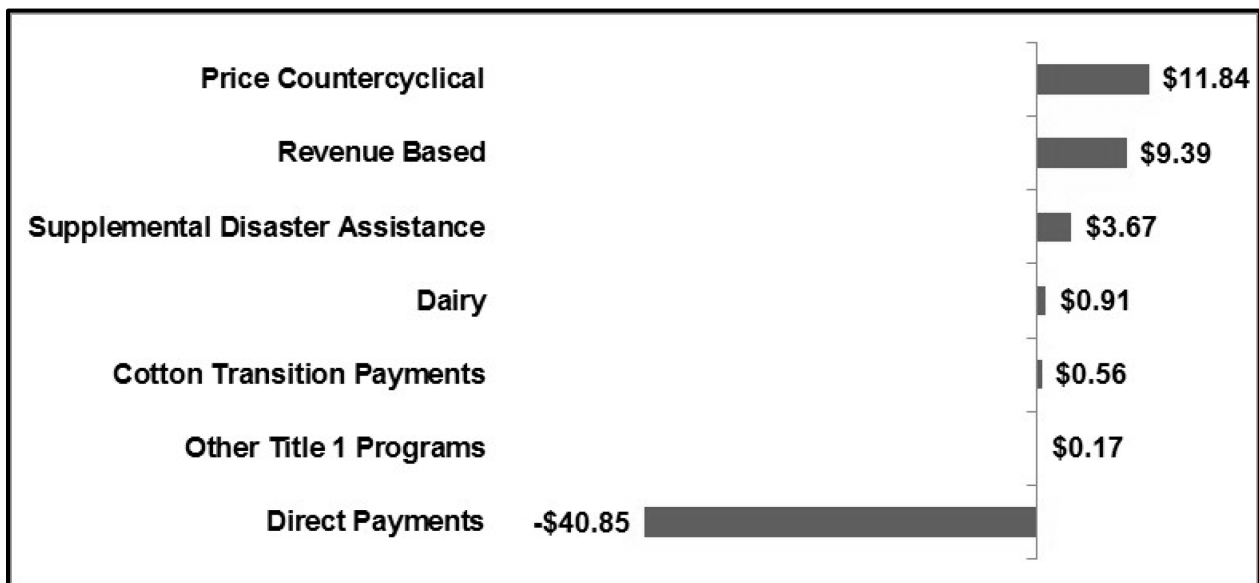
Figure 4.2 Estimated change in outlays relative to baseline by title (title number in parentheses), US 2014 farm bill, fiscal years 2014–2023 (billion dollars)



Source: CBO (2014).

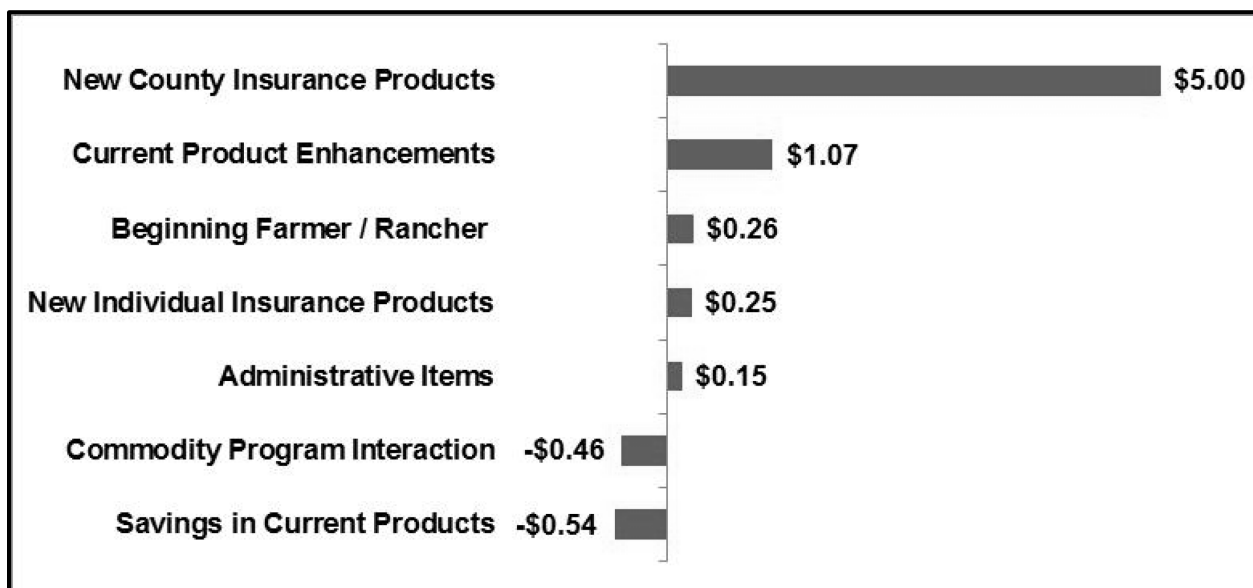
The largest single source of projected savings, a \$40.8 billion decline, was the repeal of direct payments to farmers except for smaller transition direct payments to cotton for the 2014 crop and possibly for some areas for the 2015 crop (Figure 4.3). Total spending on the safety net composed of the commodities and crop insurance titles was projected to decline by \$8.6 billion. Relative to baseline spending, nearly 80 percent of the savings from eliminating direct payments were kept in the farm safety net through increased spending of \$26.5 billion on other Title I commodity programs and \$5.7 billion on Title XI insurance programs, including \$5 billion for new insurance products (Figure 4.4).

Figure 4.3 Estimated change in outlays relative to baseline, US 2014 farm bill Title I (commodities), fiscal years 2014–2023 (billion dollars)



Source: CBO (2014).

Figure 4.4 Estimated change in outlays relative to baseline, US 2014 farm bill Title XI (crop insurance), fiscal years 2014–2023 (billion dollars)



Source: CBO (2014).

Commodity title spending is projected to increase by approximately \$11.6 billion for price countercyclical payments and \$9.4 billion for revenue based programs. In addition, spending is projected to increase by approximately \$1 billion on dairy support programs and \$3.7 billion on a permanent Supplemental Disaster Assistance Program. The latter is composed of four disaster assistance programs for livestock and other products (honeybees, farm-raised catfish, orchard trees, and nursery stock). They cover partial losses from natural events. The four programs were originally enacted in the 2008 farm bill but had expired in September 2011. Retroactive payments were also authorized for losses that occurred between that date and enactment of the 2014 farm bill.

Permanent funding of the Supplemental Disaster Assistance Program and increased spending on the horticulture title (Figure 4.2) are consistent with the inclusion of more farm products in the farm bill and more specifically the farm safety net. This trend dates at least to the 2002 farm bill. Moreover, spending is shifted from the titles that historically account for the largest share of farm bill spending (nutrition, commodities, and conservation) to the other titles, including trade, credit, rural development, research and extension, forestry, and energy. These features reflect the need to extend the farm bill's scope to secure its passage. As a result, the 2014 farm bill is more inclusive in its farm and nonfarm scope and somewhat less inequitable in projected spending across farm commodities.

The projected cost of a program depends in part on the forecast of future market prices. As history has often demonstrated, predicting agricultural prices is difficult to do accurately. It became more difficult to make accurate predictions of program expenditures when the 1996 farm bill eliminated acreage set-asides. Although set-asides created market distortions, they could be used to adjust the costs of farm programs on a year-to-year basis. In particular, if farm program costs were higher than expected after a farm bill was enacted, set-asides could be increased to reduce supply and thus reduce the cost of the program, both by individual crop and in total. Budget projections for the 2014 farm bill also were made difficult (similar to the 2008 farm bill) by the need to make assumptions regarding which program farmers would chose. In short, realized expenditures under any of the enacted programs may differ substantially from CBO estimates. If market prices and revenue prove relatively higher than projected by CBO in February 2014, total expenditure will be less. However, if prices and revenue decline more than projected by CBO, total expenditures will rise compared with CBO projections.

Enhanced Risk Safety Net

A key change in commodity policy in the 2014 farm bill is the elimination of direct payments, which date to the 1996 farm bill and were retained in the 2002 and 2008 farm bills. In place of fixed annual payments, the 2014 farm bill further embraces risk management as the focus of US farm policy. Coverage provided by the existing crop insurance program is strengthened. New shallow-loss programs are created to cover part of the deductible associated with the insurance elected by individual farms. Programs to cover losses that span multiple consecutive years of low farm prices or revenue are revised. A new insurance program replaces past support policies for upland cotton, and a new margin insurance-like program is created for dairy producers. The 2014 farm bill retains the marketing loan program and crop loan rates, except to modify the cotton rate. Loan rates are below crop prices that prevailed in world markets between 2007 and 2013.

Of equal importance was the decision to continue to provide farmers a program choice. Choice of program was first included in the 2008 farm bill. While the reasons for providing choice are multifaceted, one key driver is that the different crop sectors do not agree on the farm safety net design that should prevail. One explanation for this disagreement is that the unifying goal of increasing farm income, which dates to the seminal 1933 farm bill, has receded while managing risk remains a major concern of farmers. Thus, lobbying groups for various individual crops have shifted their focus toward their own particular circumstances. The result has been an opening to change policy with less commonality in programs across different crops.

The main crop commodity and insurance programs of the 2014 farm bill are listed and described in Table 4.1, as are the dairy program and disaster assistance programs. Antecedents of the new 2014 crop programs in the 2008 farm bill are depicted in Box 4.1. To provide additional perspective for discussion of the 2014 farm bill, Table 4.2 presents basic acreage measures for the nine crops that received direct payments for the 2012 crop year and are the historically important crops covered in the crop safety net.

Box 4.1 Schematic of new crop programs in the US 2014 farm bill

Antecedent in 2008 farm bill	Shallow losses	Multiple-year losses
Price Countercyclical	---	PLC (Price Loss Coverage)
ACRE (Average Crop Revenue Election)	ARC (Agricultural Risk Coverage)	ARC
Crop Insurance	SCO (Supplemental Coverage Option) STAX (Stacked Income Protection Plan)	---
SURE (Supplemental Revenue Assistance)	ARC	---

Source: Authors' interpretation.

Table 4.1 Summary of safety net programs, US 2014 farm bill

Program	Description
Price Loss Coverage (PLC) (revised target price program)	Alternative to ARC; fixed reference price set by crop by Congress; see Table 4.3 for most of PLC's parameters and Table 4.5 for reference prices for major crops; other reference prices are other oilseeds \$20.15/hundredweight (cwt); dry peas \$11.00/cwt; lentils \$19.97/cwt; small chickpeas \$19.04/cwt; large chickpeas \$21.54/cwt.
Agriculture Risk Coverage (ARC) (revised revenue program)	Alternative to PLC; county and farm coverage options; county coverage elected on crop-by-crop basis, farm coverage is all of an operator's or owner's Farm Service Agency farms in state in individual ARC; see Tables 4.3 and 4.5 for most of ARC's parameters.
Marketing Loan Program (existing program)	Fixed price set by crop by Congress; same as 2008 farm bill except for cotton; see Table 4.5 for loan rates for major crops; other loan rates are upland cotton, ranging from \$0.45/lb to \$0.52/lb (previous rate) depends on world average prices of preceding 2 years; extra-long staple cotton \$0.7977/lb; other oilseeds \$10.09/cwt; dry peas \$5.40/cwt; lentils \$11.28/cwt; small chickpeas \$7.43/cwt; large chickpeas \$11.28/cwt; graded wool \$1.15/lb; ungraded wool \$0.40/lb; mohair \$4.20/lb; honey \$0.69/lb.
Margin Protection Program (MPP) for Dairy Producers (new program)	Voluntary program; replaces dairy price and income support programs; payment received by participating dairy farmers if margins between milk prices and feed costs are below \$4/cwt with no premium payment; option to pay a premium to insure a margin up to \$8/cwt; government purchase of dairy products for distribution in domestic food programs authorized whenever prices are low enough to trigger margin guarantee payments.
Individual Farm Insurance (existing program)	Covers revenue or yield risk based on actual production history yield for farm, 100% of plant acres, and up to 85% of pre-plant price; no limit on payments; premium subsidy varies from 38% to 100%, highest at lowest coverage levels; 2014 farm bill expands and improves coverage of existing programs; mandates new products, including margin insurance for rice; mandates pilots and studies for new products including for specialty crops, alfalfa, bioenergy crops, swine, poultry, and catfish.
County Insurance (existing program)	Covers revenue or yield risk based on expected revenue or yield for county, 100% of plant acres, and up to 90% of expected pre-plant price; no limit on payments; premium subsidy ranges from 44% to 59%.
Supplemental Coverage Option (SCO) (new program)	Covers revenue or yield risk at the county level over a range between the coverage level for individual farm insurance elected by the farm and 86%; not available for crops enrolled in ARC or STAX; no limit on payments; premium subsidy is 65%.
Cotton Stacked Income Protection Plan (STAX) (new program)	Separate insurance program for upland cotton; farm elects coverage between individual farm coverage level it elected and 90% of expected county revenue; if individual insurance not bought, STAX coverage can be elected between 70% and 90%; a protection multiplier factor of not less than 120% exists; no limit on payments; premium subsidy is 80%; STAX acreage ineligible for SCO.
Supplemental Agricultural Disaster Assistance (renewed disaster program)	Authorized retroactively and on a permanent basis four disaster aid programs first authorized in the 2008 farm bill for livestock and other products (honeybees, farm-raised catfish, orchard trees, and nursery stock).

Source: Created by authors.

Table 4.2 Selected acreage attributes, US crops receiving direct payments, 2012 crop year

Crop	Planted acres (million)	Share of principal crop^a acres	Program (base) acres^b (million)	Share of program acres
Barley	3.6	1.1%	8.6	3.3%
Corn	97.2	29.8%	84.3	32.6%
Cotton (upland)	12.1	3.7%	17.9	6.9%
Oats	2.8	0.8%	3.0	1.2%
Peanuts	1.6	0.5%	1.5	0.6%
Rice	2.7	0.8%	4.4	1.7%
Sorghum	6.2	1.9%	11.6	4.5%
Soybeans	77.2	23.7%	50.1	19.4%
Wheat	55.7	17.1%	73.7	28.5%
Total	259.1	79.4%	255.1	98.7%

Sources: Data from USDA (2014b, 2014c).

