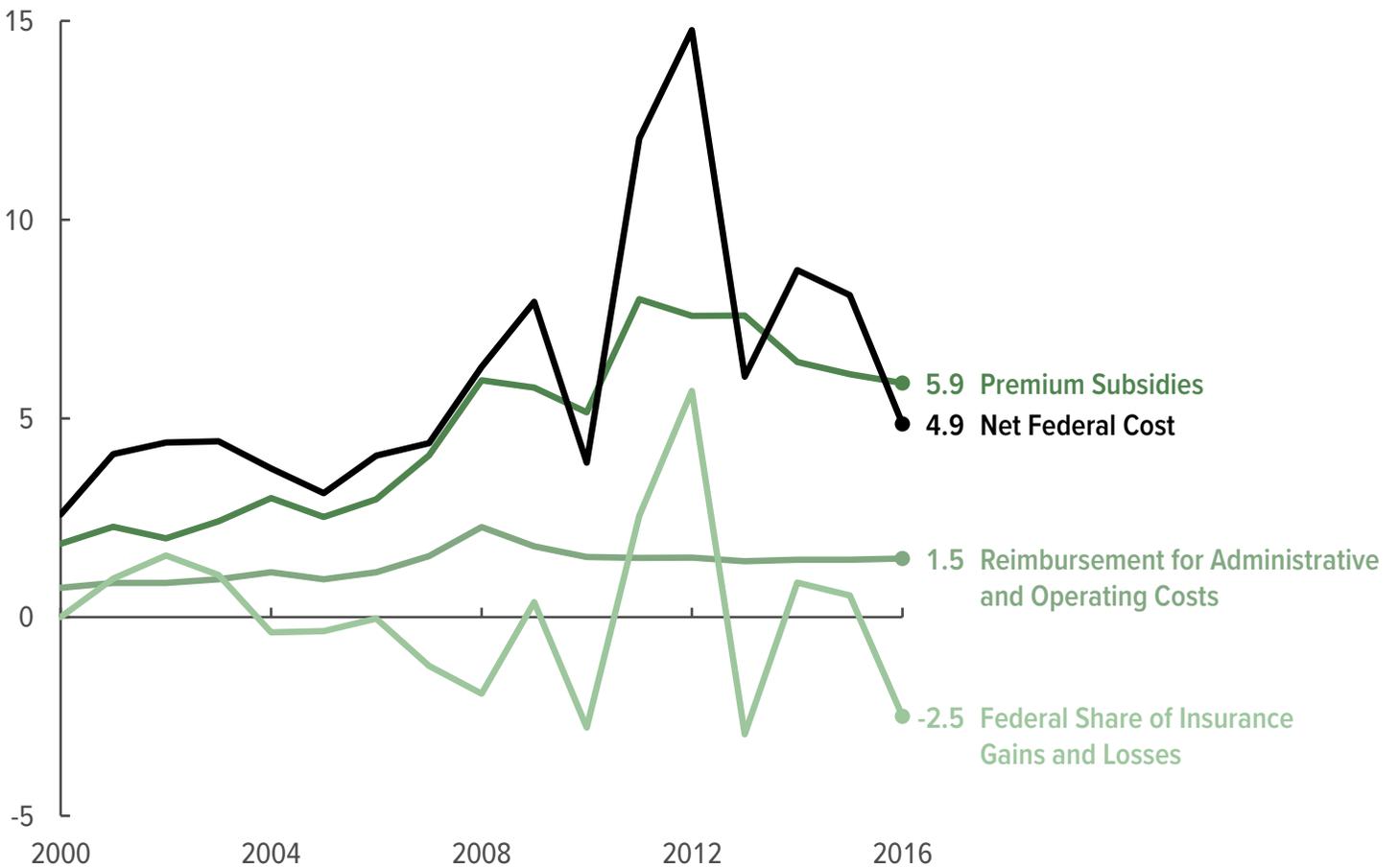


# CBO

## Options to Reduce the Budgetary Costs of the Federal Crop Insurance Program

Billions of 2016 Dollars



DECEMBER 2017

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## Notes

Numbers in the text, tables, and figures may not add up to totals because of rounding.

Unless otherwise specified, all dollar amounts are reported in fiscal year 2016 dollars, having been adjusted for inflation using the gross domestic product price index. (Federal fiscal years run from October 1 to September 30 and are designated by the calendar year in which they end.) Ten-year budgetary effects are expressed in nominal dollars. References to fiscal year federal costs and federal spending indicate net budget outlays.

Data underlying the figures are posted along with this report on CBO's website.

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# Options to Reduce the Budgetary Costs of the Federal Crop Insurance Program

## Summary

The federal crop insurance program, which helps protect agricultural producers from losses due to low crop yields or lower-than-expected crop prices, is one of the largest support programs for those producers. It cost the federal government \$5 billion in 2016 and an average of nearly \$9 billion annually over the past five years. Policymakers have faced questions about how to reduce those costs while maintaining appropriate support for agricultural producers.

This Congressional Budget Office report describes the structure of the crop insurance program, focusing on factors that influence its cost; discusses the government's role in providing crop insurance; assesses how the program benefits various groups; and examines several policy options that would decrease spending on the program over the 2018–2027 period.

## What Kinds of Costs Does the Federal Government Incur for the Crop Insurance Program?

Agricultural producers pay only a portion of the price for crop insurance policies, known as the premium. The federal government pays the majority of the cost through subsidies. Premium subsidies are set by law as a percentage of premiums, and premiums are set annually by the government to match expected claims. Most of the government's spending on the crop insurance program over the past five years—about four-fifths of the total—has gone toward premium subsidies.

The federal government also pays for the delivery costs of insurance by reimbursing the private insurance companies that sell and service the policies for their administrative and operating (A&O) costs. Those costs are the second-largest component of the government's spending on crop insurance, accounting for about one-fifth of the total. Like premium subsidies, A&O reimbursements are calculated as a percentage of premiums.

Remaining federal spending on the program goes toward risk sharing between the government and private insurers. In years when the amount of money insurers spend on claims exceeds the amount collected through premiums, those underwriting losses increase the federal cost of the program. In other years, underwriting gains decrease its cost. Those losses and gains can be substantial in a given year—having increased the government's cost of the program by as much as 60 percent and decreased it by as much as 40 percent—but they tend to cancel each other out over time. (Because the federal government shares in underwriting gains as well as underwriting losses, discussions of federal costs and federal spending throughout this report refer to net costs and net spending.)

The government's total costs for crop insurance were higher in the past decade than in the previous decade: They averaged \$8 billion a year from 2007 to 2016 but \$3 billion a year from 1997 to 2006. Increases in crop prices, which began in 2006 and peaked for many crops in 2012, largely explain the higher spending. Increased crop prices prompted the government to set higher premiums for crop insurance policies in order to match expected claims for the increased value of the crops. The higher premiums then resulted in larger premium subsidies and A&O reimbursements, because both are calculated as a percentage of premiums.

## Why Does the Federal Government Play a Role in Crop Insurance, and What Are the Alternatives?

Historically, when agricultural producers have suffered significant losses, the government has usually provided them with supplemental financial assistance. A key goal of the federal crop insurance program is to reduce that assistance. From 1994 through 2010, supplemental assistance for agricultural losses continued to be provided despite the growing participation in the program that followed increases in subsidies. Natural disasters in more recent years have not prompted comparable

supplemental assistance, which suggests that federal crop insurance can substitute for it.

However, it is unclear whether current subsidies for the crop insurance program represent a more effective or economical means of protecting producers from agricultural losses than supplemental assistance. It is not possible to know how much supplemental assistance would have been provided in the absence of the crop insurance program. Nor are data available to assess how much increased spending on the crop insurance program has reduced spending on supplemental assistance.

Agricultural producers' risks might be managed in ways that do not involve the government. For example, producers can diversify their crops to reduce the likelihood of overall low yields; use financial tools, such as futures contracts, to mitigate the risk of declines in crop prices; or rely on nonfarm income as a resource in the event of losses. Also, producers could conceivably obtain crop insurance in a fully private market, but insurers might have difficulty providing coverage at prices that could compete with such alternative risk management strategies (for reasons discussed later). Nonetheless, crop insurers could arrange to share risk more widely by purchasing reinsurance—that is, insurance coverage for insurers—through the private market, rather than relying on the government to assume responsibility for a portion of losses. Even if producers could manage their risks privately, however, the expectation that they would receive supplemental assistance for significant losses might discourage them from doing so.

### **Who Benefits From the Federal Crop Insurance Program?**

Agricultural producers, as a group, obtain a sizable benefit from the program. Considered together, producers received about \$65 billion more in claim payments than they paid in premiums between 2000 and 2016. In total, producers' receipts from claims exceeded their premium payments in all but one year during that period. (Of course, the outcomes for individual policyholders for any kind of insurance vary; accordingly, many individual agricultural producers receive less in claims than they spend on crop insurance premiums.)

Consumers derive a small benefit from the program. Analysts have shown that the higher participation in the crop insurance program that followed increases in subsidies boosted the cultivated acreage of crops (corn,

soybeans, and wheat in particular) by up to 1 percent, which probably lowered the prices of those commodities by a small amount. Ultimately, for consumers, the effect of that small change is limited because the prices of commodities account for only about 10 percent of the retail prices for domestically produced food.

There is some evidence that crop insurance companies earn a greater profit than similar insurers earn in the private market. However, data limitations make that comparison uncertain. CBO could compare the groups' rates of return on equity only on a book-value basis (which reflects financial accounting measures), not a market-value basis (which directly reflects companies' worth from the perspective of investors). Moreover, because crop insurers' rate of return on equity is not reported in publicly available statements, it must be estimated, and several factors make CBO's estimate uncertain. Although any single factor would be unlikely to bring the estimated rate of return for crop insurers in line with that of other property and casualty insurers, the combined effect of multiple factors could conceivably do so.

Taxpayers incur costs for the program. However, it is difficult to gauge whether those costs are larger or smaller than the costs of supplemental assistance might be if the program did not exist or provided less assistance to producers.

### **How Might Lawmakers Change the Federal Crop Insurance Program?**

This report examines four types of options that would reduce the costs of the program over the next 10 years: restrictions on how losses are quantified, which would reduce claim payments; reductions in premium subsidies for crop insurance; reductions in reimbursements to private insurance companies for A&O costs; and changes to the terms of risk sharing between the government and private insurers. Those options would result in cost savings ranging from less than half a billion dollars to \$19 billion.

This report also discusses two broader approaches for restructuring the crop insurance program, whereby the government might provide subsidies only for policies that specifically protected against widespread losses or might set premium subsidies independently of premium levels, as a percentage of expected gross revenue per acre of the insured crop (rather than as a percentage of premiums).

## The Crop Insurance Program and Federal Spending

The Congress established the federal crop insurance program in 1938 to help agricultural producers recover from the Great Depression and the Dust Bowl. In 1980, to encourage producers’ participation and reduce their reliance on federal programs that provided compensation for disaster-related losses for free, lawmakers expanded the program to cover more crops and regions and introduced subsidies for insurance policies. Subsequent legislation increased the subsidies and expanded the role of the private sector in managing policies.

Today, the program offers policies that cover losses associated with most natural causes, which are sold and serviced by private insurance companies.<sup>1</sup> Of the more than 100 crops insured under the program, 4 crops—corn, soybeans, wheat, and cotton—account for about three-quarters of the enrolled acreage and four-fifths of the claims paid (see Figure 1). Those 4 crops also represent the majority of the dollar value of all U.S. crop production. (For example, they accounted for 75 percent of the dollar value of total U.S. crop production in 2016.)<sup>2</sup>

The federal government plays a large role in providing crop insurance:

- It determines the terms of the policies that private insurance companies offer, including the ways in which producers’ losses are calculated;
- It sets the annual premiums for those policies to match expected claims and subsidizes a substantial portion of those premium costs;
- It reimburses private insurance companies for their A&O costs; and
- It shares risk with private crop insurance companies, assuming a portion of losses as well as sharing in gains.

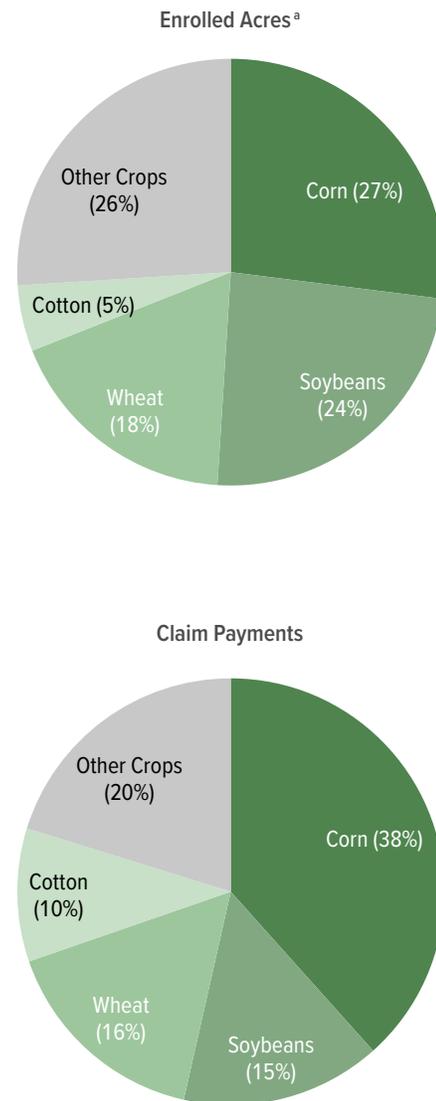
1. This type of insurance, known as multiple-peril crop insurance, is offered only through the federal crop insurance program. Crop insurance policies that offer protection against a single peril—hail or fire, which are generally limited in their geographic scope—are offered through the private market.

2. Department of Agriculture, National Agricultural Statistics Service, “Crop Values: 2016 Summary” (updated; May 2017), <http://tinyurl.com/ybkwpv2e>.

Figure 1.

### Acres Enrolled in the Crop Insurance Program and Claim Payments, by Crop, 2000 to 2016

Corn, soybeans, wheat, and cotton account for most of the acres and claim payments in the federal crop insurance program.



Source: Congressional Budget Office, using data from the Department of Agriculture’s Risk Management Agency.

a. For most crops, enrollment is reported in terms of acres. For a few crops, which are not included here, enrollment is reported in other terms, such as the number of trees. Such crops are covered by less than 1 percent of the policies in the program.

### Program Features Affecting Federal Spending for Crop Insurance

The terms of insurance policies available to agricultural producers, the percentage of premiums paid by the federal government, the A&O reimbursements to insurers, and the terms that govern risk sharing between the federal government and private insurance companies all affect how much the federal government spends on the crop insurance program.

