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Time to Revisit Crop Insurance Premium Subsidies?

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Executive Summary

In 2000, Congress decided to move away from a fixed-dollar-per-acre premium subsidy to a subsidy percentage that applies to any crop insurance product offered. This change reduced the cost to farmers of moving from yield insurance to revenue insurance by more than 50%. In addition, Congress decided to pay a large proportion of the additional premium for higher coverage levels, paying for more than half the cost of moving from the 65% to the 75% coverage level and about 25% of the additional cost of moving from 75% to 80% coverage. Not surprisingly, farmers responded to these lower costs by moving to more expensive revenue insurance policies and higher coverage levels. This response is part of the reason why the Congressional Budget Office projects that the cost of the crop insurance program exceeds \$7 billion per year.

The changes to the premium subsidy structure were made in an era of projected budget surpluses. Does this change still make sense now that federal deficits and overall debt levels are so high? How much could spending be reduced if the premium subsidy structure were changed back? This policy briefing paper provides insights into these questions.

Congress has demonstrated repeatedly that it wants a large proportion of acres to be enrolled in the crop insurance program. The proven way to expand insured acreage is to subsidize farmers' crop insurance premiums with either a "lump sum" subsidy that gives farmers a set amount to participate in the program or a proportional subsidy that pays a set fraction of a farmer's premium. The added benefit to the crop insurance industry of a proportional subsidy is that it incentivizes farmers to buy higher coverage levels and more expensive revenue insurance.

If Congress had decided in 2010 to move away from the current system of proportional subsidies to the amount of premium subsidy available for yield insurance, then the 2011 projected cost of the crop insurance program would have declined by about \$1.4 billion from the direct savings in premium subsidies, and by another \$300 million in lower underwriting gains as farmers moved away from expensive revenue insurance. Further savings would accrue if premium subsidies were fixed at a set dollar amount because this would remove the incentive for farmers to buy more crop insurance than they would buy if they were spending their own money rather than taxpayer dollars. Total savings approaching \$2 billion would likely accrue by simply returning to the premium structure that we had before the Agricultural Risk Protection Act.

Farmers would respond to this policy change by buying less revenue insurance and lower coverage levels. This would also reduce their out-of-pocket expenditures. Farm groups would undoubtedly oppose this change, but such opposition would be tempered if the choice were between this change and a reduction in a more valued program, such as direct payments.

Underwriting gains to crop insurance companies would decline significantly. Both companies and agents would have the most to lose from this policy change so they would be expected to oppose it strongly. But in an era of tight budgets, the tax dollars spent on subsidies that incentivize farmers to buy more and different types of crop insurance than they would buy with their own dollars could fall under intense scrutiny.

Keywords: crop insurance, premium subsidies, program costs, revenue insurance.

Time to Revisit Crop Insurance Premium Subsidies?

By Bruce A. Babcock

Congressional passage of the Agricultural Risk Protection Act (ARPA) in 2000 ushered in a dramatic increase in the taxpayer cost of the crop insurance program. This cost increase was largely due to a change in the way farmers' premiums were subsidized. Before ARPA, the dollar amount of farmers' insurance premiums paid for by taxpayers was strictly limited to 41.7% of the cost of a 65% yield insurance policy. This policy has a 35% deductible so it protects farmers against yield declines that are greater than 35% of their average yield. Farmers could buy a lower deductible policy, but taxpayers would not pay any portion of the additional cost. They could also choose to buy a revenue insurance policy that protects against unexpected drops in revenue. But, again, the dollar amount of taxpayer support would not increase even though revenue insurance typically costs more than yield insurance.

There are two reasons why this pre-ARPA type of premium subsidy structure makes sense. First, the mere existence of a premium subsidy encourages farmers to buy crop insurance, thereby lessening the financial impact of widespread crop losses and possibly lessening the need for Congress to pass ad hoc disaster assistance programs. Second, because the dollar amount of the premium subsidy is fixed, farmers will choose the level and type of crop insurance that best meets their risk management needs, rather than choosing insurance based on how much it is subsidized. With a fixed subsidy, farmers will more carefully weigh the costs and benefits of moving to revenue insurance or moving to lower deductible policies because they would pay the full additional cost. Before ARPA, farmers chose their crop insurance levels in much the same way that homeowners and automobile drivers choose deductible levels on their insurance policies—by judging whether the benefits of a lower deductible policy are worth the additional (unsubsidized) costs.