Notes: ^a Principal crops include most crops except fruits, nuts, and vegetables. Area planted to principal crops totals 326.3 million acres versus 259.1 for the nine crops receiving direct payments. ^b Total base acres for the United States are 258.3 million acres.

Farm Commodity Programs (Title I)

Part of the enhanced risk safety net is a set of three revised Title I crop programs: Price Loss Coverage (PLC), Agriculture Risk Coverage-County (ARC-CO), and Agriculture Risk Coverage-Individual (ARC-IC). Table 4.3 presents key similarities and differences across these options. Owners of a farm as identified by the USDA Farm Service Agency (FSA) have to elect one of the three options. An FSA farm may not be the same as a farm operation. Most large farms are composed of many FSA farms (Zulauf, Paulson, Coppess, and Schnitkey 2014).

PLC is a modified version of the price countercyclical program in the 2002 and 2008 farm bills. PLC's objective is to provide assistance against low prices, where low is defined relative to a crop's legislated reference price. The reference price is fixed by Congress for the length of the farm bill. PLC makes payments when the US crop year price is below the crop's reference price. Payments are crop-specific, but the crop does not have to be planted since payments are made on 85 percent of an FSA farm's historical program base acres.⁹ PLC is the commodity program default option. It is also the option imposed if all producers on a FSA farm do not elect the same program option. However, in both situations, no payment is made for the 2014 crop year and the FSA farm is in PLC only for the 2015 through 2018 crop years. This can be viewed as a default option with a potential loss condition if program payments are made for the 2014 crop year.

⁹ Historically, one restriction on crop-planting decisions for base acres was the loss of payment eligibility if fruits and vegetables were planted. The 2008 farm bill introduced limited planting flexibility for fruits and vegetables on base acreage on a small-scale pilot basis (in addition to giving farmers more flexibility than previous farm bills about what program crops they planted on base acres). The 2014 farm bill increases this flexibility by allowing fruits and vegetables to be planted, without any loss of payment eligibility, on the percentage of program acres on which payments will not be made (15 percent for ARC-CO and PLC; 35 percent for ARC-IC). Payments are reduced only if program acreage planted to fruits and vegetables exceeds that percentage.

Table 4.3 Comparison of parameters of 2014 farm bill new Title I crop programs

Item	PLC (Price Loss Coverage)	ARC-CO (Agriculture Risk Coverage, County)	ARC-IC (Agriculture Risk Coverage, Individual)
Decision framework	<i>Same for all options:</i> elect for 5 crop years covering 2014–2018; election made in 2014 crop year; Farm Service Agency (FSA) farm loses payment for 2014 and defaulted into PLC for 2015–2018 if no election made or if all operators of the FSA farm do not make the same choice.		
Decision unit	Individual program crop on individual FSA farm.	Individual program crop on individual FSA farm.	All program crops on all FSA farms an operator elects into ARC-IC in a state.
Payment (base) acres (generic payment acres is former cotton payment acres)	85% of program (base) crop acres on an FSA farm plus generic payment acres planted to program crop.	85% of program (base) crop acres on an FSA farm plus generic payment acres planted to program crop.	65% of all program (base) crop acres on all FSA farms operator elects into ARC-IC plus generic program acres planted to program crop.
Program (base) acres	<i>Same for all options:</i> current program acres or updated to total current program acres allocated by program crop share of FSA farm's total acres planted to program crops in 2009–2012 crop years.		
Coverage range	Loan rate to reference price.	76% to 86% of program crop county revenue benchmark.	76% to 86% of ARC-IC farm unit revenue benchmark.
Payment rate	Reference price minus higher of US crop year price or loan rate.	86% times ARC revenue benchmark for county minus higher of actual revenue for county or 76% of county revenue benchmark.	86% times ARC revenue benchmark for ARC-IC farm unit minus higher of actual revenue or 76% of ARC-IC farm unit revenue benchmark.
Payment yield	Current FSA farm countercyclical yield or updating to 90% of FSA farm average plant yield or to 67.5% of county average yield for 2008–12	XXXXXX	XXXXXX
Reference price	See Tables 4.1 and 4.5.	XXXXXX	XXXXXX
Revenue benchmark	XXXXXX	Equals prior 5-year Olympic average (remove high and low) of county yield times Olympic average of US price for 5 prior crop years.	Sum of revenue benchmarks for each program crop on all FSA farms of operator in ARC-IC weighted by program crop's share of total program acres.
Loan rate	<i>Same for all options:</i> see Table 4.1 and Table 4.5.		
Supplemental Coverage Option (SCO)	SCO insurance available.	SCO insurance not available.	SCO insurance not available.
Payment limit	<i>Same for all options:</i> payments directly or indirectly attributed to a person made by all Title I crop programs, except gains from forfeiting nonrecourse loans, limited to \$125,000 for a crop year; another \$125,000 limit per crop year generally available to spouse if active in farming; separate payment limit exists for peanuts.		
Adjusted gross income (AGI) limit	<i>Same for all options:</i> a person or other legal entity cannot receive Title I crop program benefits if person or other legal entity has a previous 3-year average AGI excluding the most recent complete year that exceeds \$900,000.		

Source: Created by authors.

ARC is a revised version of the ACRE program enacted in the 2008 farm bill.¹⁰ Key parameters of these two revenue programs are compared in Table 4.4. Both cover losses at the higher end of the crop insurance coverage range and thus are shallow-loss programs. Both also provide assistance against multiple years of low revenue since the moving averages of price and yield used to determine their revenue benchmarks adjust more slowly than the market when prices decline sharply in a given year.

Table 4.4 Comparison of parameters of ARC (2014 farm bill) and ACRE (2008 farm bill) revenue programs

Item	ARC (Agriculture Risk Coverage)	ACRE (Average Crop Revenue Election)
Decision framework	5-year irrevocable decision covering 2014–2018 crop years; if no election is made FSA farm loses all payments for 2014 crop year and is defaulted into PLC (Price Loss Coverage) for 2015–2018 crop years.	Once ACRE elected, decision irrevocable through 2012 crop year; if ACRE not elected, decision could be revisited next crop year; direct and countercyclical programs were default option.
Decision unit	ARC-CO (Agriculture Risk Coverage-County): individual program crop on individual FSA farm; ARC-IC (Agriculture Risk Coverage-Individual): all program crops on all FSA farms in a state an operator elects into ARC-IC.	All program crops on an individual FSA farm.
Payment (base) acres	85% of program crop acres on FSA farm plus generic program acres planted to program crop (generic program acres are former cotton base acres).	83.3% (85% for 2012 crop) of FSA farm's acres planted with program crop; planted acres that receive an ACRE payment cannot exceed a farm's total base acres.
Revenue benchmark	Price component times yield component.	Price component times yield component.
Revenue benchmark price component	Olympic average (removes high and low) of US crop year price of the 5 most recent past crop years.	Simple average of US crop year price of 2 most recent past crop years.
Revenue benchmark yield component	Olympic average (removes high and low) yield of 5 most recent past years for county or farm.	Olympic average (removes high and low) yield of 5 most recent past years for state.
Limits on revenue benchmark	PLC reference price is minimum price for each year and thus for the 5-year Olympic average.	Revenue benchmark could not increase or decrease more than 10% per year.
Coverage range	76% to 86% of revenue benchmark.	67.5% to 90% of revenue benchmark.
Payment made when	Actual revenue less than 86% of revenue benchmark.	Actual revenue less than 90% of revenue benchmark.
Loan rate	Rate stated in farm bill.	Rate stated in farm bill reduced 30%.
Direct payments	Not authorized.	Reduced 20%.

Source: Created by authors.

¹⁰ This discussion is condensed from Zulauf and Schnitkey (2014c).

However, important differences exist. Whereas ARC is based on county or farm yields, ACRE used state yields. ARC's coverage range is narrower—76 to 86 percent versus 67.5 to 90 percent for ACRE. ARC pays on a part of historical program acres while ACRE generally paid on planted acres. ARC, unlike ACRE, has a potential floor on its revenue benchmark. ARC's Olympic average price cannot decline below the PLC reference price. Assuming yields trend up, a floor therefore exists on ARC's revenue benchmark. Because direct payments are eliminated by the 2014 farm bill, the penalty of a 20 percent reduction in direct payments imposed on participants in ACRE under the 2008 farm bill does not apply to ARC. Last, the loan rate is not reduced for participants in ARC, whereas it was reduced for participants in ACRE. Given all the changes in ARC relative to ACRE, CBO projected spending on the revenue program to increase by \$9.4 billion (Figure 4.3) to a total of \$14.1 billion (including projected baseline spending of \$4.7 billion had ACRE been continued, not shown in Figure 4.3).

ARC-CO makes a payment when actual revenue per acre for a crop-county combination is less than the crop-county revenue benchmark by more than 14 percent (that is, revenue is below 86 percent of the benchmark). Payments are crop-specific, but the crop does not have to be planted since ARC-CO payments, like PLC payments, are made on 85 percent of an FSA farm's historical program acres. In contrast, ARC-IC makes a payment when the average actual revenue for all program crops on an ARC-IC farm unit is less than the average revenue benchmark for all program crops on the ARC-IC farm unit. A crop must be planted to receive a payment, but payment is made on 65 percent of the ARC-IC farm unit's total program acres.¹¹ In essence, ARC-IC is a whole farm program option based on the average revenue experience of program crops planted on the ARC-IC farm unit. In addition to being a successor to ACRE, ARC-IC is a successor to the 2008 farm bill's SURE program. Both ARC-IC and SURE, which was not continued in the 2014 farm bill, are whole farm programs to provide shallow-loss risk assistance.

Table 4.5 compares the 2008 and 2014 farm bill price parameters for barley, corn, oats, peanuts, long-grain rice, medium-/short-grain rice, sorghum, soybeans, and wheat. Loan rates provide a minimum price floor to producers. PLC reference prices are higher than previous countercyclical target prices for all crops. PLC reference prices are generally raised by 30 to 50 percent nominally; however, the increase varies across crops, being greatest for barley (88 percent) and least for peanuts (8 percent). The effective increases are larger (general in the range of 50 to 75 percent) because under the 2008 farm bill countercyclical payments were only triggered when market price was below the target price minus the direct payment rate per unit of output for each covered crop. The increases raise the probability of payments and are the primary reason CBO projects a \$11.6 billion increase in spending on price-based countercyclical programs (Figure 4.3) to a total of \$13.1 billion (including projected baseline spending of \$1.5 billion, not shown in the figure) had the previous price countercyclical program been continued.

Also varying by crop is the ratio of the estimated 2014 ARC price component (Olympic average of crop year prices 2009–2013) to PLC reference price. This ratio ranges from 101 percent and 104 percent for long-grain rice and peanuts, respectively, to 143 percent and 146 percent for corn and soybeans. An informative ARC-to-PLC price ratio is 114 percent. ARC's highest coverage level (in terms of price, holding yield constant) is 86 percent. However, PLC's coverage level is 100 percent because it makes payments whenever market price is below its reference price. Thus, a price ratio less than 114 percent favors PLC as downside risk assistance, while a ratio greater than 114 percent favors ARC, at least for 2014 and assuming actual yield equals the ARC yield component. The wide variation in the ratio of the 2014 ARC price component to PLC reference price raises the likelihood that different crops will in general choose different programs, which is permitted by the 2014 farm bill.

Payment limits on crop programs in Title 1 of the 2014 farm bill may be a bigger issue than in the past. Like any risk management program, ARC and PLC can make large payments when a risk occurs. Payments directly or indirectly attributed to a person are limited to \$125,000 for a crop year. Another \$125,000 limit per crop year is generally available to a spouse if active in farming. A separate payment

¹¹ An ARC-IC farm unit is the sum of a operator's share in all FSA farms he or she enrolls in ARC-IC in a state. Thus, while ARC-IC is portrayed as an individual FSA farm program, this is not the case if a producer elects ARC-IC for more than one of his or her FSA farms in a state.

limit exists for peanuts. The only Title 1 crop program payments not included in these limits are the benefits from forfeiting nonrecourse loans to the government. For a more extensive discussion of payment limits, see Zulauf, Coppess, Schnitkey, and Paulson (2014).

Table 4.5 Comparison of price parameters for Title I crop programs, major program crops

Crop ^a	Loan rate	Target price	PLC reference price	Estimated ARC price component ^b
	2014	2013	2014	2014 crop year
Barley	\$1.95	\$2.63	\$4.95	\$5.45
Corn	\$1.95	\$2.63	\$3.70	\$5.28
Oats	\$1.39	\$1.79	\$2.40	\$3.25
Peanuts	\$0.1775	\$0.2475	\$0.2675	\$0.2787
Long-grain rice	\$6.50	\$10.50	\$14.00	\$14.17
Medium-/short-grain rice	\$6.50	\$10.50	\$14.00	\$17.87
Sorghum	\$1.95	\$2.63	\$3.95	\$5.09
Soybeans	\$5.00	\$6.00	\$8.40	\$12.27
Wheat	\$2.94	\$4.17	\$5.50	\$6.60

Sources: Congressional Research Service (2014), USDA (2014c), and authors' calculations.

Notes: PLC = price loss coverage; ARC = agriculture risk coverage. ^a Units are \$/bushel except for peanuts (\$/pound) and rice (\$/hundredweight). ^b ARC's price component is the Olympic average for the five preceding years of MAX (crop year price, PLC reference price). Crop year price is from USDA, National Agricultural Statistics Service at its Quick Stats website, August 2014.