**Policy Terms Quantifying Losses.** Two basic types of crop insurance policies are offered through the federal crop insurance program: *revenue policies*, which protect against shortfalls in revenue due to low crop yields, lower-than-expected crop prices at harvest, or both; and *yield policies*, which protect against losses due to low crop yields only. (Alternatively, for a small administrative fee, producers can purchase a catastrophic coverage [CAT] policy, which provides a minimal level of insurance coverage: 55 percent of the value of yield losses that amount to at least 50 percent of the expected harvest. However, in 2016, less than 4 percent of crop insurance policies were CAT policies.) Revenue policies are more popular among agricultural producers, accounting for about 80 percent of all policies offered through the program and about the same percentage of total premiums in 2016. Yield policies accounted for the remaining 20 percent of policies and premiums.

Most producers choose a type of revenue policy that values losses relative to whichever is greater: the insured crop's projected price when the policy was purchased or the crop's actual price at harvest. Such policies accounted for 98 percent of all revenue policies purchased in 2016. (The other 2 percent of revenue policies valued losses relative to the crop's projected price.) Although prices at harvest do not often exceed projected prices, when that happens (for example, when a natural disaster causes a drop in production), producers who have purchased these policies are compensated at a higher price for their losses than they would be with a basic revenue policy.

Expected crop yield, for both revenue and yield policies, is calculated using a producer's actual production history (APH). In its simplest form, APH is an average of the producer's annual crop yields over the past 4 to 10 years, depending on the number of years the producer has cultivated the crop.

Producers may, however, modify that simple calculation in three ways. First, producers can exclude a low-yield year for a given crop if the crop's average yield within the same county or a contiguous one during that year is 50 percent or less of the average over the previous 10 years. Multiple years may be excluded in this way—in 2015, for example, some soybean producers were allowed to exclude up to 10 years from their APH calculations.<sup>3</sup> Second, producers may exclude years in which they could not plant their insured crop because of weather conditions, as long as they adhered to certain rules about the planting of alternative crops.<sup>4</sup> Third, producers may modify their APH with a trend adjustment, whereby each annual yield reported may be raised by a factor that takes into account increases in yields over time attributable to improvements in crop genetics and farming practices. Because they increase effective coverage levels, excluding certain years and adjusting for trends result in higher premiums and, as a consequence, greater federal spending on premium subsidies.

**Premiums and Associated Subsidies.** Policy premiums are set by the federal government each year with the aim of matching the expected losses associated with the policies. (However, by law, a policy's premium may not rise by more than 20 percent from year to year.) Premium subsidies are set by law as a percentage of the policy premiums.

Generally, premium subsidies are proportionally higher for policies that cover a smaller proportion of losses or broader parcels of land (in particular, "enterprise units," which comprise all of a producer's planted acres of a given crop in a given county; see Figure 2). The higher subsidies reflect the fact that those policies are less likely to trigger claim payments in any given year. (For

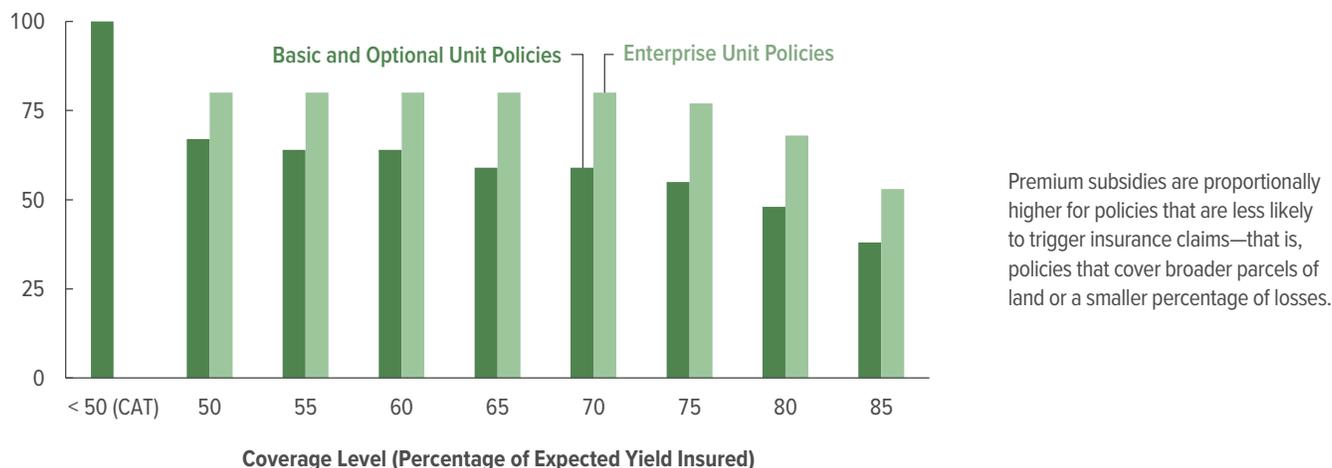
3. If excluding years in this manner leaves a producer with fewer than the minimum 4 years needed for calculating APH, that producer is assigned yields for the missing years based on a specific percentage of the county's 10-year historical average—for producers with no record, 65 percent for all 4 years; for producers with a 1-year record, 80 percent for the remaining 3 years; for producers with a 2-year record, 90 percent for the remaining 2 years; and for producers with a 3-year record, 100 percent for the remaining year. Department of Agriculture, Risk Management Agency, "Actual Production History (APH) Commodity Maps" (accessed June 19, 2017), [www.rma.usda.gov/news/currentissues/aph/index.html](http://www.rma.usda.gov/news/currentissues/aph/index.html).

4. Federal crop insurance policies provide coverage for losses incurred up to the point of planting in such "prevented planting" events.

Figure 2.

### Premium Subsidies for Federal Crop Insurance Policies, 2016

Percentage of Premium Paid by the Government



Source: Congressional Budget Office, using information from the Federal Crop Insurance Act (7 U.S.C. § 1508(i)(1)).

A basic unit policy covers a portion of a producer's single crop in a given county; crops on owned and rented land are insured separately. Optional unit policies are similar, but they further distinguish among crops that are planted in different locations or cultivated in different ways. Enterprise unit policies insure all of a producer's acreage of a single crop in a given county. CAT policies reimburse policyholders for 55 percent of their losses for yields that fall below 50 percent of expectations. Producers pay a fee to obtain CAT policies, and the federal government pays the entire premium.

CAT = catastrophic coverage.

example, the more acres a policy covers, the less likely it is for the overall yield to be low.) Premium subsidies range from 38 percent to 100 percent. Over the past five years, they have averaged 62 percent of total premiums.

On average, from 2000 through 2016, total claim payments amounted to 92 percent of the combined premium payments made by the producers and by the government. In 7 of those 17 years, however, claim payments exceeded the premiums.

**Reimbursement for Administrative and Operating Costs.** The A&O reimbursement is meant to cover crop insurers' costs of business operations—for example, the costs of salaries, record-keeping equipment, and independent crop insurance agents' commissions. In the private sector, insurance companies recover their A&O costs by factoring them into the premiums charged to policyholders. By contrast, in the crop insurance program, the federal government compensates insurers for those costs as a way of further reducing the price of insurance for producers.

The A&O reimbursement is calculated as a percentage of the policy premium; that percentage varies according to the type and, in some cases, the location of the insured crops. Since 2011, there has been both a ceiling and a floor on the total A&O reimbursement (A&O reimbursements have ranged from 11 percent to 16 percent of total premiums). Those limits on the reimbursement account for the fact that a company's A&O costs are generally not proportional to its policy premiums, which reflect expected losses and crop prices. A&O costs depend more directly on factors such as the number of policies sold, the acreage covered, and the degree of variation among available policies. An analysis prepared for the Department of Agriculture found that A&O costs for crop insurers have been comparable to or lower than those for other property and casualty insurers.<sup>5</sup>

Companies can compete for the crop insurance business of agricultural producers by offering greater compensation to the independent crop insurance agents with whom they work. However, negotiations between the

5. KPMG, *Federal Crop Insurance Program Delivery Cost Study: Final Research Paper* (March 14, 2015).

**Box 1.****The Standard Reinsurance Agreement**

The Standard Reinsurance Agreement (SRA) between the federal government and private crop insurance companies specifies the terms under which those parties share the risk associated with crop insurance policies. Provisions of the agreement vary according to the reinsurance fund in which policies are placed, the state in which insured crops are planted, and other factors. In all cases, risk sharing is determined in four steps.

First, crop insurance companies must assign each of their policy contracts to one of two reinsurance funds specific to each state—the Assigned Risk Fund or the Commercial Fund. By law, crop insurers must offer policies to all eligible producers in any state in which they operate; the two funds give them flexibility in deciding what portion of premiums and potential for gains and losses they want to retain and what portion to cede to the federal government. For policies allocated to the Assigned Risk Fund—which are typically higher-risk policies—companies retain a 20 percent interest in the premiums and the potential for gains and losses. Those contracts cannot represent more than 75 percent of a company’s crop insurance premiums in the state. All other policies are allocated to the Commercial Fund, and companies must retain at least a 35 percent interest in the premiums and the potential for gains and losses associated with those policies. However, a company can choose to increase the percentage retained for policies allocated to a given state’s Commercial Fund in increments of 5 percentage points.

Second, the gains and losses from the business that a private insurance company has chosen to retain are shared with the federal government. The shares depend on the magnitude of those gains and losses and vary by fund. For both funds, the greater the underwriting gains or losses, the greater the proportion of those gains or losses absorbed by the federal government. The shares for the Commercial Fund also vary by state, such that insurance companies receive a smaller proportion of gains and a larger proportion of losses from Commercial Fund policies in the five states in which crop insurance has historically been the most profitable (Illinois, Indiana, Iowa, Minnesota, and Nebraska).

Third, each insurance company cedes to the federal government 6.5 percent of its cumulative underwriting gain or loss (that is, the sum of gains and losses from both funds for all states once the previously described provisions of the SRA have been applied).

Fourth, in any year in which the federal government realizes an overall net gain, a small portion of that gain (1.5 percent) is distributed back to insurers operating in any of 17 states that have been historically underserved by insurance companies because of perceived limited opportunities for profit. (Those states are primarily in the Northeast but also include Alaska, Hawaii, Nevada, Utah, and Wyoming.) The amount of money disbursed to each of those companies is based on its share of the crop insurance business in those 17 states.

federal government and the crop insurance companies over the terms of the Standard Reinsurance Agreement (SRA, described below) led to limits on agents’ compensation, which took effect in 2011.

**Risk Sharing.** The SRA establishes the terms that govern the sharing of underwriting gains and losses between the federal government and private crop insurance companies (see Box 1). Under those terms, the federal government assumes a portion of the responsibility for policies that an insurance company has written, receiving a percentage of the associated premiums and assuming a percentage of the potential for gains and losses. Crop insurers have some discretion as to how much responsibility for policies the government bears. The federal government also shares in the gains and losses that private

insurance companies realize on the business they choose to retain.

Under the Federal Crop Insurance Act of 1980, in most cases, the government may renegotiate the SRA only once during each five-year period subsequent to the 2011 reinsurance year (July 1, 2010, through June 30, 2011).<sup>6</sup> The SRA currently in force took effect in the 2011 reinsurance year.

**Federal Spending on Crop Insurance**

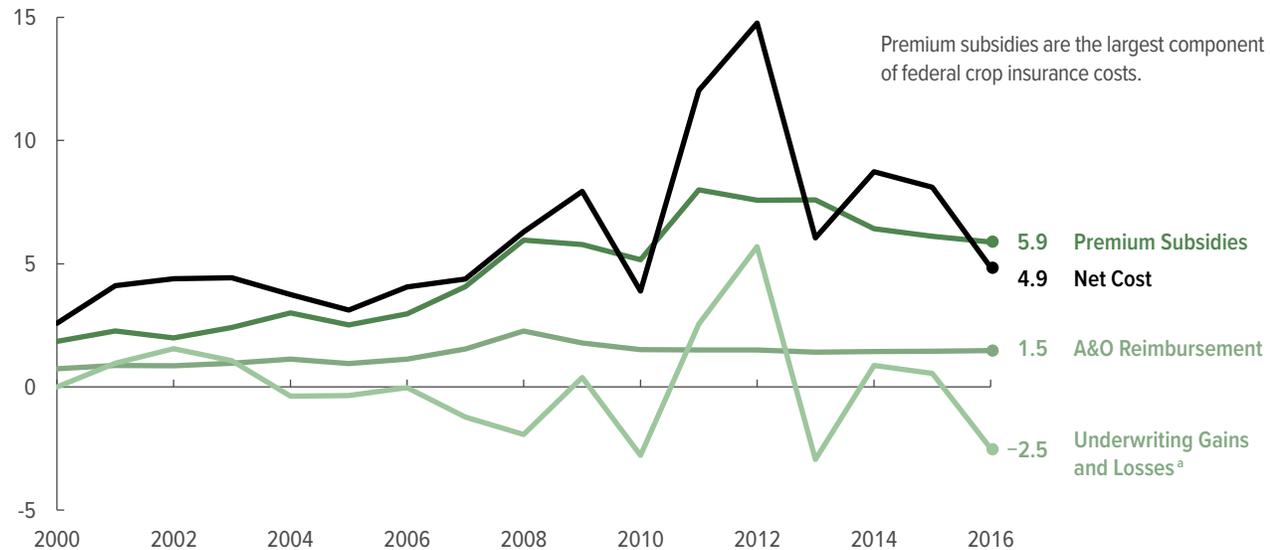
Federal costs for crop insurance averaged \$8.7 billion annually over the past five years. (Historical outlays are

6. Sec. 1508(k)(8)(A) of the Federal Crop Insurance Act of 1980, P.L. 96–365 (codified at 7 U.S.C. §1508(k)(8)(A) (2012)).

Figure 3.

### Net Federal Cost of the Crop Insurance Program and Components of Spending, 2000 to 2016

Billions of 2016 Dollars



Source: Congressional Budget Office, using data from the Department of Agriculture's Risk Management Agency.

The values shown do not include costs such as salaries for employees of the Department of Agriculture's Risk Management Agency and various research and development initiatives mandated under the Agriculture Risk Protection Act of 2000. Such costs average less than 3 percent of the total federal cost of the crop insurance program.

A&O = administrative and operating.

a. Positive values indicate losses; negative values indicate gains.

adjusted for inflation and measured in 2016 dollars.) Looking forward, CBO estimates that, under current law, annual federal costs for crop insurance would average \$7.7 billion, in nominal dollars, for fiscal years 2018 through 2027.

