Something for Nothing?
Direct Payments and Title I Farm Programs

by Bruce A. Babcock
Introduction

Growing attention to federal deficits indicates that Congress will more carefully scrutinize the efficiency of taxpayer support for farm programs. What constitutes an efficient use of taxpayer money, however, is open to various interpretations. One definition of economic efficiency is when a program corrects a misallocation of resources, such as excessive air or water pollution. But farm programs are not designed to correct misallocation of resources. A lower standard of allocation efficiency that may be more relevant for the study of farm programs is when a program does not cause resource misallocation by inducing farmers to change the way they farm. From this perspective, the direct payment program can be deemed efficient because farmers receive direct payments regardless of what farming actions they take.
Economists argue that such lump-sum payments are superior to other types of programs that incentivize farmers to change what or how they produce.

But few noneconomists would characterize direct payments as an efficient use of taxpayer money because they flow primarily to wealthy farmers who are currently experiencing record-high farm income levels. Accordingly, efficient farm programs are those that make payments only to farmers when they are needed. But it is difficult, if not impossible, to carefully define what constitutes need. Is a high risk of farm bankruptcy required, or is a drop in farm income or net worth below anticipated levels enough?

Another aspect of efficiency is that a farm program should not duplicate a service that can be provided by the private sector. Private provision of goods and services devotes a country’s resources to their highest valued use.

Putting these three definitions of efficiency together, an efficient farm program is one that has no or minimal effect on farmers’ production decisions (the resource-allocation test), makes payments only when they are needed (the farm safety-net test), and does not duplicate what farmers could purchase from the private sector (the private-market provision test). As will be shown, it is relatively straightforward to judge whether farm programs impact farmers’ production decisions and whether they duplicate what the private sector could provide. The difficulty of judging farm need can be partially overcome with guidance from economic theory in combination with an examination of what Congress claims to be the purpose of farm programs.

When Is a Farm Program Payment Needed?

Farm program payments fill two needs. Farmers may need assistance when market revenue is too low to cover costs, and members of Congress may need the payments to demonstrate constituent service. The importance of political need has been demonstrated by the ad hoc disaster assistance programs that Congress repeatedly passes. The two needs are related because disaster assistance is generally triggered by financial stress to some proportion of farmers in a region.

Making payments only when farmers face financial stress will increase the farm-level impact of the payments if farmers are averse to losses, either because they face cash-flow constraints or because they are loss averse. In either case, targeting payments only to relieve financial stress on the farm increases farmer benefits while simultaneously meeting the political needs of Congress. This means that programs that make payments triggered by on-farm financial stress will be more efficient (will generate higher benefit-to-cost ratios) than programs with payments that arrive either randomly or regularly. Targeting payments to relieve financial stress is consistent with Congress’s oft-stated objective that the purpose of farm programs is to provide farmers with a financial safety net.

But some measure of financial stress is needed if payments are supposed to relieve it. Farmers generate revenue using capital, purchased inputs, their own labor, and land to grow crops for sale. Each farmer has a break-even level of revenue needed to pay for land plus other production costs. If land involves a cash expense such as land rent or interest, then the break-even revenue level increases by the cash cost of land. If the cost of land is an opportunity cost, as it is with a land-owning farmer with no debt, then the break-even revenue level is defined only by purchased inputs. A positive cash flow is not the most meaningful metric of financial well-being of farmers, but it is reasonably straightforward to calculate and well understood by bankers, the public, and farmers themselves, so it has political resonance with politicians.

If cash outlays and a farmer’s acreage allocation among crops are known, then it is fairly straightforward to calculate the probability that a farmer will break even in any given year. At any time, information is available about the level and variability of harvest-time prices. Information about farm-yield levels and variability can also be inferred from farm and county yield records. This information can be combined into
a preplant revenue distribution as shown in figure 1. In panel a, the curve labeled A represents one distribution of farm revenue. In this distribution, the expected (average) value of revenue is $\overline{RA}$. The fraction of the total area under curve A that lies to the right of the break-even revenue level, $\overline{R_{BE}}$, is the probability that the farmer will generate enough revenue to cover costs. The fraction of the total area that lies to the left of $\overline{R_{BE}}$ is the probability that the farmer will lose money. Panel b shows what happens to these probabilities in years when prices are expected to be higher or lower. When prices are expected to be high, the revenue distribution shifts to the right to distribution B, with expected revenue increasing to $\overline{RB}$. As shown, this shift reduces the probability that a farmer will lose money. Expected low prices shift the distribution to the left to distribution C, with expected revenue decreasing to $\overline{RC}$. In this case, there is a low probability that a farmer can make money.