The 2014 farm bill changes substantially the support program for cotton. Except for a loan program with a somewhat lower loan rate (reduced from a fixed 52 cents per pound to a range between 45 and 52 cents per pound), cotton no longer has any Title I programs that assist with multiple years of low prices or revenues. Instead, cotton is provided with the STAX crop insurance product (described further below). Insurance products do not address multiple-year risks since insurance prices are reestablished each year based on existing market conditions. This notable change in policy was substantively driven by and may not have occurred without the WTO Brazil-US cotton case. The WTO ruled that several provisions of the US 2002 farm bill cotton program were trade distorting, including the cotton target price and loan rate.

Cotton being ineligible for ARC or PLC has created a caveat on the decoupling of the support payments from current planting decisions. The previous cotton program base acres are termed generic program base acres. For generic base acres, payments will be made by ARC and PLC for 85 percent of the acres planted to a program crop. Thus, payments on these generic program acres are not decoupled from planting decisions. This exception to decoupling is clearly of relevance to farms with previous cotton payment acreage. To put the prospective impact in perspective, 11.6 million acres were planted to upland cotton in the US on average over the 2010 through 2014 crop years, 6.3 million acres less than the 17.9 million acres of upland cotton base in 2012 (last year for which information is available).

A final substantial change made to Title 1 commodity programs in the 2014 farm bill is a revised dairy support program. A new voluntary Margin Protection Program for Dairy Producers (MPP) replaces the traditional dairy price supports and countercyclical (Milk Income Loss Contract) program. Under MPP participating dairy farmers receive a payment without incurring any premium if the margin between milk prices and feed costs fall below \$4 per hundred pounds for two consecutive months.¹² An option

¹² Like all Title I commodity programs, MPP will be administered within USDA by FSA.

exists to insure a margin up to \$8 per hundred pounds by paying escalating premiums. A proposal to incorporate into MPP dairy supply control provisions to reduce program cost proved controversial and is not in the law. Instead, the secretary of agriculture is directed to increase government purchases of dairy products for distribution in domestic food programs whenever prices fall low enough to trigger margin payments.

As with cotton, the change in the dairy program from a traditional commodity program toward an insurance-like program demonstrates the evolution of US agricultural policy toward insurance as a key pillar of support. Moreover, MPP introduces a different design into commodity and insurance policy. Farm organizations have tried to reintroduce farm production costs into farm safety net programs ever since cost-of-production adjustments were removed from the determination of target prices in the 1980 farm bill. MPP takes a step in this direction.

Crop Insurance (Title XI)

Reflecting the trend toward insurance as a farm safety net pillar, CBO projects 10-year spending on the insurance title to increase by \$5.7 billion. By far, the largest increase in spending is \$5.0 billion for new county insurance products (Figure 4.4). The new products are SCO and the related STAX, which is only for upland cotton. SCO and STAX are compared in Table 4.6.

Both SCO and STAX can supplement individual insurance coverage by covering shallow losses at the county level associated with the deductible chosen on the individual farm insurance. In contrast, existing county insurance products operate like individual insurance and cover all losses at the county level that exceed the deductible.¹³

While both SCO and STAX can be purchased for all acres planted with the crop and are not subject to payment limits, they differ on most other insurance product specifications. The subsidy rate is 80 percent for STAX versus 65 percent for SCO. STAX can be bought as a stand-alone policy, but a farm must buy individual insurance to be eligible for SCO. STAX is revenue insurance while SCO is yield or revenue insurance depending on the underlying individual insurance product. The highest coverage level is 90 percent for STAX versus 86 percent for SCO. The lowest coverage level is 70 percent for STAX versus 50 percent for SCO. Last, STAX, but not SCO, has a protection multiplier factor that is no less than 120 percent, which essentially means payments are increased by 20 percent for a given loss.

Although STAX has a unique origin related to the WTO Brazil-US cotton case and SCO is available to other crops in conjunction with PLC, history suggests the differences between these programs may be moderated in the next farm bill. Cost considerations and policy advocacy tend to mitigate differences over time between programs with similar policy objectives and similar operational features. Thus, SCO and STAX can be viewed as an experiment under way in how to design shallow loss insurance.

The 2014 farm bill also makes a number of enhancements to existing insurance products. They include making permanent the higher subsidy levels for enterprise insurance, which became a popular product after the 2008 farm bill temporarily increased its subsidy level. Reflecting the inclusion of revenue benchmarks for dryland and irrigated acres in ACRE and ARC, separate insurance options also will be offered for dryland and irrigated acres. Insurance for organic crops will offer price elections that reflect the retail or wholesale price. Last, producers have a new option to exclude low crop yields when calculating a farm's actual production history (APH) insurance yield. Whereas each of these changes makes crop insurance more attractive to farmers, together they increase public subsidies by about \$1 billion over 10 years.

¹³ The highest coverage level that can be elected for existing county insurance products is 90 percent. Thus insurance indemnity payments are made for county losses greater than 10 percent. The premium subsidy ranges between 44 and 59 percent. A protection multiplier factor is elected between 80 percent and 120 percent. It affects the size of the payment when payments occur. Very few farms have used these county products in recent years, as noted earlier. See Smith and Bekkerman for discussion of potential effects of interactions between PLC, SCO and individual crop insurance on farmers' decisions to alter their coverage levels.

Table 4.6 Comparison of parameters of Title XI SCO and STAX county insurance programs

Item	SCO (Supplemental Coverage Option)	STAX (Stacked Income Protection Plan)
Crops	All crops (upland cotton only if not enrolled in STAX)	Upland cotton
Can purchase as stand-alone policy	No, must buy individual farm yield or revenue insurance	Yes
Type of insurance	Yield or revenue	Revenue
Area unit	<i>Same for both:</i> county or for counties that lack sufficient data, a larger geographical area RMA determines has sufficient data for purposes of providing coverage	
Protection multiplier	Not mentioned in bill	Not less than 120%
Coverage based on	RMA prices and county yields	RMA price and maximum of RMA county yields or Olympic average yield of most recent years using data from RMA or NASS or both or other data considered appropriate by secretary
Coverage range	Individual insurance coverage level bought by farm (lowest available is 50%) up to 86%	Maximum of 70% or level of individual insurance coverage bought by farm or level of existing area insurance coverage bought by farm up to 90% in 5 percent increments
Premium subsidy	65%	80%
Operating and administration cost	<i>Same for both:</i> covered by government	
Eligibility Requirements	Must purchase individual insurance; must not be enrolled in ARC	Must grow upland cotton
Payment limits	<i>Same for both:</i> none	
Target offering date	<i>Same for both:</i> 2015 crop year	

Source: Created by authors.

Notes: RMA is Risk Management Agency; NASS is National Agricultural Statistics Service; ARC is Agriculture Risk Coverage.

A further indication of insurance's emergence as a safety net pillar is the large number of directives concerning new products, pilot programs, and studies. Priority new products include revenue-cost margin insurance with rice the initial crop targeted, revenue insurance for peanuts, and a specialized irrigation policy for grain sorghum. Priority pilot programs include index-based weather insurance, which could become the product to deliver insurance to crops with limited current coverage, such as fruits, vegetables, and hay. Authorized studies include assessments of insurance for swine and poultry catastrophic disease, poultry business interruptions, and food safety risks.

Revenue-cost margin insurance developments are important to monitor. It is not unreasonable to speculate that if it proves popular among farmers for dairy and rice, margin insurance could replace revenue insurance as the dominant insurance product. However, the potential market-distorting effects of including cost of production in publically subsidized crop insurance products need to be carefully evaluated.

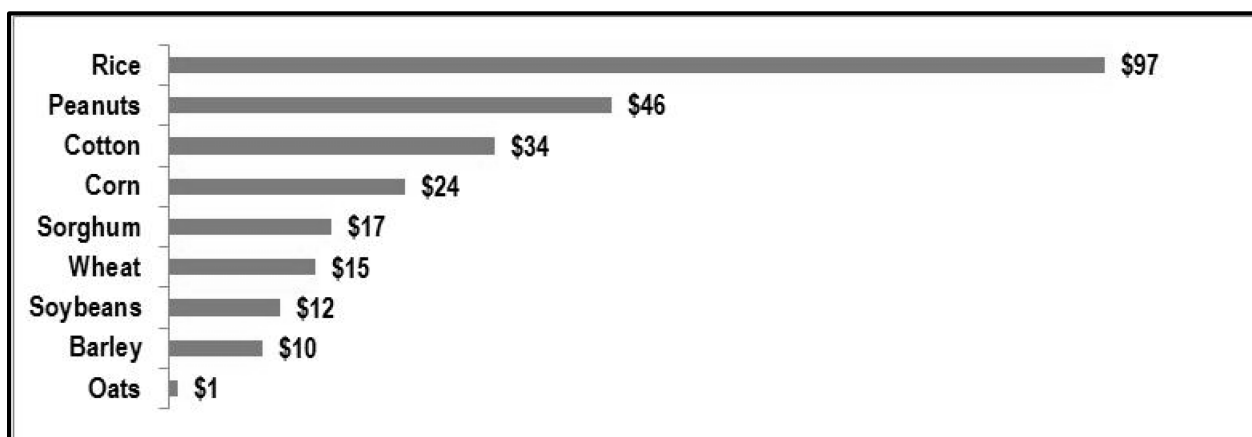
An important implementation provision of the 2014 farm bill is the encouragement of data sharing, with a focus on USDA agencies, including RMA, FSA, and the National Agricultural Statistics Service (NASS). An immediate objective is to increase the number of counties in which county-based insurance products are offered since NASS does not have an adequate sample for crop yields in a large number of counties. However, over time, the sharing of data could fundamentally alter the way that USDA collects and generates information, such as the way that crop production and yields are estimated.

Distributional Impacts of the Shift from Direct Payments to Risk Management¹⁴

The elimination of direct payments while increasing reliance on risk management programs could alter the distribution of government assistance. To explore this potential impact, we compare the distribution across crops and states of direct payments for crop year 2012 (indicative of their levels and distribution since 1996) and the net payments by crop insurance over the 2004–2013 crop years for nine crops: barley, corn, upland cotton, oats, peanuts, rice, sorghum, soybeans, and wheat (Table 4.2). The 2004–2013 crop years include the price run-up that began with the 2007 crop year as well as the changes to crop insurance enacted in the 2008 farm bill, notably the higher subsidy rate for enterprise insurance.

Average US direct payments ranged from \$1 per base acre for oats to \$97 per base acre for rice for the 2012 crop year (Figure 4.5). These calculations (which can be thought of as total direct payments divided by total base acres for each crop) adjust higher direct payments on 85 percent of base acres to an average for all base acres to be comparable to the average insurance net indemnity payments per acre. The average insurance net indemnity payment per acre for the 2004–2013 crop years is presented in Figure 4.6. The ratio of net insurance payment to direct payment can be calculated from Figures 4.5 and 4.6. It varies notably by crop: from 12 percent for rice and 39 percent for peanuts to 121 percent for cotton, 135 percent for sorghum, and 500 percent for oats. Thus, the shift from direct payments to insurance and shallow-loss programs may have notable differences in impact by program crop. This explains in part why cotton could decide to opt for an insurance-based program, STAX, while peanuts and rice resisted the elimination of direct payments. It also partly explains why rice will be the first crop for which the new revenue-cost margin insurance product will be offered, and why rice and peanuts argued for PLC reference prices that were set relatively close to market prices at the time the farm bill was being debated.

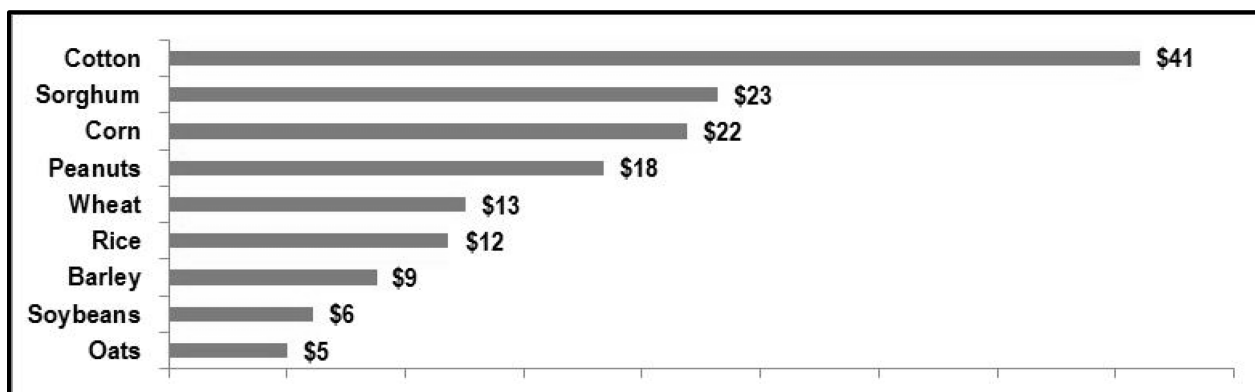
Figure 4.5 Direct payment per base acre, United States, 2012



Source: USDA 2014b.

¹⁴ This section builds upon Zulauf (2014e). See also Glauber (2012).

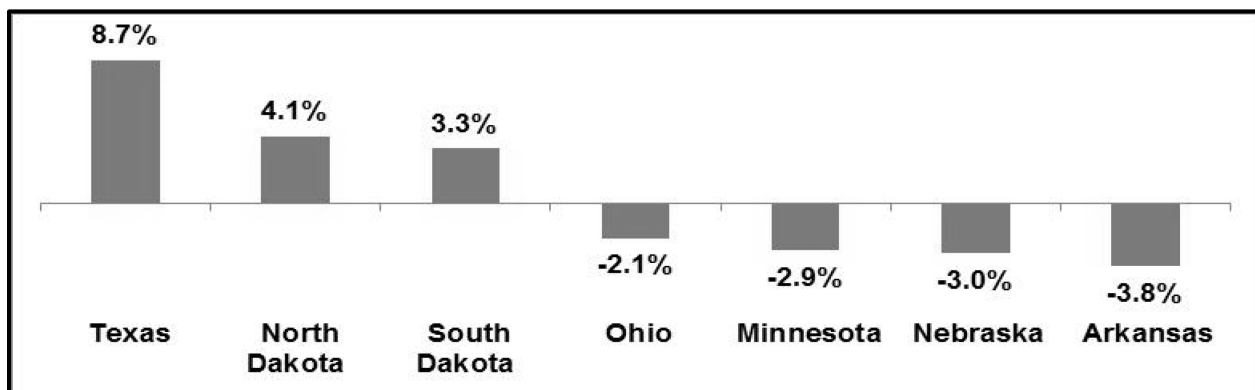
Figure 4.6 Insurance net indemnity payment to farms per insured acre, United States, 2004–2013 crop years



Source: USDA (2014e).