Among the three main components of the federal government's cost for the crop insurance program—premium subsidies, A&O reimbursements, and underwriting losses and gains—premium subsidies are the most costly (see Figure 3). Over the past five years, on average, they accounted for \$6.7 billion annually; reimbursements for A&O amounted to \$1.5 billion; and the federal government's share of underwriting losses was \$0.3 billion.<sup>7</sup>

The federal cost of premium subsidies is largely determined by crop prices. The rise in crop prices that began in 2006 and peaked for many crops in 2012 led the federal government to increase premiums for crop insurance policies in order to match the higher value of expected losses. As a result, the average annual federal cost for premium subsidies (on a per-acre basis) from 2007 through 2016 was more than twice the cost from 2000 through 2006. Federal costs for A&O reimbursements, which are also calculated as a percentage of premiums, increased as well, albeit more modestly. That more modest growth occurred because of reductions to A&O reimbursement rates mandated by the Food, Conservation, and Energy Act of 2008 (commonly known as the 2008 Farm Bill, Public Law 110-246) and inflation-adjusted limits to A&O reimbursements that went into effect in 2011 after the SRA negotiations between the federal government and crop insurers.

The federal government's underwriting costs depend on the occurrence of losses caused by insurable events,

7. Federal costs for the crop insurance program also include small amounts (less than \$200 million annually) for certain administrative salaries and expenses of the Department of Agriculture and various research and development initiatives.

Table 1.

### Claims Paid Under the Crop Insurance Program, by Cause of Loss, 2000 to 2016

Cause of Loss	Claims Paid (Billions of 2016 Dollars) <sup>a</sup>	Percentage of Total Claims Paid
Drought	45.4	38
Excess Precipitation or Moisture	28.7	24
Hail	8.2	7
Decline in Price	7.5	6
Cold Wet Weather, Cold Winter, Freeze, or Frosts	7.1	6
Heat	5.5	5
Wind	3.5	3
Failure of Irrigation Supply	1.6	1
Hurricane or Tropical Depression	1.3	1
Flood	1.4	1
Plant Disease	1.1	1
Other	1.6	1
Unspecified (Area plan crops only) <sup>b</sup>	5.3	4
<b>Total</b>	<b>118.3</b>	<b>100</b>

Source: Congressional Budget Office, using data from the Department of Agriculture's Risk Management Agency.

- a. Data are for crop years. The crop year varies by crop. It is a 12-month period that starts with the month in which the harvest of a specific crop typically begins.
- b. Area plan crops are covered by a specific type of insurance policy that provides coverage based on county yields instead of policyholders' individual yields. The data source does not identify the specific cause of loss.

including weather events. (Most researchers anticipate that the volatility of weather events and crop prices will increase as a result of climate change; see Box 2). Declines in crop yields resulting from a severe and widespread drought in 2012, for example, led to large underwriting losses. From 2000 through 2016, drought was the primary cause of the loss of insured crops, accounting for almost 40 percent of claims paid. Wet weather accounted for about 25 percent of claims paid. The next most significant causes of loss, accounting for between 5 percent and 7 percent of claims paid, were declines in crop prices and various conditions related to cold and hot weather (see Table 1).

### Federal Involvement in Crop Insurance

Insurance helps manage risk by using the financial resources of many people to reimburse losses that only some of those people incur. Insurance usually operates

through the private market. However, insuring against risks that can cause widespread and significant losses, such as those caused by floods or by terrorism, can be very costly when such events occur. In such cases, the federal government may play a role in making insurance available or otherwise providing compensation.

Insurers and agricultural producers might manage the risk of crop losses in a number of ways that might or might not involve the federal government. Given the possibility of using private means to help manage risks, there is an ongoing debate about the appropriate role of the federal government in the provision of crop insurance.

### Conditions That Inhibit Private Markets for Insurance

In private markets for insurance, policyholders pay a premium to insurance companies, which in turn assume responsibility for any significant losses. (Those premiums are intended to cover not only the company's expected claim payments but also its other costs, such as those for A&O activities.) Insurance companies generally anticipate being able to cover policyholders' losses and still remain profitable as long as at least two conditions are met:

- First, insurers offer protection against many risks that are unrelated to each other. That tends to make total losses reasonably predictable even when the losses from a single risk are hard to predict.
- Second, the company and the policyholders have similar expectations about the possibility of losses and understandings of the ways in which policyholders will act to reduce the risk of loss. That helps companies to price insurance products profitably.

Automobile insurance is one example of a market in which both conditions tend to hold. Individual policyholders' likelihood of loss are mostly unrelated, and the availability of demographic, geographic, and driving-history information allows for a shared understanding of the possibility of loss.

When both conditions are met, individuals can usually rely on insurance purchased through the private market to eliminate much of the risk that they face. When the two conditions are not met, insurers will have difficulty offering coverage at prices that allow them to cover

## Box 2.

**Climate Change and Federal Spending for Crop Insurance**

Changes in climate are generally expected to increase the variation in crop production by causing increases in extreme heat and drought, intensity of precipitation, soil erosion, and agricultural pests and diseases, as well as changes in soil moisture and water for irrigation.<sup>1</sup> Increased variation in crop production would heighten the risk of low crop yields in any given year and the volatility of crop prices. For that reason, climate change could be expected to affect the cost of the federal crop insurance program, but the extent of that variation in the future is very uncertain. Moreover, its impact would depend on many factors, including policy changes and technological change (for example, the development of crops that are more resilient in the face of drought, pests, and heat).

In a recent analysis, the Department of Agriculture estimated that by 2080, federal subsidies for crop insurance premiums could increase by anywhere from less than \$0.1 billion to \$2.3 billion annually, with an average of about \$1.0 billion (in 2016 dollars).<sup>2</sup> That range, which reflects the estimated impacts of the Intergovernmental Panel on Climate Change's unmitigated climate-change scenario using five different models of global change, indicates the potential effect of climate change on the crop insurance program.<sup>3</sup> It incorpo-

rates prospective increases in the premium subsidies for three crops—corn, soybeans, and wheat—that currently account for about 70 percent of the acres insured under the program.

The analysis does not fully reflect mechanisms in the crop insurance program that might lessen the federal government's budgetary exposure to changes in climate. It does not consider possible changes in crop insurance participation and coverage levels, even though the government can change policy premiums annually and premiums influence participation and coverage choices. The government can also change the availability of coverage for certain crops in certain locations as conditions for their production become more or less favorable. The analysis partially reflects this by allowing for the possibility that agricultural producers would shift their crop rotations to accommodate a changing climate, but it does not accommodate possibilities for shifting crops to entirely new locations.<sup>4</sup>

The uncertainties associated with global climate-change models and other models used in the analysis imply that the actual costs could be higher or lower than estimated. For example, the models do not account for anticipated declines in the supply of irrigation water or for increases in the frequency of certain types of storms. Nor do the models capture changes in crop prices due to climate-related events outside of the United States. Because crop prices are set in world markets, declines in production abroad would increase the value of insured production in the United States, leading to higher premiums and greater federal spending on crop insurance subsidies.

1. See E. Marshall and others, *Climate Change, Water Scarcity, and Adaptation in the U.S. Fieldcrop Sector*, USDA Economic Research Paper no. ERR-201 (Department of Agriculture, Economic Research Service, November 2015), <https://go.usa.gov/xn2Yk>; and Jerry M. Melillo, Terese (T.C.) Richmond, and Gary W. Yohe, eds., *Climate Change Impacts in the United States: The Third National Climate Assessment* (U.S. Global Change Research Program, 2014), <http://tinyurl.com/lyd9jzpe5>.

2. Executive Office of the President, *Climate Change: The Fiscal Risks Facing the Federal Government: A Preliminary Assessment* (November 2016), <http://tinyurl.com/ya2zmlhl> (PDF, 1.5 MB).

3. The range does not capture all aspects of uncertainty. For example, if global demand for crops was notably higher than the assumed annual growth rate of about 1 percent, the upper bound would be in the tens of billions of dollars.

4. Another analysis projects substantial potential shifts in both regional and national distributions for a wide range of major field crops. See Robert H. Beach and others, "Climate Change Impacts on Crop Insurance," RTI Project Number 0211911 (RTI International for the Department of Agriculture's Risk Management Agency, May 2010).

policyholders' potential losses while attracting enough business to remain profitable. That may be the case for crop insurance that covers losses from multiple causes that may affect a large number of policyholders at the same time. Generally, changes in commodity prices and weather events such as droughts have widespread impacts, and it can be difficult for insurers to absorb all of those losses at the same time. (Notably, crop insurance coverage that protects against only hail or fire is available on the private market without government subsidy. It is easier to assign a probability of loss to those specific hazards, and the impacts of hail and fire are limited in geographic scope.)

In addition, it is costly for crop insurance companies to gather information about the risk of loss for individual producers and to monitor producers' practices. Without sufficient information about risks, private insurers would be vulnerable to factors that could hurt their profitability: Producers who recognized that their expected claims exceeded their premiums would be more likely to purchase coverage than those in the opposite situation, and policyholders might operate in a way that increased their expected claim payments.

### **Determining the Role of the Federal Government in Crop Insurance**

A key question in determining the government's role in crop insurance is whether agricultural producers can manage their risk exposure through private means, without federal assistance. If not, is subsidizing crop insurance a more effective or more economical means for the government to protect producers against losses than providing supplemental assistance after widespread and substantial losses occur?<sup>8</sup> It is often argued that without sufficient federal subsidies for crop insurance, agricultural producers would not be able to affordably manage their risk, which would increase their reliance on supplemental assistance. A counterargument is that federal subsidies for crop insurance simply discourage agricultural producers from managing their risk exposure through private means.

### **Nongovernmental Resources for Managing Risk**

**Exposure.** Agricultural producers have ways to manage their risk exposure that do not involve federal support.

8. Supplemental assistance is provided separately from scheduled appropriations for agriculture. In the context of this discussion, it includes payments to crop producers for major losses attributable to natural disasters, as well as other unscheduled support.

For instance, producers can limit their exposure to localized weather-related losses by diversifying their planting locations, and they can limit losses from declines in the prices of individual crops by diversifying the crops they plant. Producers can also enter into several types of contracts that mitigate the risks associated with changes in commodity prices. Some examples are forward contracts, which represent a buyer's agreement to purchase crops at a predetermined time for a predetermined price; futures contracts, which are similar but involve commitments to a clearinghouse through which contracts may be publicly traded rather than direct agreements between buyers and sellers of crops; and options contracts, which establish the right, but not the obligation, to sell crops at a specified price.

In addition, producers can use income from nonfarm sources—such as off-farm work, the operation of other businesses, and investments—as a reserve in the event of losses in revenue from farming. Nonfarm income represents an important resource for most agricultural producers. For example, nonfarm sources account for roughly 95 percent of the income of small family farms (those with gross cash farm income of less than \$350,000 annually), which produce about one-fourth of the country's grains (including corn and wheat) and soybeans and about one-eighth of the country's cotton. Larger family farms and nonfamily farms draw roughly one-fifth of their income from nonfarm sources.<sup>9</sup> Household wealth represents an additional potential resource: 98 percent of farm households have wealth that exceeds the median wealth for all U.S. households. Although a significant proportion of farm households' wealth is held in the form of agriculture-related assets, such as land and equipment, producers can borrow against those assets.<sup>10</sup>

Crop insurance companies might increase their reliance on reinsurance purchased through the private market, rather than relying primarily on government-provided reinsurance, to guarantee their ability to pay many simultaneous claims. Estimates of reinsurance

9. Department of Agriculture, "2015 Agricultural Resource Management Survey," <https://go.usa.gov/xn2Yn>, and "Background on Farm Structure," *Amber Waves* (April 5, 2017), <https://go.usa.gov/xn2YQ>.

10. Department of Agriculture, "Income and Wealth in Context" (November 29, 2017), <https://go.usa.gov/xRh4S>, and "Farm Household Income and Characteristics" (November 29, 2017), <https://go.usa.gov/xn2YP>.

companies' resources suggest that those companies would be capable of managing the risks of significant and widespread agricultural losses in the United States. The capital of reinsurers in the global market (measured in both traditional and alternative forms, such as catastrophe bonds) was estimated at \$595 billion in 2016. For comparison, both public and private insurers of all types paid roughly \$55 billion in claims during that year. Over the past 10 years, claim payments for the global public and private insurance industry have averaged roughly \$60 billion a year.<sup>11</sup>

**Effects of Federal Subsidies on Participation in the Crop Insurance Program.** Historically, producers have responded to increases in subsidies by increasing their participation in the crop insurance program (see Figure 4). After the Federal Crop Insurance Reform Act of 1994 raised subsidies, the acreage covered through the program more than doubled, from 100 million acres in 1994 to 220 million acres in 1995.<sup>12</sup> However, that dramatic spike in enrollment was not entirely attributable to increased subsidies. It also reflected a requirement that producers had to have at least a CAT policy to be eligible for support through other federal programs, such as price-support and loan programs. That requirement changed a year later, such that producers without crop insurance coverage waived their eligibility for emergency crop loss assistance only. Still, covered acreage stood at more than 200 million acres in 1996, and it increased substantially thereafter as legislators increased subsidies for policies providing more coverage than CAT policies. After enactment of the most recent such legislation, the Agricultural Risk Protection Act of 2000, the number of acres enrolled in the program reached nearly 300 million by 2013, with 95 percent of the policies purchased offering greater levels of coverage than CAT policies.<sup>13</sup> Throughout that period, the amount of land used for

crops remained fairly constant at approximately 340 million acres.

Despite the increased participation following the increases in subsidies for crop insurance, it is difficult to determine whether current subsidies represent the most cost-effective way for the government to protect producers against losses. There is no agreed-upon estimate of how much participation in the program would change in response to a decrease in subsidies. A thorough analysis of how producers respond to changes in the cost of crop insurance is precluded by data limitations associated with the Federal Crop Insurance Act, which prohibits the disclosure of information furnished by individual policyholders.<sup>14</sup>

**Comparing Government Spending on Crop Insurance With Spending on Supplemental Assistance.** It is not possible to compare federal spending on the crop insurance program with spending on supplemental assistance that might have been provided in its absence, nor are data available with which to measure declines in federal assistance resulting from increases in spending on the crop insurance program. However, historical trends might shed light on their substitutability. From 1994 through 2010, even as participation in the crop insurance program grew, events continued to prompt spending on supplemental assistance for agriculture (see the bottom panel of Figure 4). However, there was no comparable supplemental assistance in response to more recent natural disasters—the flooding of the Mississippi River in 2011 and the drought of 2012, which was the most extensive to affect the country since the 1930s. In those two years, producers received significantly higher crop insurance claim payments, which suggests that greater participation in the crop insurance program can reduce the Congress's use of supplemental assistance. It is worth noting, however, that before 2011, lawmakers provided substantial supplemental assistance in some years despite significant participation in the crop insurance program.