If the objective of a federal safety net is to maintain a certain probability that a farmer will make money, then it seems from figure 1 that more assistance is needed when prices are expected to be low than when prices are expected to be high. But before we can draw this conclusion, the assumption that remains fixed across these three distributions needs to be examined.

In US agriculture, land is the most fixed factor of production. When there are profits to be had in agriculture, at least a portion of them will flow to the landowner. This means that land rents vary with expected profit levels. If we make the simplifying assumption that the prices of all other inputs do not change as expected output prices change, then the cost of land will equal expected returns over other production costs. Thus, when land prices reflect expected returns over nonland production costs, then farmers make money only when revenues exceed expected returns, and they lose money when actual revenues are less than expected revenues. In this case, the probability that a farmer will make money is the fraction of the total area under each of the distributions that lies to the right of the expected value of the distribution. As shown, this area is not affected by whether prices are expected to be high or low, and the probability that a farmer will make or lose money in any year is approximately 50 percent. Taken to an extreme, if land costs completely reflect expected returns, then there is just as much justification for assistance in high-price years as low-price years.

The recent rise in commodity prices has increased both land values and cash rents in most US production areas. Nonland production expenses, including seed, fertilizer, and machinery, have increased also. Indeed, some seed companies make the expected price of corn part of their seed-pricing equation. This tracking of costs with revenues means break-even revenue is at least partially correlated with price levels. But lags between the time that land-rental agreements are signed and price expectations are formed, as well as stickiness in land-rental agreements, mean that changes in price and revenue expectations are not fully reflected in changes in land-rental rates. Incomplete transmission of changes in profitability means that the probability of a loss for a land-renting farmer declines in high-price periods.
and increases in low-price periods, but not to the same extent as land-owning farmers. Furthermore, the idea that break-even revenue levels for land-owning farmers do not change with price levels assumes that nonland production costs are unaffected by farm profitability. But again, this assumption does not match reality, as seed and fertilizer prices have reflected changes in expected crop prices in recent years.

Thus, break-even revenue levels increase with crop prices for most farmers. The increase is greatest for farmers who pay cash to rent a large proportion of their land. But it is also true that the probability of a negative cash flow decreases as crop prices increase because break-even revenue levels do not fully reflect higher expected prices. This means that less financial stress occurs—as measured by the probability of not covering cash costs—during high-price years than low-price years.

Review of Current Programs

This section provides a review of current farm programs. A focus on what triggers payments will provide necessary information to ascertain whether the programs are efficiently meeting their objectives. The number of commodities eligible for subsidies is limited, although they represent a large share of US crop acres. The programs examined here include direct payments, countercyclical payments, marketing loans, and Average Crop Revenue Election (ACRE). Reference is made to the Supplemental Revenue Assistance Payments (SURE) program—a new standing disaster program—but it should be examined as a crop insurance program rather than a farm commodity program because it is integrated with crop insurance.

Direct Payments. The direct payment program provides farmers with fixed annual payments. The size of direct payments for any farmer is simply 85 percent of the product of base acres of a crop, the farm’s direct payment program yield, and the direct payment rate, which is shown in table 1 for seven subsidized crops. Direct payments do not vary with actual farm income, yields, or prices. They change only if a farmer adds or loses base acres. Direct payments are reported by the United States to the World Trade Organization (WTO) as green-box programs; hence, they are not subject to WTO limitations.

Countercyclical Payments. Payments under the countercyclical program (CCP) are triggered whenever the season-average price, as measured by the National Agricultural Statistics Service (NASS), is less than the effective target price. The effective target price for a crop equals the crop’s target price minus the direct payment rate. The maximum countercyclical payment rate occurs when the season-average price falls below the loan rate for each crop and is equal to the difference between the CCP trigger price and the loan rate (see table 1). Otherwise the payment rate equals the difference between the CCP trigger price and the NASS price. The payment equals 85 percent of the product of the payment rate, a farm’s program yield, and a farm’s program base acreage. As shown in table 1, NASS prices have been below the CCP trigger price for cotton every year since 2007 except 2010.

Marketing Loans. Nonrecourse loan programs have long been part of US farm programs. With nonrecourse loans, producers must produce a crop to obtain a benefit. The government provides a loan to a farmer with the farmer’s crop acting as the loan’s collateral. The nonrecourse nature of the loan means that if the market price does not rise above the loan rate during the loan period, then the producer does not pay back the loan and the crop is forfeited to the government.