A different picture emerges when we examine the distribution of direct payments and net insurance payments by state. For 32 of 49 states (Alaska was not included), the share of net crop insurance payments was within plus or minus one percentage point of the share of direct payments. Those two shares differ by more than two percentage points for only seven states (Figure 4.7). Thus, for the majority of states, the share of payments is similar for direct payments and net crop insurance payments. Texas is the clear outlier. Its share is nearly nine percentage points higher for net insurance payments than direct payments.

Figure 4.7 Share of net insurance payments to farms minus share of direct payments, states whose shares differ at least 2 percent, 2004–2013 crop years



Source: USDA (2014a, 2014e).

To summarize, the recent and projected size of net crop insurance payments compared with direct payments partly explains the political economy of the 2014 farm bill both at the aggregate level and among different crops. Net insurance payments exceeded the approximately \$4.5 billion in direct payments for crop years 2011 through 2013, and CBO projected continued large net insurance payments at the time the 2014 farm bill was enacted. Differences among crops are evident in the distribution of insurance payments versus direct payments, while the largely similar distributions by state, combined with total net insurance payments for the United States coming to exceed total direct payments, made it easier for farmers collectively to give up direct payments. It is thus not unreasonable to hypothesize that support for crop insurance as a pillar of the crop safety net could decline if payments decline materially below current expected levels.

Conservation (Title II)¹⁵

Conservation programs have been an integral component of farm bills since the 1930s. Table 4.7 summarizes selected key provisions of the conservation title in the 2014 farm bill.

Table 4.7 Overview of Title II conservation title, US 2014 farm bill

Provisions	Description
Conservation Reserve Program (CRP)	Reduces maximum acres from current 32 to 24 million; adds grasslands (including improved rangeland and pastureland) to list of eligible land provided specified conditions are met; caps grassland enrollment at 2 million acres; permits specified activities under specified conditions, such as emergency harvesting and grazing and managed harvesting for biomass; adds land in Conservation Reserve Enhancement Program to land ineligible for early termination.
Conservation Stewardship Program (CSP)	Reduces enrollment goal from 12.769 million to 10 million acres per fiscal year; eligible land is private or tribal land that produce agricultural commodities, livestock, or forest-related products; renewal of CSP contract must meet threshold for two additional priority resource concerns or exceed threshold for two existing priority resource concerns.
Environmental Quality Incentives Program (EQIP)	Adds as program objective wildlife habitat improvement and development practices; removes one-year minimum contract length; continues requirement that 60% of EQIP payments be for livestock production; specifies at least 5% of EQIP funds must go to pay for wildlife habitats.
Agricultural Conservation Easement Program	Defines agricultural land easement as an easement or other interest in eligible land conveyed for the purpose of protecting natural resources and agricultural nature of the land.
Regional Conservation Partnership Program (RCPP)	Established to be a tool for local, regional, or watershed areas to address conservation issues by creating partnerships among government entities, agricultural groups, conservation groups, and institutes of higher education and by leveraging public and private funds; secretary of agriculture can target a share of funding to identified areas.
Conservation compliance for crop insurance subsidy	Producer must comply with wetland conservation (swampbuster) and highly erodible land conservation (sodbuster) to be eligible for the federally funded portion of crop insurance premiums; if subject to conservation compliance for first time, a producer has five reinsurance years to develop and comply with an approved conservation plan; violations only apply to reinsurance years subsequent to date of final determination of a violation, including all administrative appeals.
Programs repealed	Wetlands Reserve, Grassland Reserve, Comprehensive Conservation Enhancement, Emergency Forestry Conservation Reserve, Farmland Protection, Farm Viability, Agricultural Water Enhancement, Wildlife Habitat Incentive, Great Lakes Basin, Chesapeake Bay Watershed, Cooperative Conservation Partnership Initiative, and Environmental Easement.
Programs merged	Merged (1) Wetlands Reserve, Farmland Protection, and Farm Viability Programs into Agricultural Conservation Program; (2) Grassland Reserve Program into Conservation Reserve Program; (3) Wildlife Habitat Incentive Program into Environmental Quality Incentives Program; and (4) Chesapeake Bay Watershed, Cooperative Conservation Partnership Initiative, Great Lakes Basin, and Agricultural Water Enhancement Programs into Regional Conservation Partnership Program.
Technical assistance	Priority given to requests for assistance to meet insurance conservation compliance.

Source: Created by authors.

As described briefly above, the 2014 farm bill continues a trend toward the environmental focus of US farm policy. CRP acreage is reduced, but long-term, conservation land retirement is not ended. After a contentious debate, wetland conservation (swampbuster) and highly erodible land conservation (sodbuster) were made eligibility conditions for crop insurance premium subsidies, although farmers are given considerable leeway in achieving conservation compliance. A second conservation provision

¹⁵ This section builds upon Zulauf (2014b).

related to crop insurance allows insurance premium subsidies reduced by 50 percentage points and limits yield guarantees during the first four years of planting if native sod is tilled for annual crop production in Iowa, Minnesota, Montana, Nebraska, North Dakota, and South Dakota. This replaces a prior prohibition on insurance subsidies on native sod planted in the Prairie Pothole National Priority Area, but applies to an expanded geographic area (Lubben and Peace 2014). These states are the major area for the tilling of native sod for annual crop production (Claassen et al. 2011). Both of these crop-insurance-related provisions underscore an environmental focus of US farm policy and the central role of insurance in the crop safety net. Crop insurance cannot be both a farm safety net pillar and excluded from the expectation that farmers participate in improving environmental quality in exchange for subsidies.

Consolidation of conservation programs is another key feature of Title II of the 2014 farm bill. A total of 12 programs are repealed. Most of their functions are merged into existing or new programs. A farm conservation pyramid results, with its four sides being (1) retiring environmentally sensitive land from farm production (CRP); (2) enhancing environmental performance of working farmland (the Conservation Stewardship Program [CSP] and Environmental Quality Incentives Program [EQIP]); (3) buying easements to protect natural resources or agricultural use of land (the Agricultural Conservation Easement Program); and (4) fostering local partnerships to address regional environmental issues (the Regional Conservation Partnership Program [RCPP]).

While the projected spending on CRP remains the largest projected outlay, at the margin funding is shifted from the CRP to the second two program areas, implying the 2014 farm bill favors a different mix of conservation programs. Along with reduced CRP acreage, the annual enrollment goal for working lands in CSP is reduced from nearly 13 to 10 million acres, while the EQIP budget is maintained and projected outlays are restored for the conservation easement program from a zero baseline. Relative to baseline spending for FYs 2014 through 2023, projected spending on CRP and CSP is cut by approximately \$3 billion and \$2 billion, respectively. In contrast, projected 10-year spending for other Title II programs is increased by nearly \$2 billion. All but \$208 million of the proposed 10-year reductions to projected conservation program budget outlays are back-loaded after the 2014 farm bill expires.

In the future we believe a key underlying factor in farm bill conservation deliberations will be the growing national debate over the role of technology in facilitating or impeding both agricultural production and conservation. This question permeates issues as diverse as the growing markets for organic as well as local foods, hypoxia in the Gulf of Mexico and algae blooms in various waters including Lake Erie, resistance of weeds and insects to herbicides and pesticides, labeling of foods for biotechnology traits, and the fate of honeybees. In a farm bill context, these issues may merge into a broad-scale debate over the role of conservation programs in managing the interrelationships between farming technology, the environment, and food production. This debate may frame the conservation title of the next farm bill and lead to strategic decisions over a broader role and scope for farm bill conservation programs.

In this regard, consolidation of RCPP potentially signals a new policy direction. Funded at a level about equal to past budgets of the programs it encompasses, RCPP's design allows local actors to identify and address local, regional, or watershed environmental issues by leveraging public funds with private funds through partnerships among government entities, agricultural groups, conservation groups, and institutes of higher education. The objective is to reduce, even eliminate, the need for federal regulations through local actions. RCPP is a potential change agent for how the United States addresses agricultural environmental issues.

Integrative Summary of Crop Safety Net Changes

One way to summarize the changes in the crop safety net made in the 2014 farm bill is to consider the three program decisions that FSA farm owners and operators must make. The decisions are as follows:

1. Keep the FSA farm's past countercyclical payment yields or change to (a) 90 percent of the FSA farm's average planted yield or (b) 67.5 percent of the county average yield over the 2008–2012 crop years. Program payment yields can be updated by crop, and thus may be updated for none, some, or all program crops on the FSA farm. PLC uses these yields to calculate payments. In comparison, ARC uses an Olympic average of yields for the five preceding crop years to calculate its revenue benchmarks. For additional discussion of this decision, see Zulauf, Paulson, Coppess, Schnitkey, and Kuethe (2014).
2. Keep the FSA farm's past allocation of program acres by covered crop or reallocate its total program acres according to each covered program crop's share of the farm's total acres planted to covered crops between 2009 and 2012. Generic program acres are excluded in this calculation and the reallocation decision. Total program acres on the FSA farm remain the same. This decision is important because both ARC and PLC make payments on a fixed share of the program acres of each crop. The options to update payment yield and reallocate program acres temper decoupling of payments from production decisions, but Hendricks and Sumner (2014) find only small production effects from past base updating. For additional discussion of the program acre reallocation decision, see Zulauf, Paulson, Coppess, and Schnitkey (2014).
3. Make a one-time, irrevocable choice between ARC-CO, ARC-IC, and PLC for the 2014–2018 crop years. Producers will make this major decision under a lot of uncertainty. Most farm program participation decisions in the past were either single-year decisions or decisions for multiple years with known payments (the fixed direct payment) as part of all options (for example, ACRE versus price countercyclical programs in the 2008 farm bill). In contrast, the 2014 farm bill farm program election involves only uncertain payments under each option. Analogous to the 2008 farm bill decision in which the combination of fixed direct payments and possible price countercyclical payments was the default option versus ACRE, in the 2014 farm bill PLC is the default option. However, it is a default option with a cost. Specifically, if a program is not elected for an FSA farm or if all producers on an FSA farm do not agree about program choice, no payment is made for the 2014 crop year and the farm is defaulted into PLC for all covered crops for the 2015–2018 crop years. The cost of the default option may be large if 2014 payments are large.

The ARC-IC program choice is about the production attributes of an individual FSA farm since ARC-IC makes payments based on the average experience of all program crops planted on the ARC-IC farm unit.¹⁶ Among the situations in which ARC-IC is worth considering is if production on the FSA farm is highly variable from year to year. The probability of payment is high given the highly variable production, and no premium is paid.¹⁷

In contrast to ARC-IC, ARC-CO and PLC are elected on a crop-by-crop and FSA-farm-by-FSA-farm basis. This decision really involves two choices. One is the election of a shallow-loss program. The second is the election of a program for assistance against multiple years of low revenue or prices. These two choices are interrelated because ARC is both a shallow-loss and multiple-year-loss program. The other shallow-loss option is SCO, while the other multiple-year-loss option is PLC. Moreover, because SCO is a shallow-loss program tied to individual crop insurance, and because SCO is available only if the

¹⁶ For a more extensive discussion of ARC-IC, see Zulauf and Schnitkey (2014a).

¹⁷ ARC-IC's expected payment will generally be highest if only one crop is grown each year and one FSA farm is involved. In other situations, ARC-IC will average across crops or FSA farms in an ACR-IC farm unit, or both, reducing the probability of payment.

producer does not elect ARC-CO and has individual crop insurance, the ARC versus PLC comparison requires inclusion of the insurance that is purchased if ARC-CO or PLC is elected. The decision between ARC-CO and PLC thus involves consideration of both Title I commodity programs and Title XI insurance programs.

Last, because the decision period between ARC-CO, ARC-IC, and PLC will be made in early 2015, payments for the 2014 crop year will be fairly well determined at the time of those decisions. Some uncertainty may be resolved regarding 2015 crop year payments as well, but payments for the 2016–2018 crop years will be largely uncertain. The large degree of uncertainty may translate into FSA farm owners and operators diversifying their decisions across the programs by crop and FSA farm, which is permitted by the 2014 farm bill. Diversification is a standard risk management strategy when confronted with uncertainty.¹⁸ Moreover, farm owners may also put a higher weight on the relatively well-known payment for the 2014 crop year, if one exists.

Overlapping Program Payments

A policy question of potential importance that rises from the commodity program choice decision is overlapping payments from the various farm safety net programs. Overlap between ARC and insurance received considerable attention during the 2014 farm bill debate and is a reason that ARC's coverage range is limited to losses between 14 and 24 percent. In contrast, overlap between PLC and insurance received little attention. Both PLC and insurance can make payments for the same price decline if the decline between the pre-plant and harvest price extends through the crop year, resulting in a crop year price below the PLC reference price. The resulting overlap can be sizable, particularly when prices start out near the reference price and a large decline in price occurs. In short, PLC can overlap with SCO and individual insurance in some situations, even though it is designed as multiple-year-loss assistance as opposed to shallow-loss assistance. For a more extensive discussion of the potential overlap between PLC and crop insurance, see Zulauf (2014c).

A related issue is that area insurance programs create the potential for both overcompensation and undercompensation for a loss on an individual farm.¹⁹ In other words, the payment by the area insurance program may exceed or overcompensate for the loss on an individual farm or it may be less than or undercompensate for the loss on an individual farm. In short, an insurance payment basis risk exists. Undercompensation creates a risk management problem for the farm, while overcompensation increases program costs to the government and potentially distorts production.