This seemingly sensible way of managing premium subsidies all changed after ARPA. The first change was that taxpayers paid 59% of the premium for a 65% yield policy instead of 41.7%. Also, this 59% subsidy was extended to more expensive 65% revenue insurance policies. This change meant that instead of paying 100% of the extra cost of moving to revenue insurance, farmers only had to pay 41% of the cost. Farmers responded to this dramatic cost reduction as one would expect: they moved dramatically away from yield insurance and toward revenue insurance.

The second change was that Congress also decided to put lower deductible policies on sale. Instead of paying 100% of the additional cost of moving to a 30% deductible policy, farmers only had to pay 41% of the cost. Figure 1 shows that the taxpayer contribution for lower deductible (higher coverage level) policies declines as coverage increases, but it is not until policyholders move from 80% to 85% coverage that the taxpayer contribution becomes insignificant.

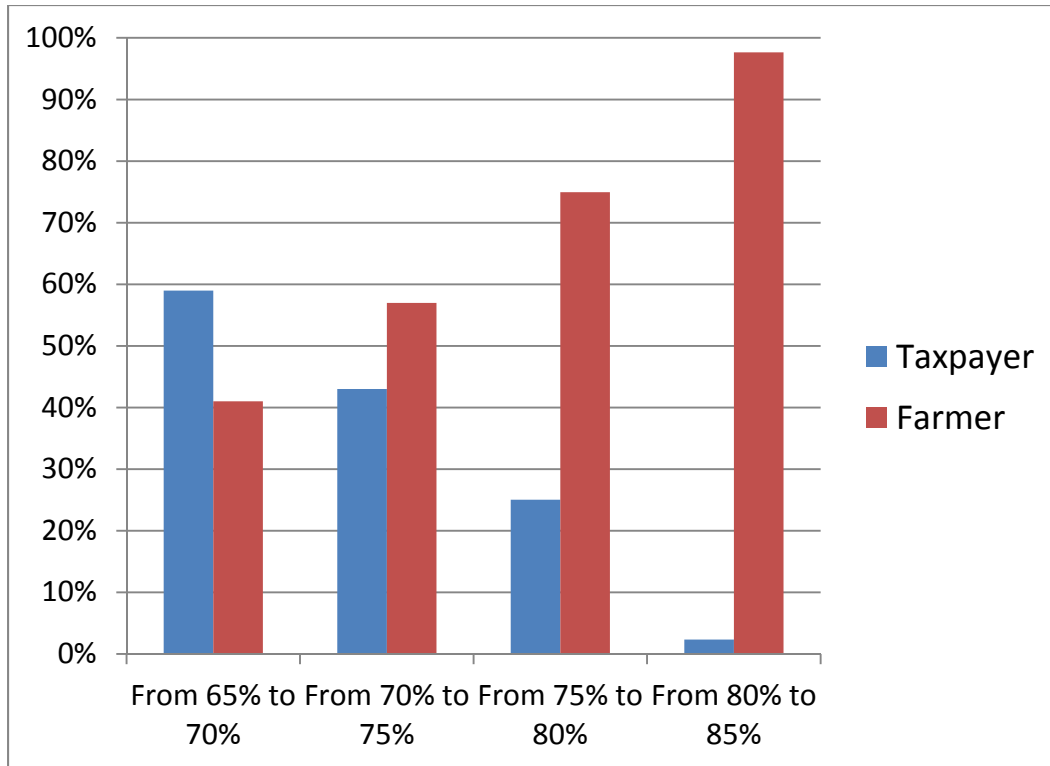


Figure 1. Proportions paid by taxpayers and farmers for higher crop insurance coverage levels

It turns out that farmers are just like clothes shoppers: when a sale is on, product moves. A comparison of Figure 2—coverage levels that Iowa and Kansas farmers purchased in 1998—and Figure 3—levels purchased in 2002—shows the dramatic increase in coverage levels after ARPA.¹ Figure 4 shows that farmers also moved dramatically toward revenue insurance policies after ARPA. With the exception of Iowa soybean farmers, most farmers chose to move to revenue insurance soon after higher ARPA subsidies put the product on sale. Today, about 90% of farmers choose revenue insurance.

That farmers responded to lower prices for insurance by buying more insurance is to be expected. But the budget cost consequences of the ARPA premium subsidy structure are likely not fully understood, so an up-to-date estimate of these costs should be of interest, especially given the sharp attention being paid to federal spending right now. But before the cost impacts are presented, a fresh look at the justification for offering farmers subsidized revenue insurance is needed.