## The Impact of the Crop Insurance Program on Different Groups

The crop insurance program affects producers, consumers, crop insurance companies, and taxpayers. Agricultural producers as a group benefit from the subsidies provided by the crop insurance program. Consumers

11. See Aon Benfield, *Reinsurance Market Outlook: Hurricane Harvey Highlights Protection Gap* (September 2017), <https://tinyurl.com/ycz7c3vk> (PDF, 1.6 MB).

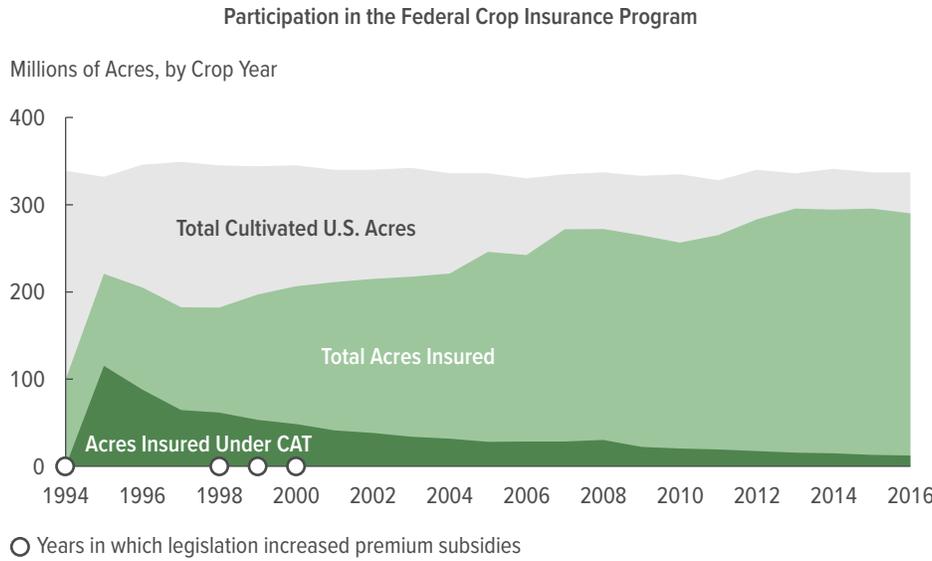
12. Federal Crop Insurance Reform Act of 1994, P.L. 103–354.

13. CBO focuses on measuring program participation in terms of acreage rather than in terms of federal spending in its examination of the impact of the crop insurance program on supplemental assistance. Total spending reflects increases in the extent of coverage chosen by producers, and those higher coverage levels might provide greater federal support to individual producers than disaster-related supplemental assistance would. See Carl Zulauf and Gary Schnitkey, "Increasing Crop Insurance Coverage Levels: An Assessment," *Farmdoc Daily*, vol. 6, no. 119 (June 23, 2016), <https://tinyurl.com/y947oa6j>.

14. Sec. 1502(c)(1) of the Federal Crop Insurance Act of 1980, P.L. 96–365 (codified at 7 U.S.C. § 1502(c)(1) (2012)).

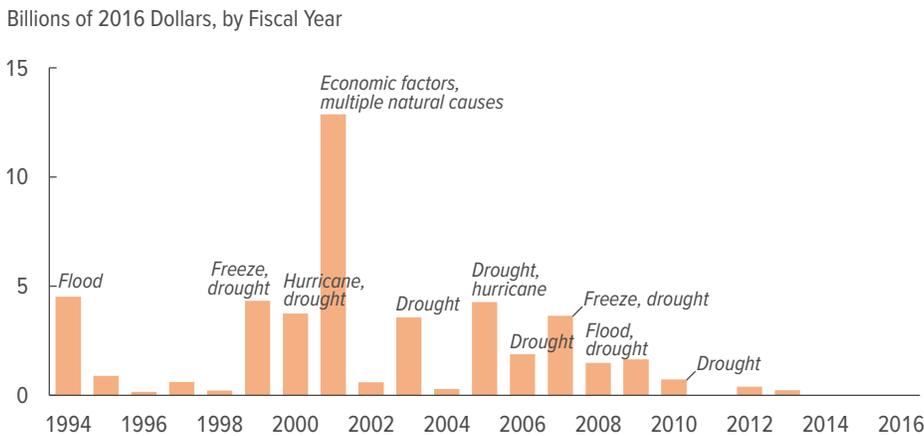
Figure 4.

**Participation in Federal Crop Insurance and Supplemental Assistance for Agriculture, 1994 to 2016**



In response to increases in subsidies, more producers participated in the federal crop insurance program, and they chose policies offering greater levels of coverage.

**Supplemental Assistance for Agriculture**



However, supplemental assistance for agriculture totaled \$1 billion or more for several years after those increases in subsidies.

Source: Congressional Budget Office, using data and information from the Department of Agriculture’s Risk Management Agency, the Congressional Research Service, and a review of enacted legislation.

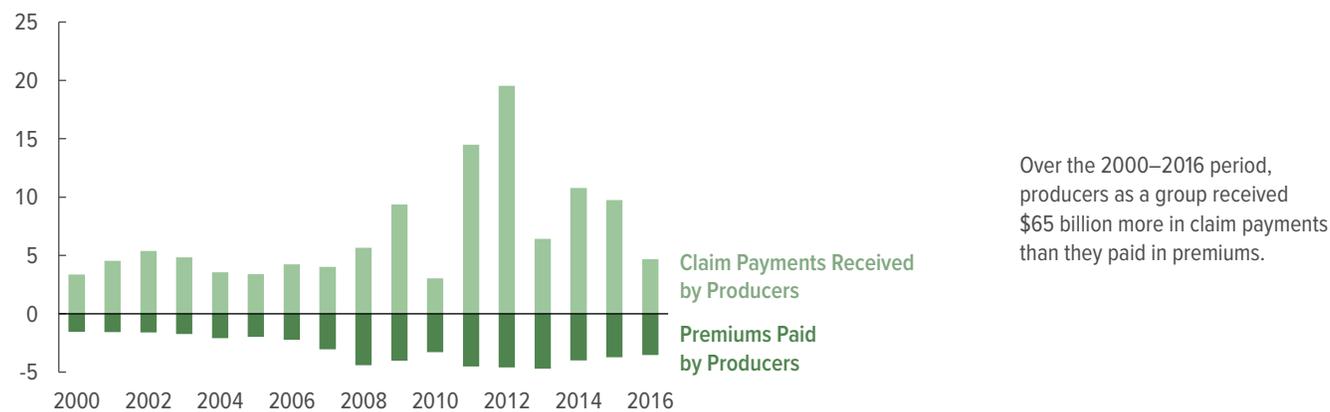
The bottom panel identifies the reasons for supplemental assistance in all years that it totaled more than \$1 billion. That assistance, which is provided separately from scheduled appropriations, consists of payments to crop producers for major losses attributable to natural disasters and other unscheduled support that addresses the types of perils covered by crop insurance. It does not include support provided through market-loss payments to producers to compensate for low commodity prices; standing disaster programs created by the Food, Conservation, and Energy Act of 2008; or nonfarm programs.

CAT = catastrophic coverage.

Figure 5.

### Total Claim Payments Received and Premiums Paid by Producers Under the Crop Insurance Program, 2000 to 2016

Billions of 2016 dollars



Source: Congressional Budget Office, using data from the Department of Agriculture's Risk Management Agency.

may derive a small benefit from the program in the form of slightly lower food prices caused by increases in the cultivation of major crops such as corn, soybeans, and wheat. Crop insurance companies may earn greater profits through the program than other property and casualty insurers earn in the private market, but the evidence for that advantage is not definitive. Taxpayers bear the cost of the program, but it is uncertain whether that cost is higher or lower than the cost of supplemental assistance might be in the program's absence.

#### Producers

Producers as a group benefit from the crop insurance program primarily because taxpayers bear a large portion of the costs.<sup>15</sup> From 2000, when the basis for current premium subsidies was established, through 2016, producers as a group received about \$65 billion more in claim payments than they paid in premiums (see Figure 5). In effect, producers received an average of \$2.22 for each dollar they paid. Of course, like all insurance policyholders, agricultural producers must incur losses to receive claim payments, and there is always a portion of the total loss—known as the deductible—that is borne solely by the policyholder. However, even in the

states distinguished by the SRA as having the lowest risks (on the basis of their historical underwriting losses), crop insurance policyholders as a group received an average of \$1.56 in claim payments for each dollar they paid in premiums.<sup>16</sup> By contrast, from 2000 through 2015, both homeowners insurance and auto insurance policyholders received only about \$0.60 in claim payments, on average, for each dollar they spent on insurance. Some research indicates that a producer's decision about crop insurance coverage may be better explained as an investment decision than as a choice about how to manage the risk associated with farming.<sup>17</sup>

#### Consumers

Consumers' benefits from the crop insurance program are likely to be small. Empirical estimates suggest that the crop insurance program has had a small impact on the total production of the domestic field crops most central to the nation's food supply—corn, soybeans, and

15. Although producers benefit from the crop insurance program, under international trade rules it is considered to have minimal or no trade-distorting effects. See World Trade Organization, "Uruguay Round Agreement on Agriculture," part XIII, article 21, annex 2, <http://tinyurl.com/y975ev4y>.

16. Those states are the so-called Corn Belt states of Illinois, Indiana, Iowa, Minnesota, and Nebraska. Of course, not every producer benefits every year, and outcomes can vary dramatically across crops as well as regions. CBO could not conduct an analysis at the level of individual crop insurance policies because by law, crop insurance information furnished by individual producers is not available.

17. Bruce A. Babcock, "Using Cumulative Prospect Theory to Explain Anomalous Crop Insurance Coverage Choice," *American Journal of Agricultural Economics*, vol. 97, no. 5 (October 2015), pp. 1371–1384, <https://doi.org/10.1093/ajae/aav032>.

wheat, which also account for roughly 70 percent of the acreage enrolled in the program. One recent analysis estimated that increases in participation in the crop insurance program in the mid-1990s and early 2000s increased the cultivated acreage of those crops by only about 1 percent.<sup>18</sup> (Figure 4 shows the consistency in cultivated acreage during that period.) That estimate is roughly consistent with estimates from previous analyses that examined one or both periods of increased participation and a wider range of crops and found 0.2 percent to 1.1 percent increases in cultivated acreage.<sup>19</sup> Studies suggest that the crop insurance program may have a greater influence on producers' choices about which field crops to plant, but those estimated effects are also modest.<sup>20</sup>

Commodity prices are determined primarily in world markets, and production in the United States accounts for about one-third of global corn and soybean production, about one-fifth of global cotton production, and about one-twentieth of global wheat production. Given

the importance of U.S. production to world markets, it is likely that the small increase in production attributable to the crop insurance program has exerted some small downward pressure on the prices of those globally traded commodities.

A small change in commodity prices would not, however, translate fully into lower food prices. From 2000 through 2015, commodity prices accounted for only about 10 percent of the retail cost of domestically produced food. Consequently, small changes in commodity prices translate into even smaller changes in food prices. In fact, even large changes in commodity prices over the 2000–2015 period translated into only modest changes in food prices (see Figure 6).

### Crop Insurance Companies

Some evidence suggests that insurers in the crop insurance program earn greater profits than other property and casualty insurers earn in the private market. That evidence is not definitive, however. CBO attempted to assess whether the program provides a benefit to crop insurers by comparing their rates of return on equity with those of similar property and casualty insurers in the private market, including homeowners and automobile insurers. Rates of return on equity provide a comprehensive measure of profitability that reflects the information guiding private investors' decisions.

Previous research—two reports prepared by an outside consultant for the Department of Agriculture and one prepared by the Government Accountability Office (GAO)—has found that crop insurance providers earn a higher rate of return than other comparable insurers.<sup>21</sup> The methods used in those reports have shortcomings, however, stemming in part from the fact that crop insurers' rate of return on equity is not reported in publicly

18. Roger Claassen and others, *Grassland to Cropland Conversion in the Northern Plains: The Role of Crop Insurance, Commodity, and Disaster Programs*, ERR-120 (Department of Agriculture, Economic Research Service, June 2011), <https://go.usa.gov/xn2YV>.

19. Barry K. Goodwin, Monte L. Vandever, and John L. Deal, "An Empirical Analysis of Acreage Effects of Participation in the Federal Crop Insurance Program," *American Journal of Agricultural Economics*, vol. 86, no. 4 (November 2004), pp. 1058–1077, <https://doi.org/10.1111/j.0002-9092.2004.00653.x>; Ruben N. Lubowski and others, *Environmental Effects of Agricultural Land-Use Change: The Role of Economics and Policy*, ERR-25 (Department of Agriculture, Economic Research Service, August 2006), <https://go.usa.gov/xn2Yp>; and C. Edwin Young, Monte Vandever, and Randall D. Schnepf, "Production and Price Impacts of U.S. Crop Insurance Programs," *American Journal of Agricultural Economics*, vol. 83, no. 5 (December 2001), pp. 1196–1203, <https://doi.org/10.1111/0002-9092.00267>.

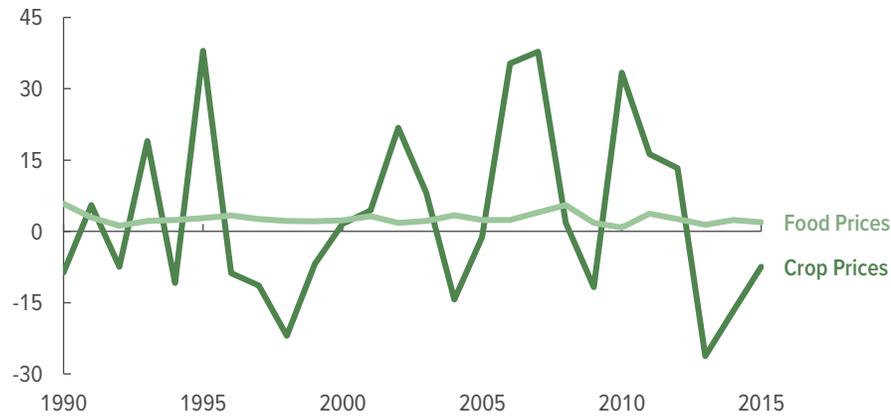
20. Barry K. Goodwin, Monte L. Vandever, and John L. Deal, "An Empirical Analysis of Acreage Effects of Participation in the Federal Crop Insurance Program," *American Journal of Agricultural Economics*, vol. 86, no. 4 (November 2004), pp. 1058–1077, <https://doi.org/10.1111/j.0002-9092.2004.00653.x>; Cory G. Walters and others, "Crop Insurance, Land Allocation, and the Environment," *Journal of Agricultural and Resource Economics*, vol. 37, no. 2 (August 2012), pp. 301–320, [www.jstor.org/stable/23496715](http://www.jstor.org/stable/23496715); C. Edwin Young, Monte Vandever, and Randall D. Schnepf, "Production and Price Impacts of U.S. Crop Insurance Programs," *American Journal of Agricultural Economics*, vol. 83, no. 5 (December 2001), pp. 1196–1203, <https://doi.org/10.1111/0002-9092.00267>.