Marketing loans differ from standard nonrecourse loan programs in two ways. First, a producer still has the option of taking out a loan from the government at harvest by pledging harvested production as collateral. But under a marketing loan, a producer has another option. If the market price falls to rise above the loan rate during the loan period, the producer can either forfeit the crop or repay the loan at
the loan repayment rate, which may be below the loan rate because it reflects daily market prices. Producers will pay back loans at the repayment rate if market prices exceed the repayment rate because they can receive the difference between the two. Otherwise, producers will forfeit their crop.

As with countercyclical payments, cotton is the only commodity for which marketing loans have been made since 2007. Market prices have been far above loan rates during this time for all other commodities.

ACRE. One of the new farm programs included in the 2008 Farm Bill is the ACRE program. ACRE provides a revenue guarantee, so payments can be triggered by any combination of price and yield that results in actual revenue falling below the guarantee. The ACRE price used to set the guarantee equals a rolling average of NASS prices in the two previous years. Thus, the ACRE price for the 2010 crop equals the average of the 2008 and 2009 NASS prices. The yield used to set the ACRE guarantee is the average of the state average yield during the five previous years, throwing out the highest and lowest yields in the five years. Consequently, each state has a unique ACRE guarantee.

The actual ACRE guarantee equals 90 percent of the product of the ACRE price and the state ACRE yield. However, the maximum per-acre payment a producer can receive from ACRE equals 25 percent of the ACRE guarantee. The total ACRE payment equals the per-acre revenue shortfall multiplied by 83.3 percent of planted acres (rising to 85 percent of planted acres in 2012). The level of support offered by ACRE can be well above the trigger levels provided by the countercyclical and marketing-loan programs because ACRE support levels are determined by recent market prices rather than fixed prices that have not changed much since the 1980s.

Farmers who want to participate in ACRE must give up 20 percent of their direct payments and all eligibility for countercyclical payments, and their loan

Table 1: Farm Program and Market Prices

<table>
<thead>
<tr>
<th></th>
<th>Corn</th>
<th>Soy</th>
<th>Wheat</th>
<th>Rice</th>
<th>Cotton</th>
<th>Barley</th>
<th>Sorghum</th>
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<tbody>
<tr>
<td><strong>Target Price</strong></td>
<td>2.63</td>
<td>6.00</td>
<td>4.17</td>
<td>10.50</td>
<td>71.25</td>
<td>2.63</td>
<td>2.63</td>
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<tr>
<td><strong>Direct Payment Rate</strong></td>
<td>0.28</td>
<td>0.44</td>
<td>0.52</td>
<td>2.35</td>
<td>6.67</td>
<td>0.35</td>
<td>0.35</td>
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<tr>
<td><strong>CCP Trigger Price</strong></td>
<td>2.35</td>
<td>5.56</td>
<td>3.65</td>
<td>8.15</td>
<td>64.58</td>
<td>2.28</td>
<td>2.28</td>
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<tr>
<td><strong>Loan Rate</strong></td>
<td>1.96</td>
<td>5.00</td>
<td>2.94</td>
<td>6.50</td>
<td>52.00</td>
<td>1.96</td>
<td>1.96</td>
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**NASS Price**

<table>
<thead>
<tr>
<th>Year</th>
<th>Corn</th>
<th>Soy</th>
<th>Wheat</th>
<th>Rice</th>
<th>Cotton</th>
<th>Barley</th>
<th>Sorghum</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>4.20</td>
<td>10.10</td>
<td>6.48</td>
<td>12.80</td>
<td>59.30</td>
<td>4.02</td>
<td>4.08</td>
</tr>
<tr>
<td>2008</td>
<td>4.06</td>
<td>9.97</td>
<td>6.78</td>
<td>16.80</td>
<td>47.80</td>
<td>5.37</td>
<td>3.20</td>
</tr>
<tr>
<td>2009</td>
<td>3.55</td>
<td>9.59</td>
<td>4.87</td>
<td>14.00</td>
<td>62.90</td>
<td>4.66</td>
<td>3.22</td>
</tr>
<tr>
<td>2010</td>
<td>5.35</td>
<td>11.70</td>
<td>5.70</td>
<td>12.40</td>
<td>81.50</td>
<td>3.90</td>
<td>5.40</td>
</tr>
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</table>