¹ Coverage levels above 75% were not available in 1998.

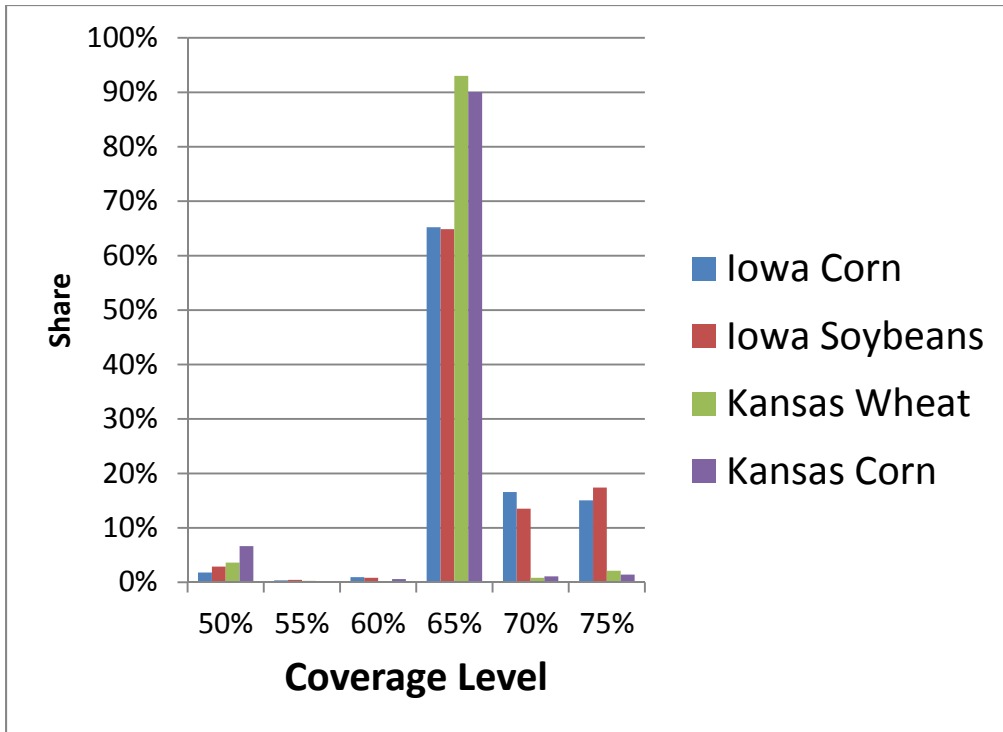


Figure 2. Distribution of insured acres at each coverage level by state and crop in 1998