21. David Appel and Philip S. Borba, *Historical Rate of Return Analysis* (prepared by Milliman, Inc., for the Department of Agriculture's Risk Management Agency, August 18, 2009), <https://go.usa.gov/xn4hM> (PDF, 318 KB); David Appel and Philip S. Borba, *Rate of Return Update—2008: Reasonable Rate of Return* (prepared by Milliman, Inc., for the Department of Agriculture's Risk Management Agency, June 23, 2009), <https://go.usa.gov/xnU68> (PDF, 380 KB); and Government Accountability Office, *Crop Insurance: Opportunities Exist to Improve Program Delivery and Reduce Costs*, GAO-17-501 (July 2017), [www.gao.gov/products/GAO-17-501](http://www.gao.gov/products/GAO-17-501).

Figure 6.

### Changes in Crop Prices and Food Prices, 1990 to 2015

Annual Percentage Change



Food prices vary little, even when crop prices change dramatically, which implies that decreases in crop prices have little effect on consumers' cost of food.

Source: Congressional Budget Office, using data from the Department of Agriculture's Economic Research Service.

Crop prices reflect the production-weighted average for corn, soybeans, and wheat. Food prices are based on the consumer price index for food.

available financial statements and must be estimated.<sup>22</sup> The reports prepared for the Department of Agriculture estimated rates of return on a book-value basis for crop insurers but on the basis of stock market prices for other types of property and casualty insurers. The problem with that approach is that book values and market values of equity typically differ: Book values reflect financial accounting measures, but they do not capture companies' worth from the perspective of investors. An ideal comparison would examine the two groups' rates of return on a market-value basis, but data for such a comparison are not available. GAO calculated crop insurers' rate of return using a different measure—retained premiums—that is directly reported, which eliminates the need to estimate its value. However, crop insurers' rate of return on retained premiums may be even less comparable to other property and casualty insurers' rate of return on equity on a market-value basis.

To avoid using inconsistent measures to compare the two groups' rates of return, CBO used a different approach, analyzing rates of return on a book-value basis for both

groups. Specifically, CBO examined the earnings of crop insurers and other property and casualty insurers from 1992 through 2015 using available data on a book-value basis.

The results of that analysis suggest that from 1992 through 2015, crop insurers realized a greater average rate of return on equity than other property and casualty insurers did. However, enough uncertainty surrounds the values needed to make such a calculation for crop insurers as to preclude CBO from providing a quantitative estimate of that rate of return, given the information available to the agency at the time of publication. (According to their financial statements, property and casualty insurers in the private market earned a rate of return on equity of roughly 8 percent, on average; see Appendix A for more details about estimating average rates of return for both groups.)

The difference in rates of return cannot be explained by differences in risk between crop insurers and other property and casualty insurers. It is not necessary to include a risk-adjustment factor in the analysis because almost all of the companies that offer crop insurance are also in the business of providing many other lines of property and casualty insurance. As such, investors in a diversified insurance company would not require an additional return for crop insurance claims that are unlikely to be correlated with other risks facing the company.

22. No publicly traded companies provide only multiple-peril crop insurance. Moreover, the publicly traded companies that offer multiple-peril crop insurance in addition to other types of insurance do not show the data for crop insurance separately in their financial reports. See the 1993–2014 editions of A.M. Best Company, *Best's Aggregates & Averages: Property/Casualty, United States and Canada* (A.M. Best Company, 1993–2014).

Table 2.

### Factors That Introduce Uncertainty in the Estimated Rate of Return on Equity for Crop Insurers

Factors That Introduce Uncertainty	Could This Factor Alone Reverse CBO's Estimation That Crop Insurers Earn a Higher Rate of Return Than Other Property and Casualty Insurers? <sup>a</sup>
<b>Factors Indicating That Crop Insurers' Gains Might Be Overestimated</b>	
The A&O reimbursement might fall short of crop insurers' A&O costs	Probably not
Crop insurers' returns might be lower under the SRA that went into effect in 2011 compared with previous agreements	Probably not
CBO's estimate of crop insurers' equity might be too low	Probably not
Crop insurers' losses during the 1992–2015 period might have been unusually low	Probably not
<b>A Factor Indicating That Crop Insurers' Gains Might Be Underestimated</b>	
Crop insurers might have less reinsurance risk compared with other insurers	No
<b>Other Factors Indicating That Crop Insurers' Gains Might Be Different Than Estimated</b>	
Crop insurers' return on invested assets might differ from that for the property and casualty insurance industry as a whole	No
Crop insurers and other property and casualty insurers might not have the same relative amounts of debt and equity	No

Source: Congressional Budget Office.

A&O = administrative and operating; SRA = Standard Reinsurance Agreement.

a. Although in CBO's evaluation, no single factor introduces sufficient uncertainty to reverse the agency's estimation that crop insurers earn a higher rate of return than other property and casualty insurers, multiple factors in combination could conceivably do so.

A number of factors introduce uncertainty in the comparison of the two groups' rates of return on equity; some of those factors may overstate crop insurance companies' gains from the program, and others may understate those gains (see Table 2). Key among those factors are the unsettled debate about whether A&O reimbursements match actual A&O costs; the fact that until more time has passed, it will not be possible to determine whether the terms of the most recent SRA have reduced crop insurers' average rate of return on equity; and difficulties in estimating crop insurers' equity. Although in CBO's evaluation, no single factor is sufficient to make the rate of return for crop insurers lower than that for other property and casualty insurers, the combined effect of multiple factors could conceivably do so. (That might be the case if, for example, A&O reimbursements fall substantially short of A&O costs under the current SRA and crop insurers' equity is substantially larger than estimated.)

**Factors Indicating That Crop Insurers' Gains From the Program Might Be Overestimated.** Four factors suggest that crop insurers' rate of return might be overstated. First, CBO's estimate of crop insurers' returns treats the

A&O reimbursement as equal to actual A&O costs. Some analyses sponsored by companies that provided federal crop insurance have determined that reimbursements have fallen short of the A&O costs reported by insurers.<sup>23</sup> Using the figures on A&O costs provided in one of those reports makes the rate of return on equity for crop insurers much closer to that for other property and casualty insurers.

Second, if the terms of the most recent SRA prove to be less profitable for crop insurers than those of previous SRAs, the long-term comparison over the 1992–2015 period might overstate the gains that crop insurers can expect to receive from the program. The current SRA has been in effect only since 2011, and CBO's comparison of rates of return for 2011 through 2015 yields a comparable rate of return for crop insurers and other property and casualty insurers.<sup>24</sup> However, earnings over

23. For example, see National Crop Insurance Services, *Federal Crop Insurance Program: Profitability and Effectiveness Analysis, 2016 Update for Reinsurance Year 2015* (prepared by Grant Thornton, March 2017), <https://tinyurl.com/ydcqdhca> (PDF, 349 KB).

24. Some research using different measures to estimate the crop insurers' rate of return on equity finds even lower returns for this

the 2011–2015 period were influenced by unusually large losses due to drought in 2012, and because insurers use their earnings in typical years to cover claim payments in years in which policyholders incur substantial losses, the earnings are best compared over a long period of time. A comparison for the 2009–2015 period yields results similar to those for the 1992–2015 period.

Third, if CBO's estimate of crop insurers' equity is too low, then their actual rate of return would be smaller than indicated. To estimate crop insurers' equity, CBO multiplied the value of equity for the property and casualty insurance industry as a whole by the ratio of crop insurers' premiums and reserves to property and casualty insurers' premiums and reserves. In an examination of year-to-year changes, CBO found the return on equity to be more volatile for crop insurers than for the property and casualty industry as a whole.<sup>25</sup> Higher volatility in returns implies more reliance on equity to absorb losses; the greater volatility in returns faced by crop insurers thus indicates that they might maintain more equity relative to premiums and reserves than property and casualty insurers do. However, because reserves might vary more than premiums over the course of a year, CBO also estimated crop insurers' equity using a similar calculation that excluded the two groups of insurers' reserves.<sup>26</sup> Using that measure doubles the estimate of crop insurers' equity, but the estimate of their rate of return remains above that for other property and casualty insurers.

Fourth, crop insurers' long-term rate of return could be smaller than CBO estimates if they experienced lower-than-expected losses during the 1992–2015 period CBO examined. Crop insurers experienced both gains and

losses over that period, but there were substantial losses in 1993 (because of significant flooding) and in 2012 (because of drought). However, even with an additional year of loss on par with the worst annual loss of the period (in place of a year of average losses), crop insurers would still have earned a greater average rate of return on equity than their property and casualty insurance counterparts, according to CBO's estimates.

**A Factor Indicating That Crop Insurers' Gains From the Program Might Be Underestimated.** One factor suggests that the estimated difference in the rates of return may understate insurers' gains from the crop insurance program. The private reinsurance relied upon by property and casualty insurers is less secure than the federal reinsurance primarily relied upon by crop insurers.<sup>27</sup> That is because private reinsurers have a relatively greater risk of failure compared with the federal government. Part of the rate of return for property and casualty insurers compensates for their greater reinsurance risk. By contrast, the rate of return for crop insurers does not have to include as much compensation for reinsurance risk.

**Other Factors Indicating That Crop Insurers' Gains From the Program Might Be Different Than Estimated.** Finally, two factors introduce uncertainty that is difficult for CBO to evaluate, although it is unlikely that either could make the rate of return for crop insurers lower than that for other property and casualty insurers.

First, because it is usually less expensive for a business to obtain funds by borrowing than by selling a stake in the company, CBO would ideally compare the two groups' rates of return on capital, which would reflect their relative amounts of debt and equity. However, because of the limited data available for crop insurance companies, CBO's analysis takes the relative amounts of debt and equity to be the same for the two groups of insurers and focuses on comparing their rates of return on equity.

Second, to estimate one component of crop insurers' return on equity—investment income on equity—CBO uses the average rate of return on invested assets earned by the property and casualty industry as a whole.<sup>28</sup> CBO

time period. See Gary Schnitkey and others, *Evaluation of Returns and Delivery Costs of Private Crop Insurance Companies* (prepared for the National Corn Growers Association, January 2017), <https://tinyurl.com/y7kzkf4>.

25. This is unsurprising because crop insurance is a single line of business. In contrast, the property and casualty industry as a whole represents diversified risk across many different lines of business.
26. Most property and casualty insurers incorporate A&O costs into their premiums. Crop insurers, however, are reimbursed separately for A&O costs, so their premiums do not reflect those costs. Therefore, CBO included the A&O reimbursements as part of premiums both when using the ratio of crop insurers' premiums and reserves to property and casualty insurers' premiums and reserves as well as when using the ratio of just premiums.

27. Although crop insurers purchase some reinsurance through the private market, most of their business is reinsured by the federal government.

28. For most lines of property and casualty insurance, equity is less than invested assets because insurers can invest the funds

takes this approach because almost all of the companies that offer crop insurance also provide many other lines of property and casualty insurance. Nevertheless, if crop insurers' average rate of return on invested assets differed from that for the property and casualty insurance industry as a whole, their rate of return on equity could differ from CBO's estimate.

### Taxpayers

Taxpayers pay for the majority of the costs of the crop insurance program. Whether those costs are lower than the costs of supplemental assistance would be in the program's absence is an open question. Two conditions would have to be met. First, widespread participation in crop insurance would have to discourage supplemental assistance. Participation in crop insurance has been fairly widespread for some time, but reductions in supplemental assistance in response to agricultural disasters are observable only after 2010, which calls the relationship between the two into question (see Figure 4). Second, the amount of avoided supplemental spending would have to exceed the cost of the crop insurance program. That seems possible because supplemental assistance, if designated in law as being for disaster relief, is not subject to normal budget controls, and the sense of urgency may limit scrutiny in spending. However, the support provided to producers through supplemental assistance may not be as great as that provided through the federal crop insurance program. There is inadequate evidence to determine which of the two forms of support in isolation would involve greater federal spending.

### Policy Options

Lawmakers have expressed concern about the cost of the federal crop insurance program and about the relationship between the program's expenditures and producers' participation. They could alter the program to trim federal support and achieve budgetary savings, but doing so would probably have some impact on participation. Unfortunately, as described in more detail below, there is no consensus measure of exactly how much participation in the program changes in response to changes in federal support. Moreover, data limitations preclude a more thorough analysis of that question.

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available to them through their insurance operations (for example, premiums received but not yet used to make claim payments) and the funds that make up their reserves. That is not necessarily the case for the crop insurance line, however, because the structure of the crop insurance program affords companies less opportunity to invest such funds.

Features of the program that might be changed include:

- The ways in which losses are calculated,
- Premium subsidies for producers' crop insurance policies,
- Reimbursements to crop insurance companies for A&O costs, and
- The expected rate of return for crop insurance companies reflected in the SRA.

CBO projects that if the crop insurance program continued as it is structured under current law, federal spending on it would total \$77 billion over the 2018–2027 period. CBO has estimated how implementing a number of policy changes in 2019 would affect that spending (see Table 3 and Appendix B). The projected potential savings, expressed in nominal dollars, range from less than half a billion dollars to \$19.2 billion. CBO has also estimated, where possible, the effect of the policy options on participation in the crop insurance program.

### Options That Would Restrict the Ways in Which Producers' Losses Are Calculated

Currently, policies offered through the crop insurance program allow for flexibility in how losses are calculated. Limiting that flexibility—whether by establishing a fixed benchmark for calculating losses when policies are purchased or by reducing producers' ability to adjust their actual production history—would achieve budgetary savings.

**Disallow the Use of Harvest Prices to Measure Losses for Revenue Policies.** Most producers purchase revenue policies that value losses on the basis of whichever is greater: the projected price of crops at the time the policy was purchased or the price of crops at harvest. Although harvest prices are usually lower than projected prices, circumstances such as a decline in production because of bad weather can elevate the harvest price above the projected price. When that happens, losses covered by such policies are valued at a higher price than anticipated when the policies were purchased. Disallowing the use of harvest prices to measure losses would prevent such outcomes.

CBO estimates that under this option, federal spending on the crop insurance program from 2018 through 2027

Table 3.