Both of these program loss overlap issues need to be monitored. If overlap turns out to be substantial, addressing this concern could involve the potential for budget savings that could be better used for other purposes than overcompensating farmers for losses. One alternative we propose to eliminate overlap is to use insurance, not season average cash price, in determining multiple-year risk assistance levels. Further, a limit could be set on the range of revenue or price over which multiple-year-loss payments are based with the lower end of the range determined by the crop insurance revenue or price level. For example, multiple-year-loss payments based on revenue could only be for losses between 100 percent of the county insurance revenue level for the crop year and, say, 100 percent of the five-year Olympic moving average of county revenue levels for the five previous crop years. Similarly, a price countercyclical program could make payments only from a specified reference level down to the crop insurance price level, not to the loan rate as specified in the 2014 farm bill. These proposals eliminate most and maybe all of the overlap of payments between crop insurance and the multiple-year revenue program or price countercyclical programs.

¹⁸ For a more extensive discussion of this topic, see Zulauf (2014d).

¹⁹ Even given the limited range of losses on which ARC makes payments, overcompensation by ARC and crop insurance can exist. To illustrate, assume only price variability exists and, for specificity, that ARC has an Olympic average price of \$5.25 while crop insurance has a price of \$6.00 and the farm buys 75 percent individual insurance. In this situation, ARC makes payments when crop year price is between \$3.99 (76 percent of \$5.25) and \$4.51 (86 percent of \$5.25) while insurance makes payments when harvest price is less than \$4.50 (75 percent of \$6). Thus, both programs make payments when price is between \$3.99 and \$4.50. Of course, there are many scenarios when no overcompensation occurs.

5. POTENTIAL COSTS OF ARC-CO AND PLC

In this section we focus on the potential costs of ARC-CO and PLC over the five crop years 2014 through 2018. The intention is to highlight four key points about these safety net alternatives:

1. payments from ARC and PLC differ among crops;
2. a trade-off between a lower cap on downside risk protection in exchange for assistance at higher price and revenue levels is imbedded in ARC versus PLC;
3. the ARC revenue benchmark moves with market conditions, such that if low prices persist payments under ARC decline over several years, while payments will not decline under PLC if prices remain stable below the reference price; and
4. uncertainty exists about total program costs for both crop year 2014 and the five years of the 2014 farm bill.

To provide perspective on these issues, we use and extend an analysis by Zulauf and Schnitkey (2014b). Their analysis used estimates of US price and yield provided in the August 2014 *World Agricultural Supply and Demand Estimates* (WASDE) to calculate an indicator of potential payments by ARC-CO and PLC. The indicator estimates are reported for the 2014 crop year for barley, corn, oats, long-grain rice, medium- (and short-) grain rice, sorghum, soybeans, and wheat. Under additional assumptions we also provide illustrative cost estimates for crop years 2015 through 2018. These are indicator estimates because average US yield is used. Actual ARC-CO payments, for example, will vary across counties, with some counties having no payments due to high yields and some counties having larger payments due to low yields. Moreover, for simplicity, we use a single WASDE estimate of 2014 yields for each crop while letting crop year prices vary over the range of WASDE estimates. Thus, we essentially assume that given the fixed WASDE yield used in our analysis prices may vary for other reasons related to world demand and supply conditions. In contrast, some negative correlation between US yield and crop year prices would be expected in markets. Nevertheless, the indicator estimates using a single US yield level help frame questions and perspectives regarding farmers' program choices and the potential total cost of Title I crop programs.²⁰

WASDE provides three estimates of possible 2014 crop year prices at low, midpoint, and high values. These price estimates are shown in Table 5.1 and can be compared with the PLC reference prices and estimated ARC price components shown in Table 4.5. For example, the WASDE midpoint price estimates exceed the reference prices for all crops except barley, long-grain rice, and sorghum, while the WASDE midpoint estimates are below the estimated ARC price component in Table 4.5 for all crops except medium-/short-grain rice. Similar comparisons can be made for the WASDE low- and high-price estimates.

²⁰ Among our sources and assumptions, US crop year yield, price, planted acres, and harvested acres are from the August WASDE, except for planted and harvested acres of long-grain and medium-/short-grain rice. The acre data for the rice varieties are from USDA's National Agricultural Statistics Service June 2014 Acreage Report. Both programs use yield per planted, not harvested, acre. Yield per planted acre is calculated as production divided by acres planted with the crop, except for corn and sorghum. For those two crops, acres harvested for silage are subtracted from planted acres. No estimate is available for corn and sorghum silage acres for 2014. For simplicity, we assume corn and silage acres will be the same in 2014 as in 2013. The one exception to the use of yield per planted acre is oats. For oats, yield is per harvested acre because a large share of acres planted to oats is for a cover crop to establish hay. Smith (2014) provides additional estimates of the potential cost of ARC and PLC.

Table 5.1 USDA WASDE price projections for 2014 crop year, August 2014

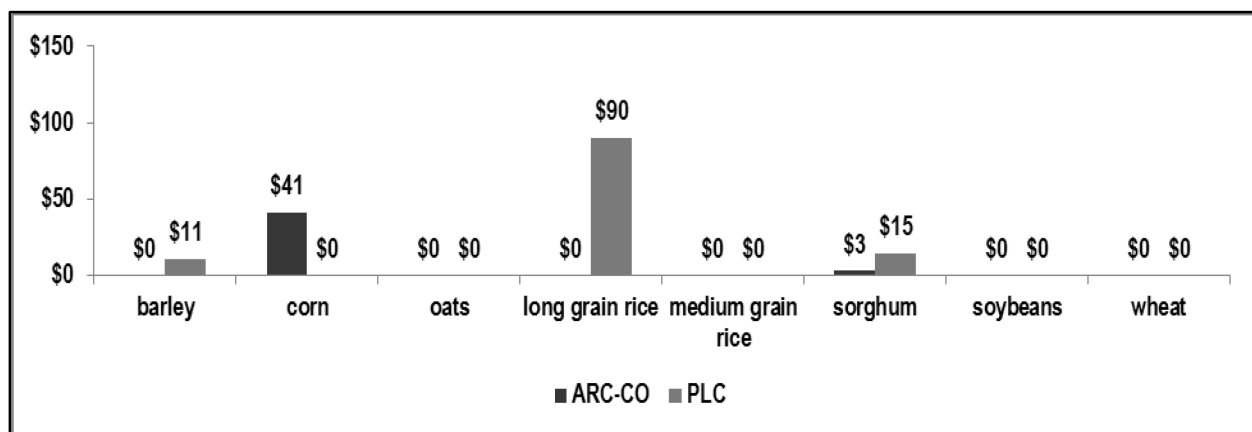
Crop ^a	Low price	Middle price	High price
Barley	\$4.35	\$4.75	\$5.15
Corn	\$3.55	\$3.90	\$4.25
Oats	\$2.65	\$2.95	\$3.25
Long-grain rice	\$12.00	\$12.50	\$13.00
Medium-/short-grain rice	\$17.50	\$18.00	\$18.50
Sorghum	\$3.30	\$3.65	\$4.00
Soybeans	\$9.35	\$10.35	\$11.35
Wheat	\$5.80	\$6.30	\$6.80

Source: USDA (2014d).

Note: WASDE = World Agricultural Supply and Demand Estimates. ^a Units are \$/bushel except for rice (\$/hundredweight).

Using the midpoint of the WASDE range of prices for the 2014 crop year, ARC-CO payments are indicated for corn and sorghum (Figure 5.1). PLC payments are indicated for barley, long-grain rice, and sorghum. The highest indicated payment per acre is long-grain rice from PLC at \$90, with the second highest being corn from ARC-CO at \$41 per acre. For long-grain rice, the midpoint WASDE price of \$12.50 per 100 pounds is \$1.50 below the reference price, while it is close enough to the ARC price component (at 88 percent) that ARC payments are not triggered. For corn, the WASDE midpoint price is above the reference price but is only 74 percent of the ARC price component. ARC payments are triggered, but they are below the ARC maximum possible payment because, in part, the assumed WASDE corn yield per acre for 2014 exceeds the ARC Olympic moving average corn yield used to compute the 2014 ARC revenue benchmark. Sorghum is the only crop with payments indicated from both programs: \$3 per acre from ARC-CO and \$15 per acre from PLC. The PLC payment per acre exceeds the ARC payment per acre as the price of sorghum falls \$0.30 per bushel below the reference price. Again, in assessing these estimates, recall that actual payments by ARC-CO and PLC will depend upon county yields and program yields, respectively, not average US yields.

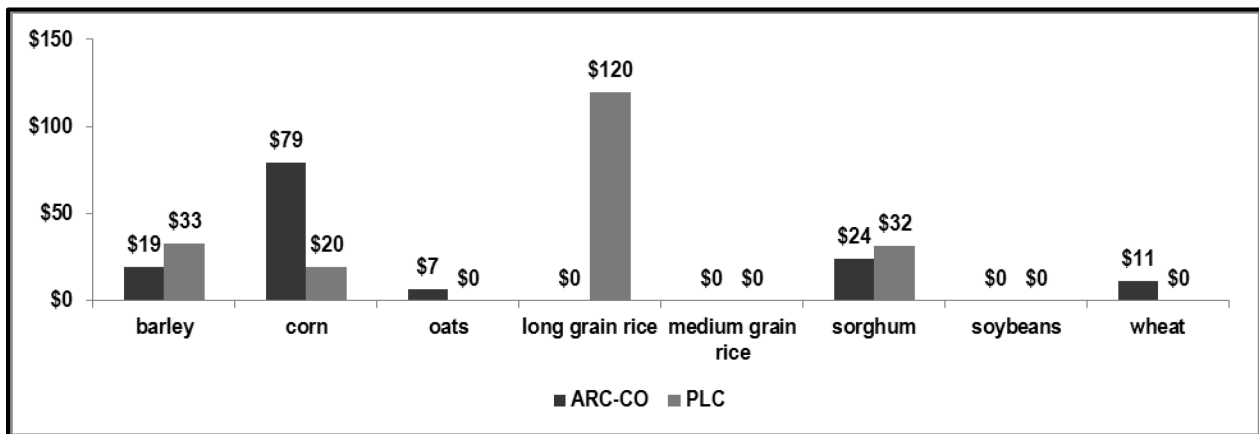
Figure 5.1 Estimated ARC-CO and PLC payment per acre, 2014 crop, using August 2014 WASDE US yield and midpoint price projection



Source: Original calculation using data from USDA (2014d).

When the low prices among WASDE estimates are used, only medium-/short-grain rice and soybeans have no payment indicated (Figure 5.2). ARC-CO has no payment indicated for long-grain rice. PLC has no payment indicated for oats and wheat. Both programs have payments indicated for barley, corn, and sorghum. ARC has the higher payment per acre indicated for corn, while PLC has the higher payment per acre indicated for barley and sorghum. The highest payment indicated is \$120 per acre for long-grain rice by PLC. This is still well below the potential maximum PLC payment per acre because the WASDE low price of \$12.00 per 100 pounds is above the long-grain rice loan rate of \$6.50. The next highest payment per acre is \$79 for corn by ARC-CO. This is the maximum possible corn ARC payment per acre, as corn revenue per acre falls below 76 percent of the ARC per acre corn revenue benchmark for the 2014 crop year.

Figure 5.2 Estimated ARC-CO and PLC payment per acre, 2014 crop, using August 2014 WASDE US yield and low-price projection



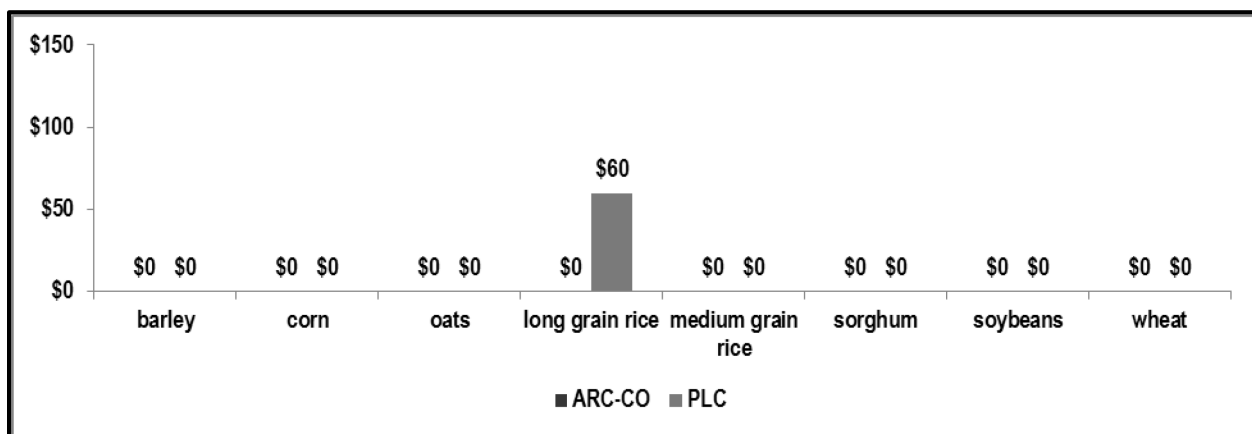
Source: Original calculation using data from USDA (2014d).

Note: ARC-CO = agriculture risk coverage, county option; PLC = price loss coverage; WASDE = World Agricultural Supply and Demand Estimates.

Potentially important information conveyed by comparing Figures 5.1 and 5.2 is how close ARC-CO is to making a payment if county yield is relatively poor compared with its benchmark yield and 2014 US crop year price is the WASDE midpoint price. This comparison suggests that ARC-CO might make payments if the midpoint price is realized and if county yield is relatively poor for barley, oats, and wheat. This situation seems likely, for example, for wheat producers in the southern plains given their relatively poor 2014 wheat yields due to drought. Consideration of the role that yield plays in determining payment by ARC-CO does not apply to PLC. Whether PLC makes a payment depends solely on how US crop year price compares with its reference price.

A very different payment matrix emerges when the WASDE high-price estimate range is used (Figure 5.3). Only PLC payments for long-grain rice are indicated if the high prices in the August 2014 WASDE materialize.