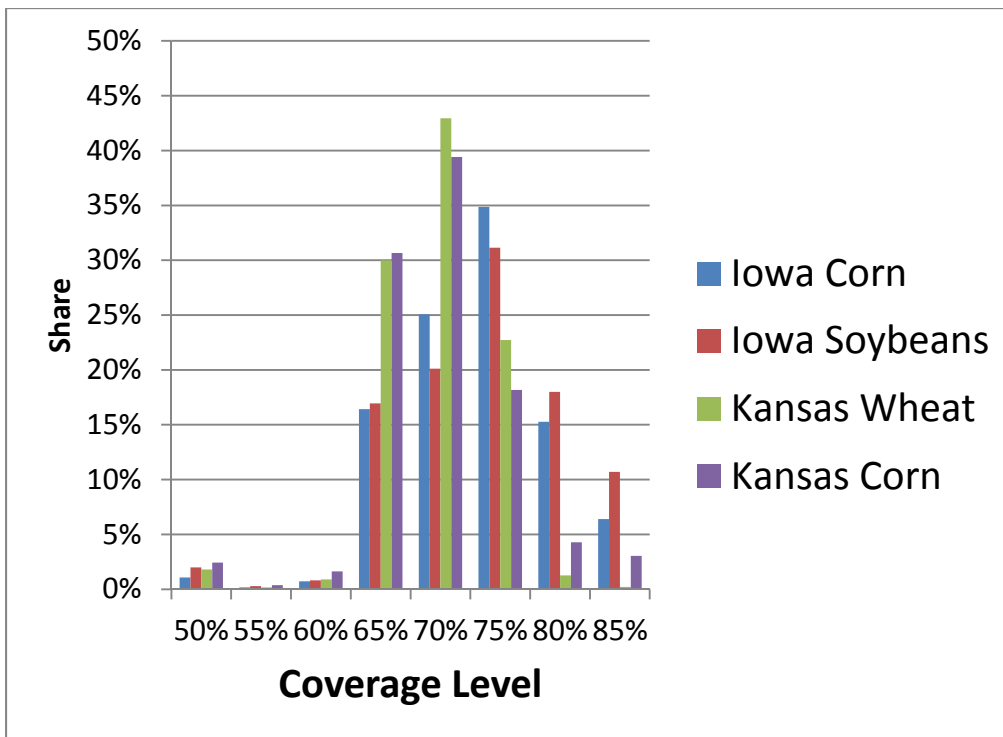


Figure 3. Distribution of insured acres at each coverage level by state and crop in 2002

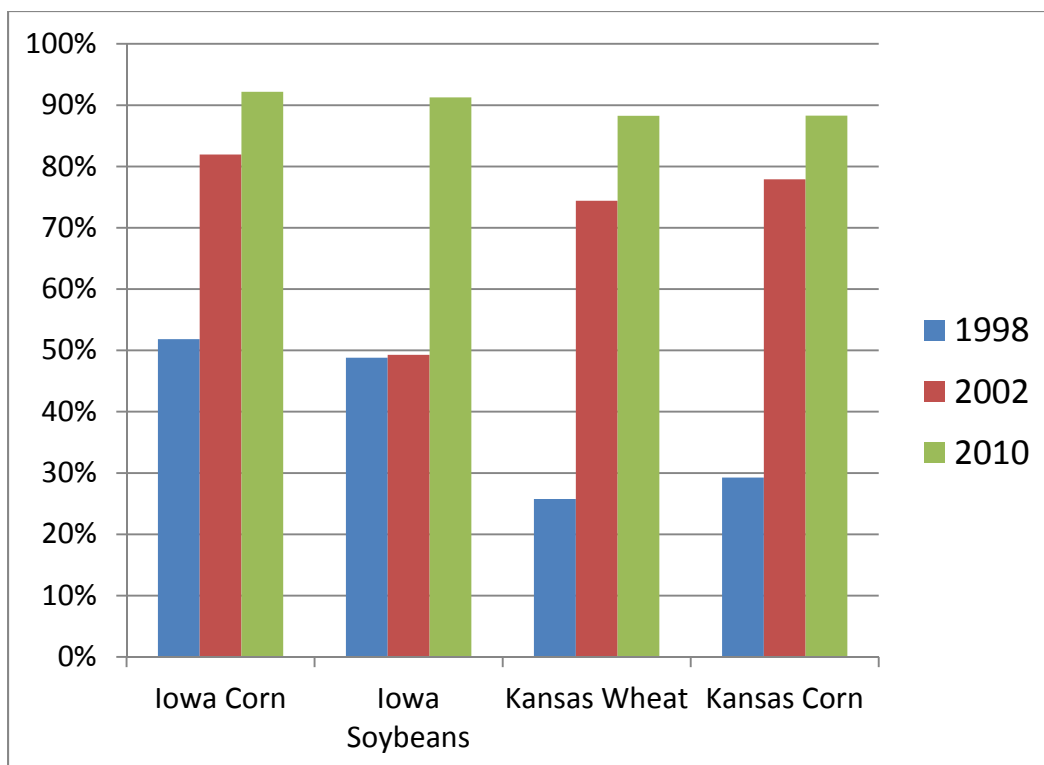


Figure 4. Revenue insurance share of insured acres in 1998, 2002, and 2010

How Crop Insurance Covers Price Risk

The move away from a fixed-dollar subsidy to a fixed-percent subsidy is responsible for at least a portion of the large movement to revenue insurance over the last 10 years. Because revenue insurance policies insure against adverse price changes, part of revenue insurance premiums covers price risk. This means that taxpayers are subsidizing farmers' management of price risk. A fundamental tenet of capitalism is that most economic goods and services should be provided by the private sector, because this generally results in the allocation of resources to their highest value use. Only if the private sector cannot efficiently provide the good is there some justification for government stepping in. The private sector offers abundant tools to corn, soybean, wheat, and cotton producers to help them manage their price risk, including forward contracts, futures contracts, options on futures contracts, and customized marketing tools such as average price contracts. Why then should taxpayers be providing price insurance? Is the private sector so inefficient that the government needs to step in? Answering this question requires an explanation of what revenue insurance actually does.