<b>Policy Options and Their Projected Budgetary Effects</b>	
Billions of Dollars	
<b>Option</b>	<b>Change in Outlays, 2018–2027</b>
Restrict the Ways in Which Producers' Losses Are Calculated	
Disallow the use of harvest prices to measure losses for revenue policies	-19.2
Reduce producers' ability to adjust their APH <sup>a</sup>	-2.0
Change Premium Subsidies for Crop Insurance Policies	
Reduce premium subsidies by an average of 15 percentage points	-8.1
Reduce premium subsidies by an average of 15 percentage points for producers with AGI greater than \$500,000	-0.4
Limit the premium subsidy for each producer to \$50,000 annually	-3.4
Change the Reimbursement for Insurers' A&O Costs	
Limit the A&O reimbursement to 9.25 percent of premiums	-2.8
Eliminate A&O reimbursements, allowing insurers to charge policyholders for A&O costs	-10.2
Change the Terms of Risk Sharing Under the SRA	
Lower the expected rate of return of crop insurers by an average of 2 percentage points	-1.4

Source: Congressional Budget Office.

AGI = adjusted gross income; APH = actual production history; A&O = administrative and operating; SRA = Standard Reinsurance Agreement.

a. This option would limit to three the number of years for which yields can be excluded from a producer's APH; apply a 50 percent yield to APH for years in which producers receive a prevented planting payment; and eliminate the trend adjustment, through which each yield in APH is adjusted upward.

would decrease by about 25 percent, or \$19.2 billion. Moreover, CBO anticipates that producers would insure 2.5 million fewer acres (out of a total of 300 million acres) and lower their level of coverage on 20 million acres.<sup>29</sup> The estimated savings reflect the fact that producers who decided to purchase crop insurance would have to choose between yield policies and revenue policies that simply valued losses relative to projected prices—both of which are backed by less expensive subsidies than policies that allow flexibility in that valuation. Data from 2016 indicate that more than three-quarters of all federal crop insurance policies would be affected by this option.

This option would have the advantage of reducing spending while preserving producers' choice between federally subsidized yield insurance and federally subsidized revenue insurance. One drawback of this option is that it would end subsidies for policies that producers can use to manage the risk associated with entering into a

forward contract to sell crops. Under a forward contract, producers agree that at the time of harvest, they will supply a given quantity of a crop at a projected price. If the producers' yield falls short of the contracted quantity, they must replace the shortfall by purchasing the crop from other producers. A revenue policy that compensates them for low yields on the basis of the projected price would not provide enough money for them to purchase replacement crops at a higher harvest price.

**Reduce Producers' Ability to Adjust Their Actual Production History.** This option would make three changes to the APH calculation. First, it would allow producers to exclude no more than 3 years from their APH on the basis of their county's average yield (regardless of crop, year, location, or other factors that currently allow up to 10 years to be excluded). Second, instead of being excluded from the APH calculation, any year in which a producer was prevented from planting would be assigned a yield equal to 50 percent of the county's average yield for the crop. Third, this option would eliminate the trend adjustment factor, which revises yields in the APH calculation upward to account for improvements in crop genetics and agricultural practices over time.

29. CBO expects that producers who reduce their coverage would mostly move from policies covering 70 percent or 80 percent of losses to policies covering 60 percent of losses or from policies covering 85 percent of losses to policies covering 65 percent of losses.

If lawmakers elected to make those changes, the benchmarks against which losses are measured would generally be lower. Consequently, CBO estimates that federal spending from 2018 through 2027 would decrease by \$2.0 billion. One advantage of this option is that if low yields represent fundamental changes in production capacity rather than temporary setbacks, claim payments made under the crop insurance program would better reflect realistic outcomes. Another advantage is that producers prevented from planting an insured crop would have no incentive to forgo the production of an alternative crop. Under current policy, doing so leaves producers' APH unchanged and thus maintains the extent of their insurance protection in future years. By contrast, producers who plant a replacement crop must include a lower-than-usual yield for the unplanted, insured crop in their APH calculation.

One disadvantage of this option is that it would reduce protections for potentially temporary conditions that depress yields. Another is that it would circumscribe the protection for yields that might be realistically expected to increase because of improved technology and farming practices. That could particularly affect producers whose APH is based on a longer production history.

### Options That Would Change Premium Subsidies for Crop Insurance Policies

Lawmakers could lower premium subsidies, which account for four-fifths of the federal cost of the crop insurance program. Doing so would reduce the financial support provided to agricultural producers; as a result, producers' participation in the program would probably decrease, and some participants would probably reduce the extent of their coverage. The budgetary effects of changes to premium subsidies, and thus changes to the cost of crop insurance for producers, would depend on how those changes influenced producers' demand for crop insurance.

Most empirical studies have found a weak link between producers' demand for crop insurance and the costs of the policies.<sup>30</sup> However, much of that work has potential

shortcomings. First, many studies have examined periods before 1997 and therefore do not reflect the availability—or popularity—of revenue policies, which were introduced in that year. Second, some of the analytical designs may not adequately address the fact that the extent of coverage chosen by a producer is a determinant of the premium subsidy and, thus, of the cost of the policy. To account for that connection, analytical designs need to use a substitute measure for the cost of a policy that is unrelated to demand, including demand in the form of chosen coverage levels. However, it is unclear whether the substitute measures used in the literature are truly unrelated to the demand for crop insurance. In some cases, studies have used no substitute measure because they examined periods during which one coverage level was the dominant choice for policyholders.<sup>31</sup> Preliminary work that uses more recent data to better reflect the prevalence of revenue policies and relies on a new substitute measure for the cost of the policies

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org/10.2307/1242927; Barry K. Goodwin, Monte L. Vandever, and John L. Deal, "An Empirical Analysis of Acreage Effects of Participation in the Federal Crop Insurance Program," *American Journal of Agricultural Economics*, vol. 86, no. 4 (November 2004), pp. 1058–1077, <https://doi.org/10.1111/j.0002-9092.2004.00653.x>; Erik J. O'Donoghue, *The Effects of Premium Subsidies on Demand for Crop Insurance*, ERR-169 (Department of Agriculture, Economic Research Service, July 2014), <https://go.usa.gov/xnbuf>; Timothy J. Richards, "A Two-Stage Model of the Demand for Specialty Crop Insurance," *Journal of Agricultural and Resource Economics*, vol. 25, no. 1 (July 2000), pp. 177–194, [www.jstor.org/stable/40987055](http://www.jstor.org/stable/40987055); and Saleem Shaik and others, "Crop Revenue and Yield Insurance Demand: A Subjective Probability Approach," *Journal of Agricultural and Applied Economics*, vol. 40, no. 3 (December 2008), pp. 757–766, <https://doi.org/10.1017/S1074070800002303>. See also Government Accountability Office, *Considerations in Reducing Federal Premium Subsidies*, GAO-14-700 (August 2014), [www.gao.gov/products/GAO-14-700](http://www.gao.gov/products/GAO-14-700).

31. For example, under the Federal Crop Insurance Act of 1980, when only yield policies were available, producers chose from three levels of coverage (50 percent, 65 percent, and 75 percent) and three price guarantees (low, medium, and high values determined by price forecasts). The federal government paid 30 percent of the premium for the lower levels of coverage (50 percent and 65 percent), and the dollar amount of the subsidy for producers who chose 75 percent coverage was the same as that for producers who chose 65 percent coverage. In one sample of Kansas wheat farmers who participated in the crop insurance program, examined from 1987 to 1990, about 90 percent chose 65 percent coverage and almost all chose the high price guarantee. See Keith H. Coble and others, "Modeling Farm-Level Crop Insurance Demand With Panel Data," *American Journal of Agricultural Economics*, vol. 78, no. 2 (May 1996), pp. 439–447, <https://doi.org/10.2307/1243715>.

30. Keith H. Coble and others, "Modeling Farm-Level Crop Insurance Demand With Panel Data," *American Journal of Agricultural Economics*, vol. 78, no. 2 (May 1996), pp. 439–447, <https://doi.org/10.2307/1243715>; Barry K. Goodwin, "An Empirical Analysis of the Demand for Multiple Peril Crop Insurance," *American Journal of Agricultural Economics*, vol. 75, no. 2 (May 1993), pp. 425–434, <https://doi.org/10.2307/1243715>.

suggests that policyholders' choices about coverage may change more than previously estimated in response to changes in price.<sup>32</sup>

**Reduce Premium Subsidies by an Average of 15 Percentage Points.** If lawmakers decreased premium subsidies by an average of 15 percentage points, from 62 percent of total premiums to 47 percent, federal spending over the 2018–2027 period would fall by \$8.1 billion, CBO estimates.

An argument for decreasing subsidies is that even if lawmakers aim to maintain the current high levels of participation in the crop insurance program (for instance, the enrollment of 80 percent or more of the total U.S. acreage of each of the four major crops in the program), subsidies may currently be greater than needed to do so.<sup>33</sup> CBO estimates that under this option, producers would insure 1.5 million fewer acres (out of a total of 300 million acres) and would lower their levels of coverage for 5 million acres.<sup>34</sup>

An argument against decreasing subsidies is that it might reduce participation by policyholders who face low risks. If that happened, high-risk producers would make up a larger share of participants in the crop insurance program, and policy premiums (which are set to cover expected losses) would consequently rise. Although there is theoretical support for this possibility, there are no empirical measures of the effect.

**Reduce Premium Subsidies by an Average of 15 Percentage Points for Producers With Adjusted Gross Income Greater than \$500,000.** If lawmakers reduced premium subsidies by an average of 15 percentage points for producers whose total adjusted

gross income (taxable income from both farm and nonfarm sources, minus certain deductions) is greater than \$500,000, federal spending would decrease by \$0.4 billion from 2018 through 2027, CBO estimates. An argument for this option is that it would probably affect very few producers: An analysis of the crop insurance program from 2009 through 2013 indicated that high-income producers represented, at most, 1 percent of policyholders. The same analysis further indicated that those producers might be relatively well equipped to manage risk through private means; many earned a substantial income from nonfarm employment.<sup>35</sup> The desirability of this option might depend on lawmakers' goals for the crop insurance program: On the one hand, this option would be consistent with the goal of providing support to producers who are most vulnerable, but on the other hand, it would not allow all agricultural producers equal opportunity to purchase subsidized insurance.

**Limit the Premium Subsidy for Each Producer to \$50,000 Annually.** Over the 2018–2027 period, this option would reduce federal spending by \$3.4 billion, reduce enrollment in the program by 0.5 million acres, and prompt producers to choose lower coverage levels for 2 million acres, CBO estimates. If producers split up their business operations to try to maintain their current subsidies, there would be a smaller reduction in federal spending. Still, this option would have the advantage of reducing federal spending without a significant estimated reduction in program participation. A drawback of this option is that it would disproportionately affect regions with large farms, high premium rates, or high-value crops such as fruits and vegetables.

### **Options That Would Change the Reimbursement for Insurers' Administrative and Operating Costs**

Reimbursements for insurers' A&O costs account for roughly one-fifth of the federal cost of the crop insurance program. Lawmakers might choose to impose stricter limits on A&O reimbursements or to eliminate the reimbursements altogether and allow private insurance

32. Joshua D. Woodard, "Estimation of Insurance Deductible Demand Under Endogenous Premium Rates" (paper presented at the 2016 Agricultural and Applied Economics Association Annual Meeting, Boston, Mass., July 31–August 2, 2016), <https://ideas.repec.org/p/ags/aaea16/236151.html>.

33. Department of Agriculture, "Risk Management Agency Information Browser" (accessed on September 22, 2017), [www.rma.usda.gov/tools/](http://www.rma.usda.gov/tools/).

34. CBO expects that producers who sought to reduce their coverage would mostly move from policies covering 70 percent or 75 percent of losses to policies covering 60 percent of losses, from policies covering 80 percent of losses to policies covering 70 percent of losses, or from policies covering 85 percent of losses to policies covering 80 percent of losses.

35. Government Accountability Office, *Crop Insurance: Reducing Subsidies for Highest Income Participants Could Save Federal Dollars With Minimal Effect on the Program*, GAO-15-356 (March 2015), [www.gao.gov/products/GAO-15-356](http://www.gao.gov/products/GAO-15-356). See also T. Kirk White and Robert A. Hoppe, "Changing Farm Structure and the Distribution of Farm Payments and Federal Crop Insurance," *Economic Information Bulletin*, no. 91 (February 2012), <https://go.usa.gov/xn2YF>.

companies to charge individual policyholders for A&O costs, which would result in budgetary savings.

**Limit the A&O Reimbursement to 9.25 Percent of Premiums.** Two analyses conducted by government agencies have found that reimbursements exceeded actual A&O costs. The first found not only that reimbursements exceeded reported A&O costs in 1994 and 1995 but that some of those reported costs did not reasonably qualify as A&O expenses under the federal crop insurance program.<sup>36</sup> The second found that reimbursements in 2007 fell short of reported A&O costs but not actual A&O costs. That was in part because the reported costs were again found to include non-A&O expenses. Primarily, though, it was because insurance agents increased their compensation for selling policies by directing producers to the companies that paid the highest commissions.<sup>37</sup> (There are now limits on agents' compensation that restrict this practice.)

By contrast, other analyses sponsored by crop insurance companies concluded that reimbursements in every year from 1997 through 2016 fell short of A&O costs reported by insurers.<sup>38</sup> However, insurers' reported A&O costs are not audited and therefore may not reliably reflect actual costs.

If lawmakers limited the A&O reimbursement to 9.25 percent of premiums, CBO estimates that spending over the 2018–2027 period would fall by \$2.8 billion. Reimbursements under this option appear to be roughly commensurate with actual A&O costs. In 2016, under this option, the average reimbursement per policy would

have been about \$750. That is roughly in line with the (inflation-adjusted) estimate provided by the analysis of actual A&O costs in the mid-1990s.<sup>39</sup> However, insurers' current A&O costs might be lower or higher than they were in the mid-1990s as a result of changes in the crop insurance industry. For example, information technology and electronic records have probably reduced costs, whereas the introduction of revenue policies in 1997 probably increased agents' workloads in helping producers choose among policies.

To further compare the \$750 average per-policy reimbursement under this option with insurers' actual A&O costs in 2016, CBO considered those costs in two parts: agents' commissions and noncommission costs. CBO estimates that in 2016, a per-policy commission of roughly \$400 would have been consistent with the inflation-adjusted amount reported by crop insurance companies in 2000—the year in which commissions were arguably best aligned with actual costs—and with agents' compensation across other lines of insurance.<sup>40</sup> A commission of that amount would have left about \$350 per policy available for noncommission costs. That number is somewhat lower than the roughly \$400 per policy (adjusted for inflation) that crop insurers reported spending on noncommission expenses in 2008. That

36. General Accounting Office (now the Government Accountability Office), *Crop Insurance: Opportunities Exist to Reduce Government Costs for Private Sector Delivery*, GAO/RCED-97-70 (April 1997), [www.gao.gov/products/GAO/RCED-97-70](http://www.gao.gov/products/GAO/RCED-97-70).