**ACRE Price**

<table>
<thead>
<tr>
<th>Year</th>
<th>Corn</th>
<th>Soy</th>
<th>Wheat</th>
<th>Rice</th>
<th>Cotton</th>
<th>Barley</th>
<th>Sorghum</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>4.13</td>
<td>10.04</td>
<td>6.63</td>
<td>14.80</td>
<td>53.55</td>
<td>4.70</td>
<td>3.64</td>
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<tr>
<td>2010</td>
<td>3.81</td>
<td>9.78</td>
<td>5.83</td>
<td>15.40</td>
<td>55.35</td>
<td>5.02</td>
<td>3.21</td>
</tr>
<tr>
<td>2011</td>
<td>4.45</td>
<td>10.65</td>
<td>5.29</td>
<td>13.2</td>
<td>72.2</td>
<td>4.28</td>
<td>4.31</td>
</tr>
</tbody>
</table>


NOTES: Prices are expressed in $/bushels except for cotton and rice ($/cwt). The NASS price for 2010 and ACRE price for 2011 are projected using the US Department of Agriculture’s February 2011 World Agricultural Supply and Demand Estimates projection.
rate drops by 25 percent. As shown in table 1, because ACRE prices are based on recent market prices, the likelihood of receiving an ACRE payment due to a price decrease is much greater than the probability of receiving a countercyclical payment for all crops except cotton.

SURE. Another new farm program in 2008 is SURE. Historically, ad hoc disaster payments to farmers have been provided on a frequent basis. SURE was touted as a permanent disaster program even though funding was only provided for 2008–2011 crops. Actual payment calculations under SURE are quite complicated, and in some cases payments cannot be made until nearly three years have passed after the crop was planted. A farmer adds up crop revenue from all sources, including crop insurance indemnities and payments from other government programs, and compares this revenue to a revenue guarantee based on a farmer’s crop insurance guarantee multiplied by 1.15. This formula results in a farmer receiving a payment to cover so-called shallow losses within a farmer’s crop insurance deductible.

Efficiency of Current Programs

Direct Payments. Because direct payments have, at most, minimal impacts on farmers’ production decisions, they pass the resource-allocation test. Also, because they are lump-sum payments, they do not compete with the private sector, so they pass the private-market provision test. Their predictability and transparency mean that a significant proportion of direct payments end up as higher cash rents. For land renters, direct payments have less impact on the probability that they will cover cash costs than for land owners. For land-owning farmers, direct payments decrease the break-even market revenue level. But, as shown in panel b of figure 1, when price levels are high, a reduction in $R_{BE}$ has little impact on the probability that farmers will lose money because the probability is already so low in high-price years. When price levels are low, the same reduction in $R_{BE}$ has a larger impact on this probability.

Consider an alternative to direct payments in which no payment is made when prices are high, but double payments are made when prices are low. When prices are high, eliminating direct payments has almost no impact on the probability of a loss to land-owning farmers. But when prices are low, a double payment would move $R_{BE}$ in distribution C of figure 1 twice as far to the left as current direct payments do. This double payment could substantially decrease the probability that the farmer loses money. Thus, making direct payments countercyclical with respect to revenue could dramatically improve safety-net efficiency. This demonstrates that there is a fundamental efficiency tradeoff involved with direct payments because they pass the resource-allocation test but fail the farm safety-net test.

Countercyclical Payments and Marketing Loans. Because countercyclical payments are based on a fixed amount of production, they likely have little impact on farmers’ planting decisions. Thus, they pass the resource-allocation test. But when market prices are expected to be greater than or equal to CCP trigger prices, the private sector can provide nearly identical risk protection through put options on futures contracts. If market prices are expected to be lower than trigger prices, then the private sector can provide price protection through put options, but the options would be very expensive because the strike price (the CCP trigger price) would be greater than the expected market price. Thus, the CCP does not pass the private-market provision test, except, perhaps, if market prices are expected to be below the CCP trigger prices.

CCP trigger prices are fixed for the duration of the Farm Bill. This means they provide little expected financial assistance when prices are high and much assistance when prices are low. For farmers with a probability of a loss that does not vary with price levels, these programs provide no assistance when price levels are high even though they may face a
significant probability of a loss. These programs also provide no assistance to farmers who have a low probability of a loss when price levels are high. But because the probability of a loss is already low for these farmers, no assistance should be given.