The crop insurance program offers two types of revenue insurance. The first type is called "Revenue Protection with Harvest Price Exclusion." Farmers who select this coverage are offered a revenue guarantee based on their own yield history and on the level of harvest-time futures price just before the insurance contract is signed. The revenue guarantee equals the product of the selected coverage level (from 50% to 85% in 5% increments), the level of futures prices, and the average of past farm yields. For example, insurance prices for the 2011 crops are \$6.01/bu, \$13.49/bu, \$9.89/bu, \$7.15/bu, and \$1.23/cwt for corn, soybeans, spring wheat, winter wheat, and cotton,

respectively. So, for example, an Iowa corn producer with an average yield of 180 bu/acre who selects 80% coverage has purchased a revenue guarantee of \$865/ac. At harvest, this farmer's actual revenue is calculated by multiplying actual yield by the harvest-time futures prices. If actual revenue turns out to be lower than \$865/ac then the farmer is paid the difference.

USDA's Risk Management Agency (RMA) calculates that the amount of premium needed to cover the insurance payouts for this coverage is \$48 per acre in 2011. This \$48 does not cover the company cost of delivering the insurance, and it does not include a premium subsidy. If this Calhoun County farmer purchases yield insurance instead of revenue insurance, the comparable premium would be \$33. This means that RMA has determined that adding price risk coverage adds \$15 per acre in cost. Yield insurance at the 80% coverage level would protect this farmer against any yield below 144 bu/ac.

Private Provision of Price Insurance

The private sector offers two ways that this farmer could manage price risk. One way is for the farmer to sell futures contracts (or agree to sell in a forward market). If harvest-time futures prices drop, then the farmer would make up on the futures market what he lost when the crop is sold at harvest. If futures rise, then the farmer makes up in the marketplace what is lost on the futures. Thus, by using futures, the farmer has effectively locked in a price. A second way to insure against price drops is for the farmer to buy put options on futures contracts. These put options give the farmer the right to sell a futures contract at the current price, but not the obligation. So if futures rise, the farmer chooses not to exercise the option. If futures fall, the farmer exercises the option and sells futures at the higher price, thereby offsetting the drop in the market.

The cost of these price risk management tools varies from negligible for futures and forward contracts to sizeable for the put options. The cost of buying a \$6.00 corn put option on the harvest-time futures contract is about 70¢ per bushel or about \$100 per acre if this farmer wants an ironclad guarantee of a \$6.00 price for 144 bushels per acre.

This high cost raises the obvious question of how RMA can estimate that price risk adds only \$15 per acre in cost to revenue insurance when the private sector seemingly prices the cost of \$6.00 price insurance at \$100 per acre. The answer is that put options provide price insurance that always pays out if price falls below \$6.00. Revenue insurance only pays out if revenue—price times yield—falls below \$865 per acre. Most of the time when the farmer's price insurance would pay out, the farmer's revenue insurance would not pay out because revenue did not fall below the revenue guarantee. This means that the farmer who buys price and yield insurance separately will pay much more (but will receive commensurately more payments) than a farmer who buys revenue insurance. Thus, revenue insurance offered by the government is not the same thing as price insurance offered by the private sector.

Insuring Lost Bushels at the Market Price

An alternative to high-priced put options is to just offer farmers yield insurance and then let them forward contract their crop to manage their price risk. In principle, the Calhoun County farmer could buy yield insurance that guarantees 144 bu/ac while forward contracting 144 bu/ac to the local elevator to insure the \$6.00 price. This gives the farmer the same revenue guarantee as revenue insurance at less cost. Although many, if not most, farmers do forward sell their crops, there is a significant risk in doing so. This risk arises if the farmer does not produce enough to fulfill the forward contract and the

market price increases. When this happens, the farmer who signed the forward contract must go into the market to buy higher-priced bushels to deliver at the agreed-upon forward price. For example, suppose the Calhoun County farmer insures 144 bu/ac with yield insurance, produces only 100 bu/ac, and the market price rises to \$7.00 per bushel. The farmer delivers the 100 bu/ac and needs to purchase 44 bu/ac of additional corn to deliver. This corn costs \$308 to buy. The farmer gets an indemnity from his yield insurance of \$264 per acre (\$6.00 multiplied by the 44 bu yield loss), but then he is short \$44 per acre. That is, under this scenario, the farmer loses \$44 per acre even though he had locked in price through the forward contract and yield through the yield insurance contract.