37. Government Accountability Office, *Crop Insurance: Opportunities Exist to Reduce the Costs of Administering the Program*, GAO-09-445 (April 2009), [www.gao.gov/products/GAO-09-445](http://www.gao.gov/products/GAO-09-445).

38. National Crop Insurance Services, "Federal Crop Insurance Program: Profitability and Effectiveness Analysis, 2016 Update for Reinsurance Year 2015" (prepared by Grant Thornton, March 2017), <https://tinyurl.com/ydcqdhca> (PDF, 349 KB), "Federal Crop Insurance Program: Profitability and Effectiveness Analysis, 2013 Update" (prepared by Grant Thornton, June 2014), <http://tinyurl.com/yafzqxqo> (PDF, 544 KB), and "Federal Crop Insurance Program: Profitability and Effectiveness Analysis, 2009 Update" (prepared by Grant Thornton, October 2009), <http://tinyurl.com/y9k5auhk> (PDF, 100 KB).

39. The General Accounting Office (now the Government Accountability Office), after modifying reported A&O costs in 1994 and 1995 to remove nonqualifying expenses, estimated that the A&O reimbursement per policy averaged \$760 for 1994 and \$820 for 1995 (adjusted for inflation in both cases). See General Accounting Office, *Crop Insurance: Opportunities Exist to Reduce Government Costs for Private Sector Delivery*, GAO/RCED-97-70 (April 1997), pp. 78 and 84, [www.gao.gov/products/GAO/RCED-97-70](http://www.gao.gov/products/GAO/RCED-97-70).

40. The year 2000 predates substantial increases in crop prices that led to great increases in A&O reimbursements (a direct consequence of higher premiums), which facilitated competition for crop insurance agents through higher commissions. It postdates the introduction of revenue policies in 1997, after which agents had to help policyholders choose from among a greater number of available insurance policies and A&O costs consequently increased. See Department of Agriculture, Risk Management Agency, *Standard Reinsurance Agreement Frequently Asked Questions: Updated for Final Draft* (June 2010), Table 1, [www.rma.usda.gov/news/2010/06/610faqs.pdf](http://www.rma.usda.gov/news/2010/06/610faqs.pdf) (525 KB); and Bureau of Labor Statistics, "Occupational Employment Statistics: Occupational Employment and Wages, May 2016: 41-3021 Insurance Sales Agents," [www.bls.gov/oes/current/oes413021.htm](http://www.bls.gov/oes/current/oes413021.htm).

reported cost is the most recent figure available (but reports were not audited).<sup>41</sup>

**Eliminate A&O Reimbursements, Allowing Insurers to Charge Policyholders for A&O Costs.** This option would introduce a measure of price competition in the federal crop insurance market. The federal government currently determines the crop insurance policies that companies must offer and sets the policies' premiums, which are intended to match expected claim payments only. Consequently, there is no competition on the basis of price among insurers in the federal crop insurance program. By contrast, in private insurance markets, companies generally compete for customers on the basis of price by setting their own premiums and including a charge for their A&O costs. If A&O reimbursements were eliminated, crop insurers would have to be allowed to charge policyholders to cover their A&O costs. The prices of comparable policies offered by different insurers might consequently vary, and prospective policyholders could compare those policies on the basis of price when making decisions about their crop insurance purchases.

Under this option, federal spending over the 2018–2027 period would decrease by \$10.2 billion. One advantage of this option is that it would allow market forces to determine crop insurers' compensation for A&O, eliminating their reliance on an A&O reimbursement that might be higher or lower than actual A&O costs. Producers, particularly those with smaller operations, would face a disadvantage under this option in that the price they paid for crop insurance policies would increase to account for insurers' A&O costs.

### **An Option That Would Change the Terms of Risk Sharing Under the Standard Reinsurance Agreement**

The federal government realizes both losses and gains from its share of underwriting in the crop insurance program, as governed by the terms of the SRA. Between 2000 and 2016, the government realized a net loss of \$1.4 billion.

Lawmakers might choose to instruct that those terms be renegotiated with the aim of lowering the expected rate of return for crop insurance companies by an average of

2 percentage points. (The terms of the SRA are negotiated on the basis of the rate of return on retained premiums—policy premiums that are not needed to cover claim payments during the period covered by a given policy. CBO's analysis examines a more complete measure of profitability: the rate of return on equity. Parties to the SRA do not use that measure because, as explained above, the calculation requires an estimate of crop insurers' equity.)

This option would decrease federal spending over the 2018–2027 period by \$1.4 billion, CBO estimates. One advantage of this option is that it might bring the profitability of crop insurance providers more in line with the profitability of other types of property and casualty insurers. Nevertheless, even if this option had already been in place, crop insurers' average rate of return on equity from 1992 through 2015 would probably have been higher than the 8 percent reported by other property and casualty insurers, according to CBO's estimates. However, there are uncertainties involved in that comparison. Ultimately, as long as crop insurers' average rate of return is at least as great as that for property and casualty insurers, crop insurers would be expected to continue participating in the program.

One disadvantage of this option is that if the actual difference in insurers' profitability is substantially less than CBO's analysis implies, changing the terms of the SRA could make it difficult for crop insurers to stay in business. That would increase the risk that insurers would leave the program and potentially compromise the delivery of crop insurance services.

### **Policy Approaches**

The federal government could also consider two broader ways in which to restructure the crop insurance program: subsidizing only area-based crop insurance and allowing premium subsidies to be set independently of the premiums themselves.

#### **Subsidize Only Area-Based Policies**

The federal government could reduce its role in crop insurance by subsidizing only area-based policies. Such policies pay claims on the basis of countywide yields or revenues (relative to expectations) instead of individual producers' yields or revenues.

One advantage of such an approach is that the coverage would better target the risks that can cause large and

41. Department of Agriculture, Risk Management Agency, *Standard Reinsurance Agreement Frequently Asked Questions: Updated for Final Draft* (June 2010), Table 1, [www.rma.usda.gov/news/2010/06/610faqs.pdf](http://www.rma.usda.gov/news/2010/06/610faqs.pdf) (525 KB).

simultaneous losses for many people—the very risks that suggest a need for the government to play a role in providing insurance. In addition, because insurers do not have to assess individual producers' losses in response to claims for area-based policies, such policies have relatively low A&O costs. They also limit the potential for individual producers to claim insurance benefits by taking actions that increase their likelihood of losses.

One disadvantage of this approach is that the benchmarks that insurers use to measure losses under area-based plans are not necessarily well correlated with individual producers' outcomes. For example, area-based policies would compensate all producers in a county that saw low per-acre yields—even producers in that group who experienced few or no losses. By the same token, area-plan coverage would not adequately compensate individual producers whose losses were worse than the average losses in their county.

To address producers' individual risks, private crop insurers could offer supplemental coverage. In doing so, private insurers would be participating in a more conventional property insurance market while the federal program addressed larger, broader agricultural risks.

### **Determine Premium Subsidies Independently of Premium Levels**

Lawmakers could change how premium subsidies are calculated, eliminating the link between the subsidies

and the premiums themselves. Currently, subsidies are set as a certain percentage of premiums, so more expensive insurance policies (such as those that offer higher levels of coverage) have higher subsidies. That creates an incentive for producers to purchase more expensive policies even when less expensive ones would provide an adequate amount of risk protection.

Economists have suggested decoupling premium subsidies from premium levels and instead setting subsidies as a specific percentage of expected gross revenue per acre of the insured crop.<sup>42</sup> One potential advantage of such a change is that it might prompt policyholders to choose insurance policies that are more cost-effective for the federal government.<sup>43</sup> Some producers might face a disadvantage under this option, however, because changing how premium subsidies are calculated would probably alter the distribution of net benefits from the crop insurance program for different crops and states.

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42. Carl Zulauf and Gary Schnitkey, "Distribution of Crop Insurance Net Farm Payments by Crop and State," *FarmDoc Daily* (February 8, 2013), <http://tinyurl.com/y9vcxm5o>.

43. Government Accountability Office, *Crop Insurance: In Areas with Higher Crop Production Risks, Costs Are Greater, and Premiums May Not Cover Expected Losses*, GAO-15-215 (February 2015), [www.gao.gov/products/GAO-15-215](http://www.gao.gov/products/GAO-15-215).

## CBO's Approach for Comparing Crop Insurers' Returns With Property and Casualty Insurers' Returns

**T**he Congressional Budget Office compared an estimate of crop insurers' average realized rate of return with the average realized rate of return reported for other types of property and casualty insurers. Ideally, CBO would compare the rates of return for the two groups on a market-value basis, which would directly reflect their worth from the perspective of investors. However, because crop insurers are usually privately held or part of larger companies, their market-value data are not available. As an alternative, therefore, CBO's measures of the two groups' rates of return reflect equity on a book-value basis—that is, equity based on financial accounting measures of assets and liabilities.

CBO estimated, on the basis of the limited data available, that crop insurers' average realized rate of return on equity from 1992 through 2015 was greater than the average rate of return reported by other property and casualty insurers. The difference suggests that the crop insurance program benefited crop insurance companies.

However, as discussed in the text and summarized in Table 2, several factors make CBO's estimate uncertain. Although no single factor would be likely to reverse CBO's estimation that the rate of return for crop insurers exceeded that for other property and casualty insurers over the 1992–2015 period, the combined effect of multiple factors could conceivably do so. For example, if reimbursements for A&O fell substantially short of A&O expenses and crop insurers' equity were substantially larger than estimated, the rate of return on equity for crop insurers might have been below that of other property and casualty insurers.

### Estimating the Rate of Return on Equity for Crop Insurers

CBO calculated crop insurance companies' return on equity by dividing their profits by the book value of their

equity. Because crop insurers are usually privately owned or part of larger, more diversified companies, data on their equity and profits are not available. Accordingly, CBO estimated those values. CBO estimated crop insurers' profits in three components, all calculated on an after-tax basis: underwriting profit, investment income on insurance operations, and investment income on equity.

### Underwriting Profit

The after-tax underwriting profit represents the difference between crop insurers' revenue and costs. Crop insurers' revenue consists of policy premiums and reimbursements for administrative and operating (A&O) activities. Their costs consist of claim payments, A&O costs, and reinsurance costs. (Reinsurance costs reflect the provisions of the Standard Reinsurance Agreement between the federal government and the crop insurers, as well as the costs of any private reinsurance that crop insurers purchase.) The federal tax rate that CBO applied to the underwriting profit is the marginal corporate income tax rate for the top tax bracket.

CBO first calculated insurers' underwriting profit as a share of premiums, using data from the Department of Agriculture's Risk Management Agency. In that calculation, CBO took crop insurers' A&O cost to match the A&O reimbursement.

To translate those values into a measure of underwriting profit relative to equity, CBO multiplied them by the ratio of crop insurers' income from premiums to an estimate of crop insurers' equity. To estimate crop insurers' equity, CBO multiplied the book value of equity for the property and casualty insurance industry as a whole by a ratio of crop insurers' premiums and reserves to premiums and reserves for the property and casualty insurance industry as a whole. Despite uncertainties in this calculation, even if crop insurers' equity were twice the amount

estimated by CBO (which is the case when it is estimated using only the ratio of premiums, rather than the ratio of premiums and reserves), their estimated overall rate of return on equity would still be above the return earned by other property and casualty insurers.<sup>1</sup>

CBO's approach to estimating crop insurers' equity is based on two facts. First, the government sets premiums to match expected claims, so premiums are proportional to risk. Second, federal regulations require crop insurers to hold enough equity to account for their risk, so equity is proportional to risk. The determination of whether an insurance company has an adequate amount of equity is usually made on the basis of its entire portfolio, and most crop insurance is provided by companies that have large portfolios incorporating many different types of insurance. Still, there is a large literature on how equity might be divided among the exposures associated with the different types of insurance.

The estimate of crop insurers' equity could be derived using a more complete model to allocate property and casualty insurance companies' equity to the different types of insurance they offer. However, that would be unlikely to change CBO's estimation that the rate of return on equity for crop insurance is above that for other property and casualty insurance. In a more complete model, estimates of the equity allocated to cover the risk of any type of insurance would be commensurate with how much it contributes to the total risk of companies' diversified portfolios. That contribution depends on the volatility of the particular type of insurance and on how much its risk correlates with companies' other risks, including the risks of other types of insurance. Crop insurance is generally considered to carry low to medium risk within diversified portfolios. (Although events such as droughts can create volatility in crop insurance losses, most lines of property and casualty insurance experience similar volatility—for example, because of earthquakes, terrorist attacks, and waves of liability claims for hazards such as asbestos.) Moreover, the events that lead to crop insurance claims are unlikely to be correlated with other risks facing a diversified insurance company. That lowers

the risk associated with crop insurance and, therefore, the amount of equity allocated to crop insurance. Ultimately, allocating equity on the basis of premiums and reserves (or just premiums), as CBO has done, is a useful approach because those variables are easily observed.

### Investment Income on Operations

Investment income on insurance operations is the gain that insurers realize from investing the funds they receive and hold in the course of their insurance operations—the premiums that have been collected but not yet used to pay claims. In the standard business model for insurance, that income represents an important source of earnings.

However, CBO estimated that crop insurers' investment income on operations is zero. Crop insurers have essentially no opportunity to invest the funds they receive, given the timing of the cash flows associated with their insurance operations. Insurers remit the policyholder-paid portion of each premium to the federal government the month after the policyholder is billed, and the federal government reimburses insurers for A&O costs in the middle of the reinsurance year even though insurers incur substantial A&O costs whenever policies are sold. (By contrast, insurers in the private market maintain control of the entire premium—inclusive of charges for A&O expenses—from the time it is paid by the policyholder, and can use that revenue to cover A&O costs when they are incurred and to invest until resources are needed to pay claims.)

### Investment Income on Equity

After-tax investment income on equity reflects insurers' returns from invested capital. For this component of the return on equity for crop insurers, CBO adopted the average rate of return from invested assets earned by the property and casualty industry as whole. The federal tax rate that CBO applied is an effective marginal tax rate based on weights that reflect property and casualty insurers' mix of investments.<sup>2</sup> The calculation also reflects the

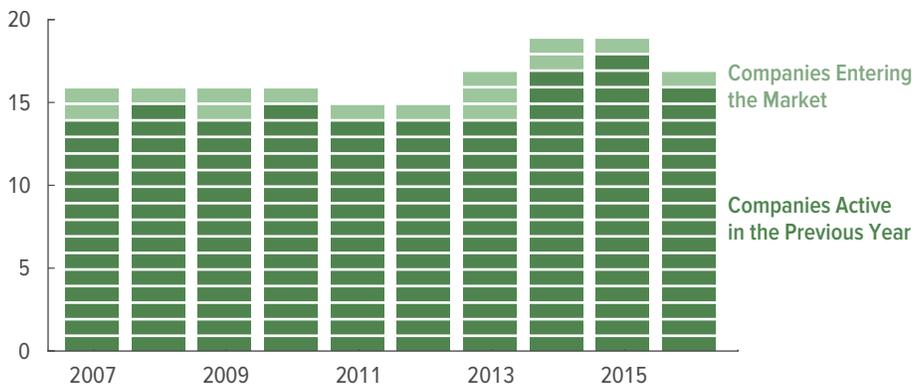
1. Most property and casualty insurers incorporate A&O costs into their premiums. Crop insurers, however, are reimbursed separately for A&O costs, so their premiums do not reflect those costs. Therefore, CBO included A&O reimbursements as part of premiums both when using the ratio of crop insurers' premiums and reserves to property and casualty insurers' premiums and reserves as well as when using the ratio of just premiums.