Figure 5.3 Estimated ARC-CO and PLC payment per acre, 2014 crop, using August 2014 WASDE US yield and high-price projection



Source: Original calculation using data from USDA (2014d).

Note: ARC-CO = agriculture risk coverage, county option; PLC = price loss coverage; WASDE = World Agricultural Supply and Demand Estimates.

These per acre payment results illustrate that different programs will likely be favored by different crops in 2014. A key reason for this is a sharp decline in revenue for some crops, particularly corn, relative to the ARC benchmark even if prices are above the reference prices. Corn will probably lean toward ARC-CO while long-grain rice will probably lean toward PLC as a risk assistance program for 2014. In addition, the analysis suggests that county yields that are below average will be a factor in determining payments by ARC-CO in 2014, given expected prices in the August 2014 WASDE.

The sensitivity of payments by ARC-CO and PLC to the level of prices is further illustrated by calculating an estimate of total payments by the programs for all crops for crop year 2014. These estimates are obtained by assuming that all farms update program yields and payment occurs on 85 percent of the 2012 program base acres for the crop. Payment limits are not considered. An additional key simplifying assumption for these calculations is that all base acres for the crop are enrolled in the program that pays the most per acre in crop year 2014 for the assumed price outcome among the three WASDE levels. Under these assumptions, the estimates provide a reasonable indicator of the amount of payments that might occur given conditions at the time of the August 2014 WASDE.

Using the midpoint estimate of price, payments by ARC-CO for crop year 2014 total just under \$3 billion (Table 5.2), with all such payments going to corn (as shown on a per acre basis in Figure 5.1). Payments by PLC total \$561 million, with most going to long-grain rice. In comparison, payments by ARC-CO are estimated to total nearly \$6.5 billion (with payments to corn of \$5.7 billion) if the low-price estimate materializes but zero if the high-price estimate materializes. For PLC, the spread is from approximately \$225 million if the high prices materialize to just over \$1.0 billion if the low prices materialize.

The range of total payments clearly implies that as of August 2014, considerable variation exists in the level of anticipated cost of the programs for the 2014 crop year. This range illustrates the point that cost of the 2014 crop program can be higher or lower than costs would have been if the 2008 crop programs had been continued. Under our assumptions, total costs of ARC-CO and PLC for the 2014 crop year are about \$1 billion below the foregone direct payments if the midpoint WASDE prices materialize. At the high WASDE prices, farmers forego essentially all of the former direct payment amount. Conversely, if the low WASDE prices materialize, farmers receive almost \$3 billion more than the foregone direct payments for crop year 2014. This is the relevant comparison because the low WASDE

prices would not have triggered countercyclical payments at the target prices of the 2008 farm bill except in the case of peanuts, which is not included in this analysis.²¹

Table 5.2 Estimated total cost of ARC-CO and PLC in million dollars, 2014–2018 crops, using August 2014 WASDE US yield and low-, midpoint-, and high-price projections and assuming all base acres are in the program that pays the most in 2014

Crop year	Low price		Middle price		High price	
	ARC	PLC	ARC	PLC	ARC	PLC
2014	\$6,420	\$1,002	\$2,958	\$561	\$0	\$224
2015	\$6,420	\$1,002	\$2,958	\$561	\$0	\$224
2016	\$4,021	\$1,002	\$382	\$561	\$0	\$224
2017	\$0	\$1,002	\$0	\$561	\$0	\$224
2018	\$0	\$1,002	\$0	\$561	\$0	\$224
Total	\$16,861	\$5,010	\$6,298	\$2,805	\$0	\$1,120

Source: Original calculations using data from US Department of Agriculture, *World Agricultural Supply and Demand Estimates* price projections for 2014 crop year, August 12, 2014 (USDA).

Notes: ARC-CO = agriculture risk coverage, county option; PLC = price loss coverage; WASDE = World Agricultural Supply and Demand Estimates. See text for cost estimates if program acreage for all crops are enrolled in PLC.

Another important issue is what happens to payments by ARC-CO and PLC over time. Differences are expected because whereas ARC-CO's benchmark revenue moves with the market subject to the reference price minimum in its price component, PLC's reference price is fixed in all market situations. To illustrate the importance of this key difference in program design, total program cost is calculated for the 2015–2018 crop years as well as 2014. We continue to make the simplifying assumption that all base acres are enrolled in the program that paid the most per acre for the 2014 crop year. As shown above, at midpoint and low prices such decisions bring particularly large payments for the 2014 crop year for corn and long-grain rice, while at high prices only long-grain rice has substantial estimated payments. Another key assumption for the time path of payments is that we assume for simplicity that price and yield remain at their August 2014 estimated WASDE level for each year through 2018. This simplifying assumption allows us to highlight the differences in payment dynamics due to the different design of ARC and PLC.

ARC-CO total payments in 2015 remain the same as they were in 2014 (Table 5.2). The reason is that ARC-CO's five-year Olympic moving averages of price and yield discard the low-price/high-yield situation for 2014 compared with previous years in calculating the benchmark revenue for 2015. However, in 2016 ARC-CO payments decline since its revenue benchmark follows the market lower. By 2017 and 2018 ARC-CO payments are zero as the moving average fully adjusts. In the low-price scenario, barley, corn, long-grain rice, and sorghum prices are below their reference prices but do not trigger ARC payments after 2016. In comparison, reflecting its fixed reference prices, PLC payments never change during the 2014–2018 period under our assumption of constant crop year prices. In our illustrative analysis, total PLC payments are relatively low, although they exceed ARC payments for 2017 and 2018. If crop year market prices fell further below the reference prices, PLC payments will increase correspondingly. For example, for every \$0.10 that corn prices fall below the reference price, PLC payments increase by \$0.9 billion. In the unlikely event that all program crop prices fall to the loan rates,

²¹ WASDE does not provide estimates for peanut supply and demand, but assuming crop year average price is the same in 2014 as in 2013, we estimate crop year 2014 PLC payments to peanuts of \$33 per payment acre, with total payments of \$41 million. ARC-CO is estimated to make no payments.

the total PLC payments would exceed \$31 billion, while ARC-CO payments by design of the range of losses covered would be constrained to be much less even in the first year such a decline occurred.

The declining level of payments for ARC-CO versus the flat, fixed level of payments for PLC over time at the constant market prices and yields in our analysis illustrates the important design aspect that distinguishes ARC from traditional countercyclical commodity support programs with a fixed reference price. As Table 5.2 illustrates, producers are faced with deciding if they prefer support from ARC-CO that is available for declines in revenue that can occur at any price and revenue level and that, for corn in particular, might make large payments in the first few years, or support from PLC that is retained for low prices that may or may not materialize over the five years 2014–2018, and that, as we note above, has a higher maximum than ARC-CO.

As shown in Table 5.2, only at the August 2014 WASDE low prices do the 2014 farm bill programs cost more than the foregone annual direct payments of approximately \$4.5 billion. This occurs only in the first three years of crop years 2014 through 2018. Cost then declines even at the low WASDE price estimates to a level much lower than the level of direct payments. The reason is that payments by ARC decline. Over five years, total payments by ARC and PLC are \$21.9 billion at the WASDE low prices; an average of \$4.4 billion, essentially equal to the foregone direct payments. Alternatively, if all producers sign up for PLC, total PLC payments at the WASDE low prices increase from \$1.0 billion per year to \$2.4 billion per year as additional PLC payments of \$1.4 billion are made for corn (there would be no PLC payments for oats or wheat, as shown in Figure 5.2). These total payments by PLC are about \$2.1 billion per year less than the foregone direct payments from the 2008 farm bill.

All of these points are reinforced by WASDE estimates of September and October 2014 which became available as we completed this paper (for October, see Zulauf and Schnitkey 2014d). The WASDE range of estimated prices shifts downward and projected annual costs of ARC-CO and PLC increase in our illustrative analysis. The October high price estimates give costs for the 2014 crop year similar to the August midpoint prices projections (\$3.6 billion for ARC-CO and \$371 million for PLC). The October midpoint price projections are similar to the August low-price projections (leading to corn ARC-CO payments at their maximum level of \$79 per acre and total costs of \$6.2 billion for ARC-CO and \$628 million for PLC). A new level of low prices are projected. At the October WASDE low-price projections, our illustrative analysis estimates ARC-CO payments increasing substantially to \$8.2 billion as corn, soybeans and wheat receive payments. Estimated PLC payments are \$912 million made to barley, long grain rice and sorghum. Again, these calculations are made assuming farmers enroll all corn acreage in the ARC-CO program. Estimated payments if they choose PLC for corn rise to \$79 per acre for crop year 2014 at the WASDE October low-price estimates, equal to the ARC-CO per acre corn payment. If all program crop acres are enrolled in PLC, total cost of PLC would be \$6.5 billion per year at the WASDE October low prices, and remain at that level for crop years 2015-2018 under our other illustrative assumptions. Total PLC payments over the five years would be \$32.7 billion in this case. However, the November 2014 WASDE price projections moved back toward the earlier levels from the August WASDE report.

6. WTO CONSIDERATIONS

The preceding sections describe the 2014 farm bill as it has emerged from a process of slow, uneven, and incomplete evolution of US farm policy from programs that provide support tied to low prices toward programs that require revenue loss and from fixed price targets set by Congress to revenue targets that change with the market. These interrelated trends differ from the policy change path envisioned by the WTO Agreement on Agriculture (WTO 1995). The WTO disciplines on agricultural domestic support recognize a set of programs as green box agreed to have “no, or at most minimal trade-distorting effects or effects on production,” and a set of programs (often called the amber box) agreed to be trade distorting. Amber box subsidies are counted as product-specific or non-product-specific Aggregate Measurement of Support (AMS). By leaving no constraint on spending in the green box while imposing limits on AMS spending, the WTO implicitly encourages countries to adopt green box programs.²²

The United States preceded the European Union in adopting fixed direct payments and has consistently argued that they qualify in the green box category of decoupled income support. But reliance on such payments largely remained constant after being adopted in the 1996 farm bill, and the elimination of direct payments in the 2014 farm bill runs counter to the implicit WTO design of increased reliance on green box measures. In contrast, EU fixed direct payments now exceed 40 billion euros annually. Orden, Blandford, and Josling (2011) provide a discussion of differences in US and EU policies relative to the WTO domestic support rules and commitments.

As we have described, the 2014 farm bill represents a significant movement back to countercyclical programs to provide downside risk assistance. With US farm policy evolving in a direction counter to the implicit long-run objective of the WTO, critics will see the 2014 farm bill as the United States flouting at least the spirit of its commitments to limit trade-distorting agricultural domestic support under the WTO agreement. The 2014 farm bill will also be cited as contrary to efforts to tighten constraints on the use of trade-distorting support under Doha Round negotiations that occurred mainly from 2002 through December 2008. While those negotiations faltered, the twin issues of how US farm safety net programs fit within the existing WTO disciplines or might fit within tighter disciplines that could be negotiated remain relevant policy concerns.

The US constraint under the rules and commitments negotiated in the Agreement on Agriculture is a relatively large annual cap of \$19.1 billion on certain domestic support. Payments by ARC and PLC are determined by historical program acres regardless of what crop is subsequently planted. The United States will likely notify these payments as non-product-specific support, which is how it has notified its price countercyclical payments since 2002. This is the case even with the program acre and payment yield updating allowed in the 2014 farm bill.²³ Non-product-specific support is subject to a large *de minimis* exemption: it does not count against the annual support cap if it remains below 5 percent of the total value of agricultural output, which is a \$15-to-\$20 billion threshold for the United States over recent years. The main other support that has been notified by the United States as non-product-specific since 2008 is crop insurance premium subsidies, which in recent years have been notified in the \$5-to-\$7 billion range and had reached \$6.2 billion for the 2014 crop year by September 15, 2014. Thus, for the United States to exceed its non-product-specific *de minimis* threshold, total expenditures on ARC and PLC would need to range between \$10 and \$15 billion.²⁴ Were the United States to notify all crop insurance subsidies as product-specific, payments under ARC-CO and PLC could be that much higher before exceeding the *de minimis* threshold.

²² See Melendez-Ortiz, Bellmann, and Hepburn (2009) for in-depth discussion of issues related to the green box.

²³ The rules on base updating are vague in the Agreement on Agriculture. The draft Doha Round modalities proposed stricter rules for a fixed base in determining eligibility of payments for the green box category of decoupled income support, but those rules did not address issues of classification as non-product-specific support versus product-specific support with base updating.

²⁴ The notified US value of production was \$334.9 billion for 2010 and \$380.8 billion for 2011, resulting in *de minimis* thresholds of \$16.7 billion and \$19.0 billion, respectively. Crop insurance premium subsidies notified as non-product-specific support were \$4.7 billion for 2010 and \$7.5 billion for 2011. Other notified non-product-specific support was \$0.7 billion and \$1.7 billion for 2010 and 2011, respectively.