When expected prices are less than or equal to the CCP trigger prices, the expected level of assistance from countercyclical payments can be substantial. In contrast to direct payments, countercyclical and marketing-loan payments are made more often when they have a significant impact on the probability that farmers will suffer a financial loss. Thus, the countercyclical and marketing-loan programs come closer to passing the farm safety-net test than direct payments. However, because they are based solely on price instead of revenue, they do not provide as strong of a farm safety net as a revenue program would.

One difference between countercyclical payments and marketing loans is that marketing loans are triggered by a posted county price or an adjusted world price, both of which tend to generate significantly greater payments than needed to offset the effects of price decreases. In addition, marketing loans are coupled to production, so in bumper crop years when farmers have a lot of production to sell, they are overcompensated for price drops, and in short crop years, they are undercompensated. Furthermore, this coupling creates a direct incentive to increase production when expected prices are below the loan rate. Thus, marketing loans influence farmers’ planting decisions, so they fail the resource-allocation test. They provide safety-net protection, however, so they pass the safety-net test. But again, unless prices are expected to be lower than loan rates, farmers can purchase duplicate coverage using put options, so marketing loans fail the private-sector provision test.

In summary, countercyclical programs pass the resource-allocation test and provide a better safety net than direct payments do, but they duplicate what the private sector offers farmers, unless expected price levels drop below CCP trigger prices. Marketing loans do not pass the resource-allocation test, and they duplicate what the private sector offers, but they are a better safety net than direct payments.

ACRE. ACRE differs in two significant ways from countercyclical and marketing-loan programs. First, payments are triggered by revenue shortfalls, not low prices. Thus, they are targeted at the variable most important in determining whether a farmer suffers a loss. Second, ACRE guarantees potentially reflect recent market conditions. Thus, ACRE offers potential safety-net value to farmers in both high- and low-price periods. This feature

<table>
<thead>
<tr>
<th>Expected 2011 Prices ($/bu)</th>
<th>Expected ACRE Payments ($/Acre)</th>
<th>Actual Coverage Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iowa Corn</td>
<td>Kansas Wheat</td>
<td>Iowa Corn</td>
</tr>
<tr>
<td>5.00 5.40</td>
<td>7.17 6.87</td>
<td>76% 83%</td>
</tr>
<tr>
<td>6.00 6.48</td>
<td>0.84 2.21</td>
<td>64% 69%</td>
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<tr>
<td>3.50 4.10</td>
<td>80.51 20.87</td>
<td>109% 109%</td>
</tr>
<tr>
<td>4.45 5.29</td>
<td>20.00 7.65</td>
<td>86% 85%</td>
</tr>
</tbody>
</table>

SOURCE: Author’s calculations.
NOTES: Payments simulated using Monte Carlo analysis. Yields are assumed to be beta distributed with means of 173.5 (Iowa corn) and 37.7 (Kansas wheat). Prices have a mean equal to the indicated levels and a price volatility of 25 percent. Prices and yields are correlated at -0.6 for Iowa corn and -0.3 for Kansas wheat.
benefits farmers who have costs that rise with expected prices.

ACRE payments are based on planted acres, so it has the potential to influence farmers’ planting decisions. If ACRE prices are reasonably close to current expected market prices, however, the resource allocation effect will be small. Only if expected market prices are below current ACRE prices will ACRE have the potential to influence planting decisions.

Targeting payments only to relieve financial stress on the farm increases farmer benefits while simultaneously meeting the political needs of Congress.

ACRE has significant drawbacks. First, its price protection can be provided by the private sector because both are based on recent market conditions. Thus, the price portion of ACRE fails the private-sector provision test.

Second, because ACRE guarantees are based on prices in the previous two years, they may not reflect current market conditions. Table 2 shows expected 2011 ACRE payments for Kansas wheat and Iowa corn. ACRE guarantees for the 2011 crop depend on state yields from 2006 to 2010 and season average prices for the 2009 and 2010 marketing years. The 2010 marketing year is not complete, so the 2011 ACRE guarantee is not known yet. The projected prices for 2010 from table 1 are used to calculate the expected payments in table 2. The projected 2011 ACRE guarantee for Iowa corn is $664 per acre—90 percent of the projected ACRE price ($5.45/bu) and the ACRE yield (165.7 bu/ac).