The second form of revenue insurance, called simply “Revenue Protection,” covers this type of risk. It is by far the most popular form of revenue insurance, with more than 90% of farmers buying it. Revenue Protection offers the same downside revenue insurance as Revenue Protection with Harvest Price Exclusion, but in addition, it provides insurance against a farmer having to go into a higher-priced market to fulfill the terms of a forward contract. RMA has determined that \$71 is needed to cover payouts to the Calhoun County farmer who buys 80% coverage under Revenue Protection. This is \$38 per acre more than yield insurance. Revenue Protection is more expensive because if harvest-time futures are higher than the futures prices used to set the initial revenue guarantee, then the revenue guarantee reflects the harvest-time futures. This increase means that any yield loss will be valued at the higher harvest-time futures prices if futures move higher. This feature covers the risk of a farmer producing fewer bushels than is forward contracted.

Premium Subsidy as a Driver of Crop Insurance Decisions

Figure 5 shows how much the per-acre premium subsidy varies across the three types of insurance for the Calhoun County corn farmer at various coverage levels. It is easy to see that the dollar amount of premium subsidy can be altered dramatically by the type of insurance and the amount of insurance a farmer chooses to buy. This figure explains a great deal about which products farmers currently buy.

If a farmer wants to maximize the dollar amount of insurance, then purchasing Revenue Protection at the 80% or 85% coverage level accomplishes this. But, as we saw in Figure 1, farmers must pay almost all of the additional cost when they move from 80% to 85%, so most farmers do not choose the 85% coverage level. In addition, farmers must pay about 75% of the incremental premium moving from 75% to 80%. This means that many farmers simply do not find that the pursuit of higher premium subsidies is cost effective.

Most Iowa farmers have decided that the 70% and 75% coverage levels strike the right balance between out-of-pocket expense and the ability to garner more subsidy (see Figure 3). Many Kansas farmers insure at the 65% coverage level. It is interesting to note that Kansas wheat farmers who choose the 65% coverage and Revenue Protection receive more of a subsidy than if they choose 75% yield insurance.

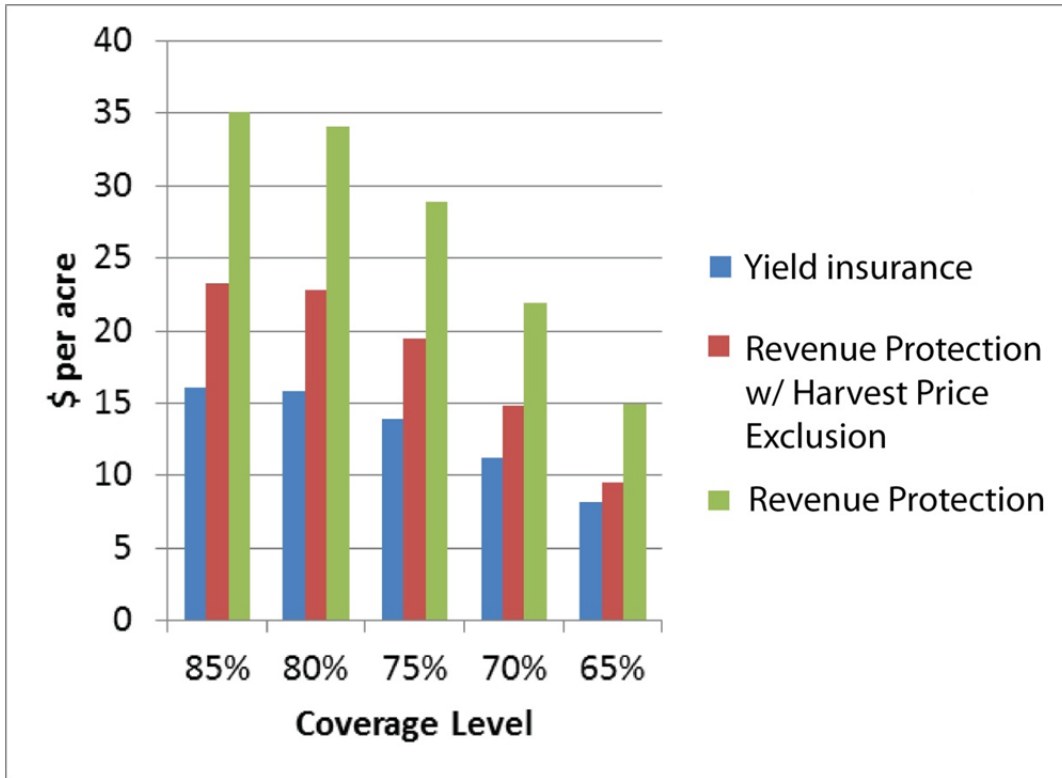


Figure 5. Per-acre premium subsidy for 80% corn coverage in Calhoun County

Does Crop Insurance Crowd Out Provision of Private Price Insurance?