2. Data for property and casualty insurers' invested assets and the distribution of their investment income across asset categories are from the 1993–2014 editions of A.M. Best Company, *Best's Aggregates & Averages: Property/Casualty, United States and Canada* (A.M. Best Company, 1993–2014); and National Association of Insurance Commissioners, "Statistical Compilation of Annual Statement Information for Property/Casualty Insurance Companies in 2014" (2015),

Figure A-1.

### Number of Crop Insurance Companies in the Crop Insurance Program, 2007 to 2016

Number of Companies



The number of insurance companies in the federal crop insurance program has remained stable over the past 10 years. Competition is limited because the policies companies offer and the prices they charge are determined by the federal government.

Source: Congressional Budget Office, using data from the Department of Agriculture's Risk Management Agency.

provisions of the Tax Reform Act of 1986 that guide the treatment of tax-exempt income for those companies.<sup>3</sup>

### Estimating the Rate of Return on Equity for Property and Casualty Insurers

The realized rate of return on equity for property and casualty insurers reflects the same components of profit as the realized rate of return on equity for crop insurers. Conveniently, the relevant data for all publicly traded property and casualty insurers are reported by those companies.<sup>4</sup> To ensure consistency in the measures of return on equity for the two types of insurance companies, CBO used a weighted-average return on equity (on a book-value basis) based on the size of each property and casualty insurer for each year included in the analysis. (Over the period investigated, on average,

data were available for about 90 companies per year.) Because reinsurance years run from July through June, CBO converted the publicly reported data into values for each reinsurance year by averaging the values for the two calendar years that overlapped it. For example, the reinsurance year 2014 reflects an average of the values for data reported for 2013 and 2014.

### Considerations About the Difference in the Rates of Return

Economic theory holds that in a competitive private market, industries cannot earn higher rates of return than other industries without reason for very long. Higher rates of return are usually associated with greater market risk, but differences in market risk between crop insurance and other types of property and casualty insurance do not necessarily explain the differences in their rates of return.<sup>5</sup> Most crop insurance is provided by companies that have large insurance portfolios incorporating many different types of insurance, and returns to the crop insurance business are not strongly correlated with the returns to other types of insurance or with the market as a whole.

Typically, a business activity that generates an unusually high rate of return will attract new companies to the market, and the increase in competition will drive down the rate of return. Unusually high rates of return can persist, however, if it is difficult for companies to enter

[www.naic.org/prod\\_serv/STA-PS-15.pdf](http://www.naic.org/prod_serv/STA-PS-15.pdf) (7.7 MB), and "Statistical Compilation of Annual Statement Information for Property/Casualty Insurance Companies in 2015" (2016), [www.naic.org/prod\\_serv/STA-PS-16.pdf](http://www.naic.org/prod_serv/STA-PS-16.pdf) (7.7 MB).

3. Sec. 832(b)(5)(b) of the Tax Reform Act of 1986, P.L. 99-514 (codified at 26 U.S.C. § 832(b)(5)(B) (2012)).
4. See the 1993–2014 editions of A.M. Best Company, *Best's Aggregates & Averages: Property/Casualty, United States and Canada* (A.M. Best Company, 1993–2014); and National Association of Insurance Commissioners, "Statistical Compilation of Annual Statement Information for Property/Casualty Insurance Companies in 2014" (2015), [www.naic.org/prod\\_serv/STA-PS-15.pdf](http://www.naic.org/prod_serv/STA-PS-15.pdf) (7.7 MB), and "Statistical Compilation of Annual Statement Information for Property/Casualty Insurance Companies in 2015" (2016), [www.naic.org/prod\\_serv/STA-PS-16.pdf](http://www.naic.org/prod_serv/STA-PS-16.pdf) (7.7 MB).

5. Market risk is the risk that investors cannot protect themselves against by diversifying their portfolios.

or compete in the market. The structure of the federal crop insurance program limits the scope for competition: Companies cannot compete for policyholders on the basis of product offerings or price, the federal government determines which insurance policies are available in the market and sets the premiums for those policies, and crop insurers operating in any given state must sell those policies to any eligible producer for the specified premium. Crop insurance companies can compete by

offering higher commissions to agents who have exclusive relationships with policyholders, but the SRA that went into effect in 2011 set caps on agents' commissions. Those impediments to competition help explain the fact that the number of crop insurance companies in the market has remained steady since at least 2007 (the earliest time for which such data are readily available; see Figure A-1).

# The Basis for CBO's Estimates of the Budgetary Effects of Policy Options

**T**his appendix describes how the Congressional Budget Office estimated the cost of the crop insurance program in its baseline budget projections, which incorporate the assumption that current laws governing taxes and spending will generally remain unchanged. It also describes how CBO estimated the program's cost under some of the policy options considered in this report relative to its cost under current law.

## CBO's Crop Insurance Baseline Projections

CBO estimated the budgetary effects of the options included in this analysis using its June 2017 baseline budget projections for the 2017–2027 period.

CBO's baseline projections for the crop insurance program include projections for eight commodities: corn, soybeans, wheat, upland cotton, rice, barley, grain sorghum, and pasture/rangeland/forage. In 2016, those eight commodities accounted for 92 percent of the acres insured under the program and 83 percent of premiums. CBO combines the remaining commodities covered by crop insurance (a total of more than 100 commodities, from alfalfa seed to walnuts) in an aggregate category.

For each category, CBO estimates the number of policies, insured acres, liabilities (realized and expected insured losses), premiums, subsidies, claim payments, and the parameters necessary to calculate those items' cost (including prices, acres, and premium rates). Depending on the commodity, that information was available for as many as 24 insurance plans (variations on policies that address losses due to low crop yield or lower-than-expected revenue) and 10 levels of coverage (catastrophic coverage and nine levels of coverage exceeding catastrophic coverage).

CBO uses annual projections of the total production levels, prices, yields, and insured acres of crops to estimate

future changes in the demand and cost of the various insurance policies offered through the crop insurance program. CBO makes those projections for each of the categories of commodities listed above, including the aggregate category. In its June 2017 baseline projections, CBO estimated that the crop insurance program will cost roughly \$7 billion to \$8 billion per year over the 2018–2027 period (see Table B-1).

To estimate the costs of the crop insurance program, CBO starts with historical data for the program published by the Federal Crop Insurance Corporation, which is responsible for the federal crop insurance program. In addition, CBO convenes yearly meetings of crop insurance analysts to review the past performance of the crop insurance program and to discuss potential changes to the program. Attendees include analysts from the Department of Agriculture's Risk Management Agency (RMA) and Economic Research Service who are involved in crop insurance administration and research.

A key factor in the determination of CBO's crop insurance baseline projections is the expected loss ratio. The loss ratio is calculated as claim payments (known as indemnities) divided by premiums. (This calculation does not include the costs of crop insurance companies' administration and operation.) An expected loss ratio of 1.0 means that claim payments are expected to equal premiums received; lower loss ratios indicate greater profitability.

The Federal Crop Insurance Act requires RMA to set premiums at levels that will cover expected claim payments in order to achieve an average projected loss ratio of no greater than 1.0.<sup>1</sup> However, the actual loss ratio has equaled 1.0 or more in 5 of the past 18 years. CBO's

1. Sec. 1506(n)(2) of the Federal Crop Insurance Act of 1980, P.L. 96–365 (codified at 7 U.S.C. §1506(n)(2) (2012)).

Table B-1.

**CBO's Baseline Budget Projections for the Federal Crop Insurance Corporation**

Millions of Dollars

CBO's June 2017 Baseline	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
<b>Crop Year</b>											
<b>Costs</b>											
Excess losses	-864	-903	-945	-991	-1,000	-996	-986	-992	-1,004	-1,011	-1,018
Premium subsidies	5,333	5,593	5,891	6,218	6,279	6,252	6,185	6,228	6,313	6,356	6,406
A&O reimbursement	1,348	1,349	1,350	1,352	1,352	1,352	1,351	1,352	1,352	1,352	1,352
Underwriting gains	1,147	1,199	1,254	1,316	1,327	1,322	1,310	1,318	1,334	1,342	1,351
Other <sup>a</sup>	30	34	20	20	20	20	20	20	20	20	20
<b>Total Costs</b>	<b>6,994</b>	<b>7,272</b>	<b>7,572</b>	<b>7,914</b>	<b>7,979</b>	<b>7,951</b>	<b>7,880</b>	<b>7,925</b>	<b>8,015</b>	<b>8,060</b>	<b>8,112</b>
<b>Fiscal Year</b>											
<b>Outlays</b>	<b>3,471</b>	<b>7,085</b>	<b>7,204</b>	<b>7,501</b>	<b>7,850</b>	<b>7,968</b>	<b>7,960</b>	<b>7,891</b>	<b>7,913</b>	<b>7,996</b>	<b>8,050</b>

Source: Congressional Budget Office.

Total costs calculated on a crop-year basis do not match fiscal-year outlays because budgetary activity during a crop year spans two fiscal years. The crop year varies by crop and begins with the month in which the harvest of a specific crop typically begins; fiscal years begin in October.

Excess losses represent the difference between payments for insurance claims and total premiums. A&O reimbursements are payments to private insurers for the costs of selling and servicing insurance policies. Underwriting gains are private insurers' share of excess losses.

A&O = administrative and operating.

a. Includes adjustments from new provisions in the Agricultural Act of 2014 (commonly known as the 2014 Farm Bill), excluding the Supplemental Coverage Option and the Stacked Income Protection Plan (which applies to upland cotton only).

baseline incorporates a projected loss ratio of 0.91 for the 2017–2027 reinsurance years, estimated using a regression analysis of actual crop insurance premiums and indemnities over the 1999–2015 period.<sup>2</sup> Compared with a loss ratio of 1.0, a loss ratio of 0.91 lowers projected outlays through 2027 by 11 percent.

### Effects of Policy Options

CBO used the crop insurance baseline projections to estimate the budgetary effects of the four types of policy options considered in this report: restricting the ways in which producers' losses are calculated, changing the premium subsidies for crop insurance policies, changing the reimbursements to insurers for administrative and operating (A&O) costs, and changing the terms of risk sharing between the federal government and crop insurance companies.

### Changing Premium Subsidies for Crop Insurance Policies

CBO's analysis of options to change premium subsidies is based on aggregate national and county-level data for current revenue and yield policies at each coverage level. CBO obtained that data from RMA's Summary of Business database.<sup>3</sup>

A change in premium subsidies would alter the cost of crop insurance to producers. A producer's reaction would depend on how much the cost changed. In response to a reduction in premium subsidies, for example, a producer might do nothing, switch to a lower coverage level (for example, 60 percent instead of 85 percent), change the type of insurance purchased (for example, switching from revenue coverage to yield coverage, which is less expensive), reduce the number of acres covered by the insurance policy (for example, by not insuring every field on a farm), drop insurance coverage altogether, or take

2. A reinsurance year runs from July 1 through June 30. For example, reinsurance year 2017 began on July 1, 2016, and ended on June 30, 2017.

3. Department of Agriculture, Risk Management Agency, "Summary of Business Reports and Data," [www.rma.usda.gov/data/sob.html](http://www.rma.usda.gov/data/sob.html).

some combination of those actions. CBO accounted for each of those possible outcomes, making determinations of likely behavior with input from various people involved with crop insurance (producers, academics, people working within the agricultural industry, Agricultural Extension Service personnel, and others).

Because the Federal Crop Insurance Act prohibits the disclosure of individual policyholders' information, CBO could not assess the number of producers who have adjusted gross income above \$500,000. However, income information is available for producers who participate in the Department of Agriculture's commodity programs. (Those programs provide price and income support based primarily on statutorily fixed prices rather than market prices.) Therefore, CBO's analysis of the option to limit premium subsidies for individuals with adjusted gross income above \$500,000 used a distribution of crop insurance premium subsidies by adjusted gross income that was based on similar distributions of payments to producers through commodity programs. This approach is justified because of the substantial overlap between producers who participate in the crop insurance program and those who participate in commodity programs; the main difference is that crop insurance

covers a wider variety of crops than the commodity programs do.

### **Change the Reimbursement to Insurers for Administrative and Operating Costs**

The current Standard Reinsurance Agreement (SRA) establishes a limit for the A&O reimbursement. That limit is generally less than the SRA's specified percentages of total premiums used to calculate the reimbursement. Hence, in most situations, the annual savings from a specific restriction on the A&O reimbursement would be the difference between the limit and what the specific restriction would allow.

### **Change the Terms of Risk Sharing**

For the option to change crop insurance companies' average rate of return on the portion of premiums that they retain, CBO estimated the difference in payments relative to the rate of return on retained premiums underlying the agency's June 2017 baseline projections (an average of 14.5 percent over the 2018–2027 period). The actual gains paid to companies, or the portion of losses that companies would be required to bear, would vary from year to year.



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## About This Document

This report was prepared in response to Congressional interest and as developmental work for future budget options as part of the agency's ongoing efforts to help inform federal lawmakers about the implications of possible policy choices. The report examines ways to reduce spending for the crop insurance program and their implications. In keeping with the Congressional Budget Office's mandate to provide objective, impartial analysis, the report makes no recommendations.

Natalie Tawil prepared the report with assistance from David Wylie and Tristan Hanon (formerly of CBO) and with guidance from Joseph Kile and Chad Shirley. Jim Langley provided estimates of the budgetary effects of options and prepared the corresponding appendix (Appendix B). Tiffany Arthur, Robert Casturo, Kim Cawley, Michael Falkenheim, Sebastien Gay, Edward Keating, Wendy Kiska, Damien Moore (formerly of CBO), and David Torregrosa provided comments. G.A. (Art) Barnaby, Jr., of Kansas State University, Joseph Glauber of the International Food Policy Research Institute, Vincent Smith of Montana State University, and Thomas P. Zacharias of National Crop Insurance Services also provided comments. The assistance of external reviewers implies no responsibility for the final product, which rests solely with CBO.

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Keith Hall  
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