The projected 2011 ACRE guarantee for Kansas wheat is $169 per acre—90 percent of the projected ACRE price ($5.29/bu) and the ACRE yield (35.5 bu/ac). The bottom row of table 2 reports expected ACRE payments if 2011 expected crop prices equal the ACRE price. As shown, expected payments for Iowa corn and Kansas wheat are relatively modest. One reason for these modest expected payments is that the actual ACRE coverage level is below 90 percent for both Iowa corn and Kansas wheat because ACRE bases its yield guarantee on five years of data. Both Iowa corn and Kansas wheat have upward-trending yields, so ACRE tends to use a yield to set its guarantee below current trend yields.

Another potential drawback of ACRE is that the price used in the ACRE guarantee may be “stale”—that is, it may differ significantly from price expectations when land-rental agreements are signed or at planting time. Table 2 shows the effects on expected payments and the implied coverage level from using a stale price. The first row shows expected payments under the fixed ACRE guarantee when expected prices are $5.00 for corn and $5.40 for wheat, both of which are higher than the price used to set the ACRE guarantee, which is shown in table 1. The coverage level (defined as the actual ACRE guarantee divided by the product of trend yield and expected price) falls as expected prices rise. The second row shows what happens if prices rise even higher. As shown, both the coverage level and expected payments fall significantly. For many farmers, such an increase in expected price above the price used in ACRE will also reduce the probability that they will suffer a loss. Thus, this decline in expected payments is a good attribute of the program.

The third row shows what happens if the ACRE price is higher than expected market prices. Coverage levels and expected payments increase dramatically. If the drop in expected price is a surprise, in that production costs and land rents are based on a higher expected price, then the dramatic increase in payments is appropriate. If the drop in expected price is anticipated and is reflected in a commensurate drop in costs, then the increase in payments is a windfall to producers.

Another drawback to ACRE is that there is a possible mismatch between payments and loss. The guarantee is based on state revenues rather than on-farm or county revenues. State yields may be
high, generating no ACRE payment, but some farm yields may be low, warranting a payment. Conversely, state yields may be low, generating a payment, but farm yields may be high, warranting no payment. ACRE rules include a provision requiring farmers to show that they have suffered a farm revenue loss, but in most years, farmers will be able to meet this provision.

This mismatch between payments and loss is likely more important for yield basis risk than price basis risk for most regions. To determine the magnitude of the problem, a “pseudo ACRE” that makes payments based only on yield shortfalls was simulated for Iowa corn and Kansas wheat. State and county yield histories were obtained back to 1955. County yields were used as a proxy for farm yields, but the same issue of yield basis risk arises because of differences between farm yields and county yields. Hence, the results presented in Table 3 underestimate the amount of basis risk associated with ACRE.

ACRE guarantees were calculated for 1960–2010 using ACRE’s five-year average-yield rule. County and state losses were recorded for each year. For each year and county, one of four events could occur. First, both the state and the county could suffer a loss. Second, both could suffer no loss. Either of these events means there was no mismatch in the payment made. Third, the state ACRE program could make a payment, but no loss occurred. Fourth, the state ACRE program could not make a payment, but a loss occurred.

Table 3 reports the proportion of all county years observed in which each of the four events occurred. For Iowa corn, 83 percent of the time neither the counties nor the state suffered a yield loss at the 90 percent coverage level. For Kansas wheat, this occurred 59 percent of the time—this reflects less variable yields in Iowa plus a higher trend yield, which makes for a lower effective coverage level under ACRE rules. Adding in the 8 percent (Iowa) and 16 percent (Kansas) of the counties that suffered a loss the same year that the state suffered a loss, there is a 91 percent chance of no mismatch in Iowa and a 75 percent chance of no mismatch in Kansas. From this perspective, the state ACRE program does a decent job at protecting county yields.

A more relevant measure of the importance of basis risk is the proportion of time a county suffers a loss and receives a payment. Adding together the first and last rows, we see that there is a 15 percent probability that a county suffers a loss in Iowa and a 26 percent probability in Kansas. In Iowa, conditional on there being a loss, there is a 53 percent chance (8 divided by 15) that the county will receive a payment from the state program. That is, in Iowa, the odds are a little better than half that a county yield loss would be at least partly covered by a state payment. In Kansas, the odds are a bit higher, with a 61 percent chance (16 divided by 26) that a county yield loss would be associated with a state payment.

Another relevant metric is the probability of receiving a state payment when no loss occurred in the county. For Iowa, this is quite low at 2.3 percent (2 divided by 85) because the probability of a payment is so low. But in Kansas the probability is 20 percent (15 divided by 74). This means there is a one-in-five chance that a county that has not suffered a loss could receive a state ACRE payment. The ACRE individual-loss trigger could be used to limit this type of windfall payment.