The private sector does an outstanding job of providing farmers with the ability to buy price insurance with put options and to forward sell their crop. But revenue insurance is not price insurance because a price drop is neither a necessary nor a sufficient condition for revenue to drop. Rather, revenue insurance is a more cost-effective insurance mechanism than separate price and yield insurance. This means that unless the private sector is being prevented from offering revenue insurance policies because of the existence of the crop insurance program, there is no direct crowding out. In fact, a strong argument can be made that by lowering the risk of a yield shortfall, Revenue Protection actually enhances farmers' ability to forward sell their crop.

This, then, raises the question of why taxpayers should cover a large portion of the additional cost of revenue insurance if it is such a superior risk management tool. This question is best answered with an analysis of who actually benefits when farmers respond to subsidies by increasing their coverage levels and the purchase of revenue insurance.

Impact of Moving Back to a Fixed-Dollar-Per-Acre Subsidy

Suppose that Congress had begun its cost-cutting moves last year and decided to limit 2011 premium subsidies to the dollar amount available for yield insurance at any particular coverage level. How much would this save?² Well, the estimate is complicated

² Savings estimates described here are based on author assumptions about how the Congressional Budget Office would estimate cost savings. Actual cost savings will not typically equal CBO estimates of cost savings.

because all coverage levels and all insurance products for each county and crop have to be considered. An indication of the amount that would be saved can be made by calculating the cost savings assuming that each farmer buys 75% coverage and then multiplying the reduction in per-acre premium subsidies by the total number of acres insured.

Figure 6 gives some results for the largest state-crop combinations for corn, soybeans, wheat, and cotton. Not surprisingly, those states that have the highest participation in crop insurance would generate the most savings in premium subsidies. Across all states for these four crops, the total reduction in premium subsidies would be almost \$1.4 billion.