The level of ARC and PLC expenditures likely to push the United States above its non-product-specific *de minimis* threshold is higher than the projected expenditures in our illustrative analysis using the August 2014 WASDE price range (Table 5.2). Prices could fall lower, as the September 2014 WASDE estimates demonstrate, and ARC and PLC payments would increase, if prices decline compared with the August WASDE estimates used in our illustrative analysis. These are the conditions that could make annual expenditures by ARC and PLC high enough to push the United States over the *de minimis* threshold, leading to the non-product-specific support counting against the \$19.1 billion commitment and bringing the counted support close to or above that limit.²⁵ Glauber and Westhoff (2015) provide further simulation model results on the possibilities of the United States exceeding its commitment. The elimination of the price support program for dairy products in 2014 provides additional room for the United States relative to its WTO domestic support limit.²⁶

If there had been a Doha agreement in 2008, the included modalities would have resulted in tighter rules and commitments against which expenditures on ARC, PLC, crop insurance, SCO, and other US support would be evaluated. The allowed AMS support would have been \$7.6 billion instead of \$19.1 billion for the United States, and the product-specific and non-product-specific *de minimis* thresholds would have been 2.5 percent instead of 5 percent of the product value and total value of agricultural production, respectively. In addition, a new cap would have been created on Overall Trade Distorting Support (OTDS). For the United States this limit would have been \$14.5 billion, including the sum of capped AMS support, *de minimis* support, and blue box support. The rules defining what is known as the WTO blue box would have been modified to include programs such as ARC and PLC that make payments on a fixed acreage and do not require production controls. New product-specific limits on AMS and blue box payments also would have come into effect, along with a cap on total blue box payments (of \$4.9 billion for the United States). The product-specific AMS and blue box limits for the crops having the largest payments in our WASDE-based analysis would have been \$1.1 billion and \$2.5 billion, respectively, for corn and \$314 million and \$256 million for rice.²⁷

Comparing the possible ARC and PLC payments in Table 5.2 to the limits described above shows that the possible payments could exceed a number of WTO constraints had the Doha agreement under negotiation in 2008 been adopted. Given the August 2014 WASDE low prices estimates, ARC and PLC payments total \$7.4 billion in 2014 and 2015. This is right at the Doha negotiation AMS cap if notified as product-specific support and exceeds the aggregate blue box cap. The non-product-specific *de minimis* threshold might fall as low as \$7.5 to \$10 billion for a value of US agricultural production in the range of \$300 to \$400 billion. If ARC and PLC payments were notified as non-product-specific support, payments of as little as \$2.5 billion could cause the *de minimis* threshold to be exceeded even at the higher threshold estimate with crop insurance also notified as non-product-specific support. This would then cause the AMS cap to be exceeded. In addition, the product-specific AMS caps for corn and rice would be exceeded. The only cap that might not be violated in this scenario is the aggregate OTDS at \$14.5 billion, although this might also be exceeded. At the WASDE midpoint prices, constraints such as those that were under consideration in the Doha negotiations are not as binding as at the low prices, but the US programs would still approach or exceed some limits.

This discussion implies that if there had been a Doha agreement in 2008, the United States probably would not have enacted new legislation along the lines of the 2014 farm bill. Conversely, enactment of the 2014 farm bill likely makes the limits approaching those in the 2008 proposed Doha agreement more difficult to attain. In any case, the Doha Round negotiations including tighter limits on

²⁵ Formally, the 2014 farm bill, similarly to the 2002 and 2008 bills, includes an “Adjustment Authority Related to Trade Agreements (Section 1601(d)(1)) allowing the secretary of agriculture to make adjustments “to the maximum extent practicable” to ensure that the amount of expenditures not exceed the U.S. commitment for any period.

²⁶ Ending the dairy price support program in the 2014 farm bill eliminates annual market price support calculated at \$2.8 billion in the US notifications for 2010 and 2011 under the WTO rules on administered prices even though the dairy program was not providing any support to farmers because market prices exceeded the dairy loan rates. The 2008 farm bill had also reduced the notified dairy support when it redefined support as applying only to processed dairy products, not to raw milk. See Brink (2011) and Blandford and Orden (2011) in Orden, Blandford, and Josling (2011) for discussion of the WTO market price support rules and the US dairy case, respectively.

²⁷ See Blandford and Orden (2011) for the full set of US commitments under the Doha draft modalities being discussed in 2008.

domestic support have not been revived since they collapsed in 2008. Very narrow new Doha commitments on agriculture were reached in December 2013 as part of a limited Doha agreement meant to salvage something from the many years of negotiations (WTO 2013), but even this agreement was not adopted by the WTO members as of October 2014.

The WTO Agreement on Subsidies and Countervailing Measures (ASCM) also specifies that government programs cannot significantly suppress world prices or otherwise significantly distort market conditions. The market effects of US subsidies constituted a core complaint brought under ASCM in the Brazilian case against the US cotton support programs. It is unlikely that the US cotton program would have been changed as markedly as it was in the 2014 farm bill except for the Brazilian cotton case.

The ruling in the Brazilian cotton case suggests that if US prices were to remain below the reference prices for much of the 2014 farm bill, PLC could be subject to potential challenge at the WTO. Moreover, extrapolating from the cotton ruling, if the set of US subsidies for a crop, including expanded crop insurance, increases US production and thereby distorts trade or suppresses market prices, then other WTO members may have grounds to file a formal complaint.

The growth in subsidies for crop insurance and the addition of SCO suggest that US crop insurance not only is becoming increasingly vulnerable to potential challenge but has heightened scrutiny over how the United States accounts for such programs in its support notifications to the WTO. The United States acknowledges that the crop insurance program does not meet the criteria for classifying insurance programs in the green box, which include the requirement that the insurance coverage not exceed 70 percent of losses incurred. Instead, the United States has notified crop insurance as non-product-specific AMS support even though almost all insurance contracts are written for a specific commodity, not for a whole farm. Through its 2007 notification, the United States calculated its insurance subsidy as net indemnities defined as total indemnities paid to farmers less insurance premiums paid by farmers. Starting with an amended 2008 notification, the subsidy has been calculated as the public subsidy for insurance premiums. The new measure varies less from year to year, especially in years such as 2012 when large insurance indemnity payments were made (Figure 2.2). This technical measurement change could prove important in maintaining US compliance with its commitments in years of widespread, systemic weather disasters such as the severe drought of 2012, particularly if the US limit on AMS support were ever tightened or new WTO commitments such as a limit on OTDS were reached through negotiations.²⁸

Net insurance payments have historically varied by crop both on a dollar per insured acre basis (Figure 4.6) and as a share of gross income per acre. The observed variations are related in part to the riskiness of the climate in which the crop is grown. Hence, payments by the crop insurance program appear to be more consistent with a product-specific program than a non-product-specific program. In addition, as noted above, the history of crop insurance programs suggests that most US crop insurance contracts would not exist without government subsidies. This observation raises the question of whether government reinsurance provided to the private insurance companies is part of the farm subsidy. It is reasonable to hypothesize that government-provided reinsurance likely results in lower premiums than if an equivalent amount of reinsurance had to be purchased in the private reinsurance market. While it is harder to argue that administrative costs of the insurance programs are crop-specific because the administrative structure applies to all crops, inclusion of such costs in the green box might be questioned. Classifying subsidies to the private sector for delivery of crop insurance and reinsurance as general service expenditures stretches the WTO definition.²⁹ In short, current US classification of subsidies to its insurance program seems at least partially out of line with the payment outcomes of the program.

²⁸ The A&O costs of insurance contracts, which are provided by private agents with cost reimbursement by the government, and government reinsurance, which is provided to the private insurance companies, were not reported to the WTO through 2007. Starting with 2008, they have been notified in the green box general services category. The reinsurance costs were notified as \$2.4 billion in 2010 and \$0.6 billion in 2011, while notified A&O costs were \$1.4 billion each year. As a point of comparison, RMA's direct administrative costs averaged \$78 million annually.

²⁹ In addition to meeting the general green box requirements, the WTO criteria for general services preclude "direct payments to producers or processors." Were that description to also preclude payments to input suppliers, it would be more evident that payments to insurance providers were excluded.

7. SUMMARY AND CONCLUSIONS

The strengthening of the US farm safety net in the 2014 farm bill makes it easy both for critics to chastise the United States and for US farm groups to defend the new programs. This section attempts to balance those two perspectives. Moreover, while assessment of any farm bill depends on what happens in the next farm bill, we believe history will conclude that the 2014 farm bill is important for several reasons.

Both the 2008 and 2014 farm bills chose only to reduce, not eliminate, CRP in the presence of worldwide concern over the past six years about high agricultural prices. In 2018, CRP's acreage cap will still be 24 million acres. In contrast, during the 1970s agricultural price run-up, almost no acres were removed from production as a fence row-to-fence row planting mentality dominated. The so-called recent food-versus-fuel policy debate is more accurately the food-versus-fuel-versus-environment debate. In 2014, the United States chose to keep a significant focus on the environment, a decision that confirms a change in US farm policy.

The choice to make conservation compliance an eligibility criterion for crop insurance premium subsidies further confirms the importance of the environment in US policy. Individual farm crop insurance is now one of the two pillars of the US crop safety net. Crop insurance cannot be both a pillar of the farm safety net and excluded from US society's expectation that farms improve environmental quality in exchange for subsidies. In addition, the 2014 farm bill continues a recent farm bill focus on agricultural working land conservation and fosters new partnerships as part of the growing national debate over the role of agricultural production and environmental quality. These issues may frame debate over the next farm bill in a way that leads to new strategic decisions over the role and scope of its conservation programs.

The endorsement of subsidized individual farm crop insurance to address yield and revenue risk over the production period dates to a series of legislative acts since the early 1980s. In part as a reflection of this development, the US crop safety net is trending away from price-based programs with fixed targets and toward programs with parameters tied to market prices and revenue that require a revenue loss. The 2014 farm bill continues this trend, including the sharp alteration of the cotton and dairy support programs.

The growth in crop insurance net indemnity payments to farmers, especially the high level of such payments during 2011 through 2013, made it easier for the farm lobby to give up direct payments in 2014. Thus, insurance can be viewed to some extent as a replacement for direct payments. This is a substantial change in the structure of the US crop safety net. Access to crop insurance payments requires payment of a premium in addition to a deductible. These are important additions to the set of safety net policy parameters. Both not only provide a policy lever for reducing cost but also reduce moral hazard and adverse selection behavior associated with the safety net.

Due to its size and central place in the crop safety net, the premium subsidy likely will be a focus of the next farm bill debate. While disagreement exists among economists over systemic risk as a justification for public subsidies for farm insurance, it is difficult to make an economic-based argument for public assistance for idiosyncratic risk specific to an individual farm. The private market can effectively price and monitor such risk.

Although the 2014 farm bill enhances insurance programs, our assessment is that US crop insurance is oversubsidized even if a systemic risk rationale for public intervention is accepted. We base our assessment on several measures of the systemic risk component of farm risk. Systemic risk justifies subsidies no higher than 45 percent in these analyses. However, the average subsidy rate for insurance purchased by US farmers was 62 percent in 2013, and the 2014 farm bill further enhances crop insurance. We propose that the subsidy level be reduced to a level consistent with the share of farm risk that is systemic or farmers pay premiums that cover the production risk idiosyncratic to the individual farm and field. Either approach will reduce both the public cost of crop insurance and the market and environmental distortions that result from excessive subsidies for risk that can be insured effectively by the private market.

Beyond enhancing individual farm crop insurance, the 2014 farm bill further strengthens the downside risk safety net in two main dimensions. One addresses shallow losses, or losses that coincide with the deductible on individual farm insurance. The second is multiple-year losses, or losses associated with sequential years of low prices or revenue that are not addressed by insurance.

While crop insurance is the consensus instrument among farmers for annual production-period yield and revenue risk, the 2014 farm bill leaves open safety net design issues for shallow-loss assistance and for multiple-year-loss assistance. One unresolved design issue is whether shallow-loss assistance should be delivered via crop insurance (through SCO) or through ARC. SCO covers losses at the county level between 14 percent and the percentage coverage level elected for the individual farm insurance, which can be as low as 50 percent. In contrast, ARC covers only losses between 14 percent and 24 percent of its revenue benchmark subject to payment limits. Whereas SCO has a premium cost paid by farmers, ARC makes payment on less than 100 percent of the farm's historical program acres regardless of actual acreages of the crops grown in a given year. Each of these differences reflects an issue over the design of protection against shallow losses. Another design issue is the amount of integration or overlap with individual farm crop insurance. ARC has more potential than SCO to overcompensate farmers for insured losses because its price component is not an insurance price but a moving-average of crop year prices. We have proposed that the resulting overlap can be minimized or eliminated by changing how the ARC price component is calculated.

A key design issue for multiple-year losses is whether such losses should be addressed by programs with fixed parameters or with parameters that move with the market. Multiple-year risk assistance is provided by ARC because its moving-average revenue benchmark changes more slowly than markets can change within a given year, and because the price component of the benchmark is constrained not to fall below the PLC reference price. PLC reference prices are generally 30 to 50 percent higher than in previous legislation and are fixed for the length of the 2014 farm bill, in contrast to ARC's revenue benchmark that adjusts over time. PLC's potential downside risk assistance is higher than ARC's 10 percent range. PLC provides assistance for low prices from the reference prices down to the much lower loan rates. Thus, while the US farm safety net is trending toward targets that move with the market, strong support remains among some, maybe most, US farm groups and policymakers for at least some role for fixed risk assistance parameters.

The 2014 farm bill nonetheless provides a test of this second important design issue in the form of whether multiple-year risk assistance should be provided by ARC or PLC. If low prices below the reference price are the dominant concern during the 2014–2018 planned duration of the 2014 farm bill, then ARC's market-adjusted assistance levels will provide less support payments than PLC's fixed assistance levels because the market-adjusted assistance will move downward as prices decline and stay low. If prices exceed the fixed reference prices, ARC's market-adjusted assistance will provide more payments because the assistance starts from relatively high revenue levels based on the past five years and, in general, moves higher with price or revenue increases. The trade-off of ARC versus PLC is essentially one between a lower cap on downside risk protection, both within a given year and over multiple years, in exchange for assistance at higher price and revenue levels.

This difference in support based on the choice between these options is illustrated in our analysis of likely payments by the county option ARC-CO versus PLC for crop years 2014 through 2018 at the low and midpoint prices estimated by WASDE in August 2014 for the 2014 crop. At the low prices in the WASDE range, farmers would receive ARC payments of \$6.4 billion and PLC payments of \$1 billion if they enroll all eligible acres in the program that makes the largest payment for 2014 (ARC for corn, oats, and wheat; PLC for barley, long-grain rice, and sorghum). Total payments would be only \$2.4 billion in 2014 if all acres were enrolled in PLC. However, assuming (for simplicity of the illustration) that prices and yields stay constant at the estimated 2014 levels through 2018, ARC payments would decline to zero in the last two years (2017 and 2018) of the farm bill, while PLC payments would remain at the 2014 level. Using lower WASDE price estimate from October 2014, program costs would be higher. Historically, Congress has stepped in to provide added support if prices and revenue are sharply lower than levels anticipated when a farm bill is enacted. But this may prove more difficult to orchestrate

politically after farmers have made various enrollment choices by mid-2015 that are allowed in the 2014 farm bill under the stipulation that their choices cannot be reversed.