In summary, because ACRE targets revenue shortfalls rather than price shortfalls, it provides a more targeted safety net than countercyclical and marketing-loan payments, which target only price shortfalls. In addition, ACRE guarantee levels reflect recent market prices, thereby putting producers at

Table 3: A Measure of Yield Basis Risk

<table>
<thead>
<tr>
<th></th>
<th>Iowa Corn</th>
<th>Kansas Wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Loss, County Loss</td>
<td>8%</td>
<td>16%</td>
</tr>
<tr>
<td>No State Loss, No County Loss</td>
<td>83%</td>
<td>59%</td>
</tr>
<tr>
<td>State Loss, No County Loss</td>
<td>2%</td>
<td>15%</td>
</tr>
<tr>
<td>No State Loss, County Loss</td>
<td>7%</td>
<td>10%</td>
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</tbody>
</table>

SOURCE: Author’s calculations.
risk even when prices are expected to be high. The two most significant safety-net drawbacks to ACRE are its potential to generate windfall payments to producers with risks that do not increase significantly with expected price levels, and its use of state yields to provide its guarantee. A county- or farm-yield guarantee would reduce the mismatching of ACRE payments and losses on the farm. Because ACRE payments are based on state yields rather than farm yields, ACRE likely does not significantly influence farmers’ input decisions. However, because ACRE bases its payments on planted acres rather than base acres, the program could influence farmers’ planting, particularly when market prices drop suddenly before planting and ACRE guarantees are higher than expected market revenues.

It is not reasonable to transfer $5 billion each year from taxpayers to farmers when farm income is at a record high.

Finally, the critical role of crop insurance in providing a farm safety net needs to be recognized. It is somewhat disingenuous to justify farm programs as providing a critical safety net because a large portion of the country’s farmers use heavily subsidized crop insurance. The most popular form of crop insurance is revenue insurance, which places a floor on farm-level revenue. If this floor is above break-even revenue, then the probability that a farmer does not break even is zero, which implies that there is no safety-net justification at all for farm programs. Thus, to create a cost-effective safety net, Congress should choose whether the safety net should be provided through crop insurance programs, in which case farm programs should be eliminated, or whether farm programs should provide the safety net, in which case subsidies for crop insurance should be eliminated. One example of how farm programs could provide more efficient safety-net support for farmers outside the crop insurance program is discussed in the next section. This program would pass the resource-allocation test and provide some safety-net support to farmers. This option makes sense if Congress insists on providing support to farmers.

Reform of Farm Programs

The exploration of farm program objectives and attributes leads to some clear recommendations on how to improve federal commodity programs. Farm programs should not induce farmers to change their production decisions, they should be targeted at farm financial stress, and they should not duplicate what the private sector can provide. In addition, if Congress insists on providing commodity support to farmers, the support should reduce crop insurance expenditures and satisfy Congress’s political need to provide assistance to the farming sector when widespread financial difficulty occurs.

Eliminate Direct Payments. Although direct payments do not distort production decisions, and they are not limited by the WTO, it is not reasonable to transfer $5 billion each year from taxpayers to farmers when farm income is at a record high, farm balance sheets have never been better, and Congress is actively cutting programs that provide public goods such as transportation, parks, disease prevention, and education. When such programs are being cut or eliminated, the fact that direct payments to farmers do no harm provides insufficient justification for continuing them.

Eliminate Countercyclical Payments and Eliminate or Replace Marketing Loans. Marketing loans could be replaced with a recourse loan program whereby farmers have to pay back marketing loans with interest. There is no economic justification for taxpayer support for programs that provide price guarantees when the private sector can provide the same support, albeit at some cost to farmers.
Recognize the Private Sector. If Congress insists on providing commodity support to farmers, then this support should provide safety-net support to farmers, should have minimal impact on their production decisions, should not duplicate private-sector services, and should decrease the demand for crop insurance, thus generating savings from that program. The support should recognize that the private sector provides farmers with efficient hedging instruments that can be used to guard against unexpected price drops during high-price periods. There is no justification for federal provision of price-management tools when prices are high.4

Provide County-Level Coverage. It is not clear that the private sector alone can provide adequate private insurance against unexpected yield drops. To meet Congress’s political need to intervene when widespread yield declines occur, it could provide farmers coverage against yield declines at the county level. Such coverage would provide assistance to farmers when widespread production disruptions occur. County coverage also reduces moral-hazard issues associated with individual-yield coverage. Program payments could be triggered when county yields fall below a certain percentage (85, 90, or 95 percent) of expected county yields. The price at which the yield shortfall is valued could be based on prevailing market prices at the time of planting, but price declines should not increase payments when prevailing market prices are high. Such coverage would duplicate the safety-net coverage provided by the crop insurance program.