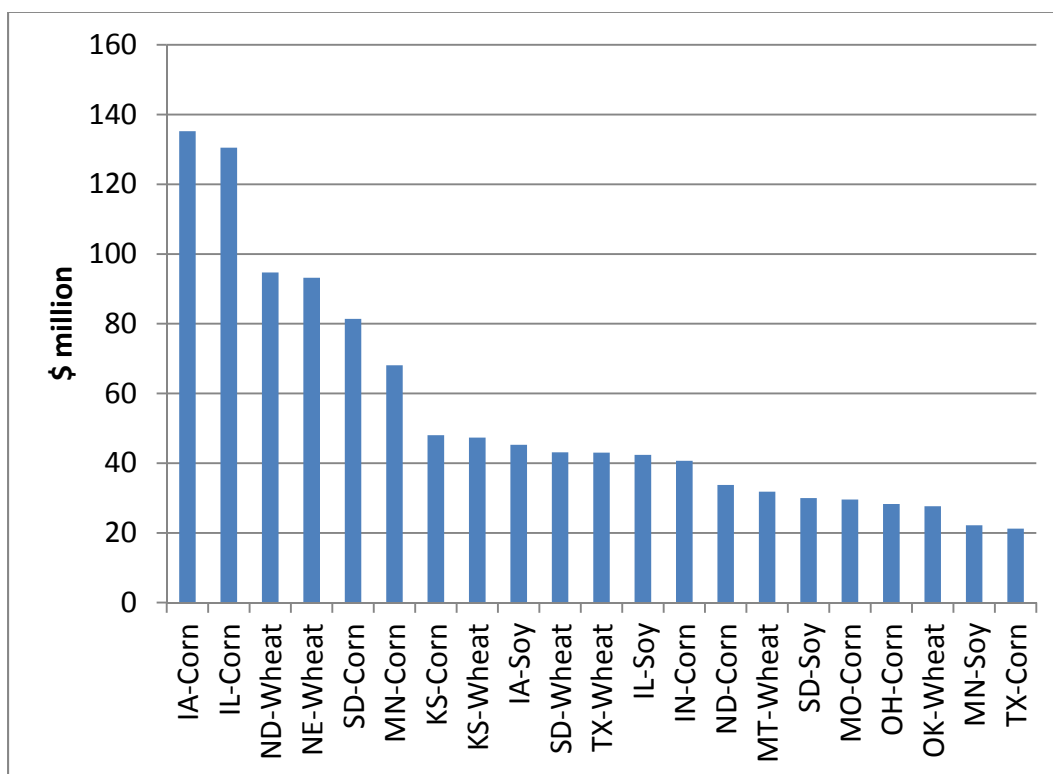


Figure 6. Reduction in premium subsidies by state and crop from limiting subsidies to those available for yield insurance

If this change were actually made, the cost savings would be greater than the \$1.4 billion reduction in premium subsidies. Such a policy change would have farmers pay 100% of the additional cost of moving from yield insurance to revenue insurance. Many farmers would choose not to make this move. Some would drop out of the program; others would buy the less expensive Revenue Protection with the Harvest Price Exclusion; and still others would buy only yield insurance. Because all three impacts would reduce the total premium in the program, underwriting gains would also decline.³ If the total premium in

³ Administrative and operating reimbursements will decline if the move away from revenue insurance causes these reimbursements to fall below their capped amount, in which case the estimated costs savings would increase.

the program dropped by, say, 20% (\$2 billion), cost savings would total an additional \$300 million per year.⁴

Even more savings could be had if the dollar amount of the premium subsidy were fixed rather than varying with the coverage level. Farmers would then respond to this change by not only changing the type of insurance that they purchased but also the coverage level. Statistical analysis suggests that only 50% of farmers would want to buy more than 65% coverage if higher-than-65% coverage levels were not subsidized.⁵ Presumably the 50% that would not buy more insurance would find more cost-effective ways to manage risk than with crop insurance. These farmers would still choose to participate in the program to capture the fixed-dollar subsidies, but they would not buy more costly coverage levels.

The total dollar savings from moving to a fixed-dollar-per-acre amount of subsidy for crop insurance would likely approach \$2 billion per year at current price levels. Note that these savings accrue not because any program or subsidy is eliminated but simply from a change in the way that farmers are subsidized. Moving to a fixed-dollar amount of subsidy per acre rather than a complex set of subsidies that increases the demand for high-cost coverage levels and revenue insurance policies would generate this magnitude of savings.

Political Feasibility of Changing Premium Subsidies

In writing ARPA, if Congress had chosen to leave the premium subsidy structure alone in the crop insurance program, the program cost to taxpayers over the last 10 years would be significantly lower than it actually was. Because farmers are more frugal with their own dollars than with taxpayer dollars, a policy that maintained a fixed-dollar amount of premium subsidy would have resulted in farmers buying lower coverage levels, more yield insurance, and less expensive forms of revenue insurance. Participation in the program would have been nearly as high in terms of total acres insured, but there would have been far fewer premium dollars in the program. That is, farmers would have adjusted to higher prices for insurance by buying less insurance.

However, making this move now would generate significant opposition because in policy and politics, it is not easy to take away or change an existing program. It would be a surprise if any farm advocacy groups come out in favor of changing the way that premium subsidies for farmers are calculated. But if given a choice between changing how premium subsidies are structured and cutting a program such as direct payments, many farmers would likely opt to keep direct payments.

A more difficult hurdle to overcome would be opposition from the crop insurance industry, including crop insurance agents. Because industry revenue depends on premiums generated, policy changes that have the potential to reduce total premiums are usually opposed by the industry. Congress, particularly the U.S. Senate, has revealed itself to be strongly in favor of taxpayer support for the crop insurance industry, so a move back to the old premium subsidy structure would be difficult to achieve.

⁴ This assumes an expected net underwriting gain of 15% of total premium.

⁵ See Babcock, B.A., "The Politics and Economics of the U.S. Crop Insurance Program," National Bureau of Economic Research, volume on agricultural economics, forthcoming.

But Congress seems poised to cut popular federal programs, including food and agricultural programs. Perhaps faced with explicit trade-offs between competing programs, such as funding for infants from poor families versus funding for food stamp recipients, or funding for the current premium subsidies versus funding for direct payments, Congress and advocacy groups will find that the \$2 billion annual cost savings from a simple change in calculating crop insurance premium subsidies are just too good to pass up.

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