In exchange for the strengthened protection received against downside risk in the 2014 farm bill, farmers gave up fixed direct payments of about \$4.5 billion annually they had received since 1996. This moves US farm policy toward programs deemed amber box and subject to commitment caps in the WTO. The United States will likely notify ARC and PLC payments as non-product-specific support, as it has the price countercyclical payments since 2002. The main other support that has been notified by the United States as non-product-specific is crop insurance premium subsidies. For the United States to exceed its non-product-specific *de minimis* threshold, and thus for the non-product-specific support to count against its domestic support commitment of \$19.1 billion, total expenditures on ARC and PLC would have to range between \$10 and \$15 billion in this case. This is certainly possible under low prices. It is a higher range of expenditures than we calculate using the August 2014 WASDE range of estimated prices for the 2014 crop year. In this sense, our illustrative analysis suggests the United States is unlikely to exceed its WTO domestic support commitment with the farm safety net of the 2014 farm bill. But prices could be lower than the WASDE estimates of August 2014, as WSADE's estimates in September 2014 demonstrate. A sequence of lower price years could result in the United States exceeding its commitment and could stimulate challenges to the strengthened US farm safety net along lines of the WTO Brazil-US cotton case. In the meantime, resolution of the longstanding cotton case is an accomplishment of the 2014 farm bill.

A second international concern is whether enactment of the 2014 farm bill affects the willingness of the United States to negotiate for tighter future constraints on its agricultural domestic support. Our WASDE-based analysis shows that the 2014 farm programs could easily result in expenditures that exceed many of the tighter constraints that were being considered in the WTO Doha Round negotiations in 2008. This has two implications. Had agreement been reached on those rules and commitments, it is unlikely the United States would have adopted the farm bill it did six years later. Conversely, enactment of the 2014 farm bill likely makes achieving limits approaching those proposed in the 2008 negotiations more difficult to attain.

In terms of the domestic political economy of US farm policy, some stakeholders and other observers have noted the delay in completing the 2014 farm bill and have drawn the implication that the farm lobby has lost power. We conclude, to the contrary, that enactment of the 2014 farm bill indicates continued political strength of the US farm support lobby. Admittedly, farm groups gave up fixed direct payments and the WTO cotton case affected US policy decisions in 2014. Our analysis suggests that whether the new safety net payments will exceed the foregone direct payments to farmers is uncertain. Farms may be faced with program choices in early 2015, particularly for corn, that require them to choose between substantial payments under ARC over the next one or two crop years but that decline afterward versus foregoing those larger initial payments in favor of stronger support in the event of low prices over the full five years of the 2014 farm bill. Nonetheless, even with a divided Congress, the 2014 farm bill secured overwhelming bipartisan majorities in both the House of Representatives and the Senate. The historical emphasis of US policy on countercyclical programs is reaffirmed, with crop insurance now a twin pillar of support along with the commodity programs and the emphasis changing somewhat from price to revenue. The retention of permanent legislation from the 1930s and 1940s that each new farm bill temporarily supplants sets the stage for enacting another farm bill before the end of the decade. Next time debate will begin with the stronger protection against downside risks enshrined in the 2014 bill and likely continued bipartisan support for extending the farm safety net.

Enactment of the 2014 farm bill also indicates continued political strength of the traditional coalitions that arise to enact farm bills. It provides benefits to numerous constituencies. The new farm bill reauthorized the Supplemental Nutrition Assistance Program with only a 1 percent reduction in projected outlays for this large entitlement program, despite contentious debate over reigning in fiscal deficits and intense pressure from political conservatives to reduce expenditures on food-based entitlements to low-income consumers, as well as on farm subsidies. Farmland conservation measures saw a loss in projected expenditures compared with continuation of the 2008 farm bill, but all but minimal reductions in

projected spending were back-loaded to after the 2014 farm bill expires. The CRP and other programs were extended and proponents were able to extend conservation cross-compliance requirements to recipients of crop insurance subsidies. A variety of other programs received increased budgets bringing additional interest groups into the farm bill coalition. In this way, in circumstances of broad legislative gridlock where little legislation has been enacted, the farm lobby and farm bill coalition prevailed once again as many other coalitions floundered.

As a result, the Agricultural Act of 2014 gives US farm policy a different safety net design than it had under the preceding 2008 farm bill, not just because of the elimination of direct payments but in terms of the continuous evolution of the structure of the safety net programs that has occurred since the 1980s. US farm policy in 2014 has the same underlying countercyclical foundation as it had in the last two decades of the 20th century and from its historical roots. Yet very significant evolution of the risk assistance programs has occurred. This paper has summarized the key trends that have emerged, described the new 2014 farm bill programs in depth, and highlighted some of the key policy issues that arise and will play out over its planned five-year duration and the future evolution of US farm policy.

APPENDIX: EARLY PROPOSALS

Table A.1 Comparison of selected farm assistance proposals, as of February 1, 2012

Characteristic	ADAP (Corn Growers)	ARRM (Brown/Thune/Durbin/Lugar)	RMAF ^a (American Soybean)	CRGP (Conrad/Baucus/Hoeven)	STAX (for cotton only) (National Cotton Council)
Programs eliminated	Direct payment, countercyclical, ACRE, SURE	Direct payment, countercyclical, ACRE, SURE for ARRM eligible crops	Direct payment, countercyclical, ACRE, SURE	Direct payment, ACRE, SURE but extends SURE to 2012 crops	Direct payment, countercyclical, ACRE
Program level	CRD	CRD	Farm	Farm	County
Revenue program	Yes	Yes	Yes	Yes	Yes
Yield type for benchmark	CRD yield; farm yield for farm loss condition	CRD yield; farm yield for farm loss condition	MAX [APH or 5-year OMA APH or 80% county yield]	MAX [APH or 5-year OMA APH or countercyclical yield]	Expected county yield
Price type for benchmark	Crop insurance harvest price	Insurance harvest price (if not available, average of 1st 5 months of crop year)	5-year OMA of US crop year cash price	MAX [2012 target price or 5-year OMA crop year price]	MAX [insurance plant price or fixed reference price]
Price type for realized revenue	Crop insurance harvest price	Same price type used for benchmark	1st 4 months of US crop year cash price	MAX [1st 4 months of US crop year cash price or loan rate]	Insurance harvest price
Range of loss covered	5% to 15%	10% to 25%	Dryland: 10% to 25%; irrigated: 5% to 20%	12% to 25%	Farm elects to enter program; nonspecified MAX loss exist
Payment factor	100%	85%	85%	65% on planted acres 45% on prevent planted acres	100%
Note on program	Benchmark = 5-year OMA of revenue computed for year (no cup & cap)	Benchmark = 5-year OMA of revenue computed for year (10% cup & cap); elected annually	Payment factor could be reduced to make budget; calculation of payment includes net insurance payouts	Requires CAT/NAP; payment acres equal 90% of eligible acres, but cap is total base acres; payment adjusted for other safety net payments and quality loss; farms can add county to farm coverage	Insurance not required for STAX; farm co-pay possible
Program payment limit	Not discussed	\$65,000; 2008 farm bill AGI	Maybe; 2008 farm bill AGI	\$105,000; single nonfarm and AGI limit of \$999,000	Not discussed Loan rate tied to 2-year average price but within \$0.47–\$0.52
Marketing loan	Continue	Continue	Continue	Continue	

Table A.1 Continued

SRRP (American Farm Bureau)	FFSN (crop insurance company)	CROP (Neugebauer)	Administration (Obama)	FOR (National Farmers Union)
<u>Eliminated programs:</u> direct payments, countercyclical, ACRE, CAT insurance (SURE not mentioned)	<u>Eliminated programs:</u> direct payments, marketing loan benefits, countercyclical, SURE; maybe ACRE	<u>Eliminated programs:</u> none	<u>Eliminated programs:</u> direct payments	<u>Eliminated Programs:</u> direct payments, marketing loan benefits, countercyclical, SURE; ACRE
<u>Program description</u> <ul style="list-style-type: none"> ▶ proposes a county revenue insurance program for county losses greater than 20% to 30% (in other words, a systemic loss program is proposed) ▶ Uses a 3- or 5-year moving average of US price to set the county benchmark ▶ administrative fee is charged ▶ envisions private insurance contracts designed to wrap around the county product ▶ uses planted acres ▶ program delivered through Risk Management Agency ▶ retains marketing loan program 	<u>Program description</u> <ul style="list-style-type: none"> ▶ program level is the farm ▶ crop insurance is the only farm assistance program ▶ to protect against multiple-year losses, minimum price is added to insurance equal to 80% of 5-year average of insurance plant price ▶ in computing APH, excludes some low-yield years if certain conditions are met ▶ to address shallow loss, adds 5 percentage points to coverage (example: 75% becomes 80%) ▶ limits farm-paid premiums to 15% of total dollars of enterprise^b coverage 	<u>Program description</u> <ul style="list-style-type: none"> ▶ allows producers to supplement individual insurance coverage with additional coverage via a county insurance product to cover shallow losses ▶ changes APH calculation from a 10-year average to a 7-year OMA. 	<u>Program description</u> <ul style="list-style-type: none"> ▶ reduces spending over 10 years on farm assistance programs by \$30 billion, on conservation programs by \$2 billion, and on crop insurance by \$8 billion 	<u>Program Description</u> <ul style="list-style-type: none"> ▶ allows producers to put their crop into the crop's farmer owned reserve (FOR) when market price is below the crop's loan rate. ▶ producers paid a \$0.40/unit/year FOR storage fee ▶ Loan rates are pegged to the corn loan rate and are adjusted for changes in the chemical input price index ▶ when FOR reaches its cap, voluntary paid land set-aside triggered; producers can bid acres into the set-aside program based on their whole-farm acres (not crop-by-crop acres)

Source: Zulauf and Orden (2012) based on Shields and Schnepf (2011), supplemented by conversations with proposal authors, and documents publically released by proposal authors.

Notes: ^a RMAF proposes (1) same percent budget cut be used for conservation and farm programs, (2) crop insurance not be cut, and (3) Conservation Reserve Program acre cap be reduced. ^b All acres of a crop in a county.

Proposal acronyms: ADAP = Agriculture Disaster Assistance Program; ARRM = Aggregate Risk and Revenue Management; CRGP = Crop Revenue Guarantee Program; CROP = Crop Risk Options Plan; FFSN = Farm Financial Safety Net; FOR = Farmer-Owned Reserves; RMAF = Risk Management for America's Farmers; SRRP = Systemic Risk Reduction Program; and STAX = Stacked Income Protection Plan.

Other acronyms: AGI = aggregate gross income payment limit; APH = crop insurance actual production history yield; CAT = catastrophic crop insurance; CRD = crop reporting district; OMA = Olympic moving average—removes high and low value; NAP = noninsured crop disaster assistance.

Table A.2 Comparison of crop programs, House Agriculture Committee bill and Senate bill, July 2012

Crop program	Description	House Agriculture Committee bill	Senate bill
Individual farm insurance (existing programs)	Covers revenue or yield risk based on actual production history (APH) yield for farm, 100% of plant acres, and up to 85% of pre-plant price; premium subsidy varies from 38% to 100%—highest at lowest coverage levels.	Yes	Yes
County insurance (existing programs)	Covers revenue or yield risk based on expected yield for county, 100% of plant acres, and up to 90% of expected pre-plant price; premium subsidy ranges from 44% to 59%.	Yes	Yes
Supplemental Coverage Option (SCO) (new county insurance)	Covers revenue or yield risk at the county level over a range that is between the coverage level for individual farm insurance elected by the farm and 90%, or anywhere in between; premium subsidy is 70%.	Yes, if elect PLC No, if elect Revenue Loss Coverage (RLC)	Yes, but maximum coverage is 80% if elect Agriculture Risk Coverage (ARC)
Cotton Stacked Income Protection Plan (STAX)	Separate insurance program for upland cotton; farm elects coverage level between coverage level it elected for the individual farm and 90% of expected county revenue; if individual insurance is not bought, STAX coverage can be elected between 70% and 90%; a multiplier factor up to 120% allowed; premium subsidy is 80%; STAX not available to upland cotton acres in the SCO.	Yes, if elect PLC No, if elect RLC	Yes, but maximum coverage is 80% if elect ARC
Marketing Loan Program	Fixed price set by crop by Congress (same as 2008 farm bill except cotton loan rate reduced to average of world price for previous 2 years, but not less than \$0.47/pound nor more than \$0.52/pound).	Yes	Yes
Target Price Program (House PLC)	Fixed price set by crop by Congress; payment yield usually is 90% of 2008–2012 average farm yield; ^a payment usually on 85% plant acres plus 30% prevent plant acres. ^b	Yes (PLC)	No
Farm Revenue Program (Senate Farm ARC)	Coverage level between 79% and 89% of (5-year Olympic average of farm yield times 5-year Olympic average of US crop year price); payment usually on 65% of plant acres plus 45% of prevent plant acres. ^b	No	Yes (Farm ARC)
County Revenue Program (House RLC and Senate County ARC)	<u>House RLC version:</u> level between 75% and 85% of (5-year Olympic average of county yield times 5-year Olympic average of US crop year price); minimum price used for any year when calculating the Olympic average is the fixed target price for the House PLC program; payment usually on 85% of plant acres plus 30% of prevent plant acres. ^b <u>Senate County ARC version:</u> coverage level between 79% and 89% of (5-year Olympic average of county yield times 5-year Olympic average of US crop year price); payment usually on 80% of plant acres plus 45% of prevent plant acres. ^b	Yes (RLC)	Yes (County ARC)

Source: Zulauf and Orden (2012).

Notes: ^a Payment yield can be 1998–2001 countercyclical yield. ^b Total payment acres of farm cannot exceed its base acres.

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