Transform County Yield Coverage into County Revenue Coverage. If Congress insists on providing protection against low prices, then an alternative to the CCP and marketing-loan program is to transform county-yield coverage into county revenue coverage. The revenue-guarantee level could equal a certain percentage of the product of the countercyclical trigger price and the expected county yield. Actual county revenue would equal actual county yield multiplied by the NASS price in the first six months of the marketing year. If actual county revenue falls below the revenue guarantee, then a payment would make up the difference. Turning yield coverage into revenue coverage during low price periods satisfies the congressional impulse to aid the farming sector when prices are low. Furthermore, to the extent that farm production expenses cannot be covered when prices fall below countercyclical trigger price levels, then reliance solely on futures prices may not give farmers the ability to lock in break-even prices. The program would not distort planting decisions because coverage is provided at the county level, so payments could be based on planted acreage rather than base acreage.5

Conclusions

Current farm programs are not an efficient use of taxpayer money because they duplicate price protection that the private sector can provide and they make payments when the farm sector is highly profitable. The one positive aspect of current farm programs is that they do no harm, in that they do not cause farmers to significantly change the crops they plant or how they grow their crops. But doing no harm is insufficient justification for continuing to spend more than $5 billion a year on Farm Bill programs.

There has never been a better time to reform farm programs. The budget deficit has never been a more powerful reform justification, and the portion of the farm sector that receives farm subsidies has never been more profitable. If the budget-cutting fever currently gripping Congress makes its way to farm programs, then the 2012 Farm Bill could truly be a watershed event.
Notes


4. This recommendation would extend to federally subsidized revenue insurance programs, but the crop insurance program is outside the scope of this paper.

5. Crop reporting district yields could be used for counties that have an insufficient number of farmers for NASS to report county yields.
Something for Nothing?
Direct Payments and Title I Farm Programs

by Bruce A. Babcock

The United States spends over $5 billion per year supporting the farm sector through Farm Bill programs, most of which are inefficient. For a farm program to be efficient, it should not induce farmers to change their production decisions (allocation test), should be targeted at farm financial stress (farm safety-net test), and should not duplicate what the private sector can provide (private-market provision test). This paper uses these three criteria to determine the efficiency of Title I farm programs. Some of the conclusions include:

1) **Direct payments do not create a financial safety net and should be eliminated:**
When price levels are high, there is little impact on the probability that farmers will lose money; when price levels are low, there is a larger impact on that probability. As an alternative to direct payments, no payment could be made when prices are high, and double payments could be made when prices are low. By making direct payments countercyclical with respect to revenue, the safety-net efficiency can be improved.

2) **Countercyclical payments (CCPs) duplicate what the private market provides and should be eliminated:**
When market prices are expected to be above or below CCP triggers, the private market can provide risk protection through put options on futures contracts. When prices are expected to be lower than trigger prices, options tend to be more expensive, but CCPs provide little expected financial assistance when prices are high and much assistance when prices are low. The CCP program is thus inefficient for farmers who have a high probability of loss when prices are high.

3) **Marketing loans can influence farmers’ planting decisions and should be eliminated or replaced:**
If marketing loans are to remain, they should be replaced with a recourse loan program whereby farmers have to pay back marketing loans with interest. Currently, farmers are overcompensated in bumper crop years and undercompensated in short crop years. This creates a direct incentive to increase production when expected prices are below the loan rate.

4) **The Average Crop Revenue Election (ACRE) program should provide coverage against yield drops at the county level:**
The current system, which bases guarantees on state revenue, creates a yield basis risk. County coverage reduces moral-hazard issues associated with individual yield coverage. Payments could be triggered when county yields fall below a certain percentage of expected county yields.

5) **An alternative to CCP and marketing loans is county revenue coverage:**
This would transform ACRE from county yield coverage into county revenue coverage. The justification for turning yield coverage into revenue coverage during low price periods is that it satisfies the need to aid the farming sector when prices are low.

Current farm programs are not an efficient use of taxpayer money because they duplicate price protection that the private sector can provide and they make payments when the farm sector is highly profitable.