

United States
Department of
Agriculture



Economic
Research
Service

Economic
Information
Bulletin
Number 103

November 2012

Potential Farm-Level Effects of Eliminating Direct Payments

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Recommended citation format for this publication:

Ifft, Jennifer, Cynthia Nickerson, Todd Kuethe, and Chengxia You. *Potential Farm-Level Effects of Eliminating Direct Payments*, EIB-103, U.S. Department of Agriculture, Economic Research Service, November 2012.

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A Report from the Economic Research Service

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Potential Farm-Level Effects of Eliminating Direct Payments

Jennifer Ifft
Cynthia Nickerson
Todd Kuethe
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Abstract

Since 2003, direct payments have accounted for a significant portion of farm program payments. If direct payments were eliminated, many agricultural producers would be affected, both through the loss of income and potential declines in land values and rental rates. This report considers the potential contribution of direct payments to farm revenues and land values across farm commodities and regions and estimates the magnitude of the financial impact on participating farms should direct payments be eliminated. Direct payments are highest relative to crop revenues in parts of the Northern Plains, Southern Plains, Mountain, Delta, and Southeast regions, and the estimated effect of direct payments on cropland values also is relatively high in many of these regions. Overall, our analysis suggests that an abrupt end to the direct payment program could reduce the number of farms with a favorable financial status (profitable farms having relatively low debt burdens) by about 11,000 nationally, or about 2 percent of farms that received direct payments in 2009. The estimated effect varies regionally and is more pronounced in the Delta and Southeast regions, where direct payments per farm tend to be higher, on average, than elsewhere.

Keywords: direct payments, farm policy, farmland values

Acknowledgments

We appreciate the reviews from Joy Harwood and Terry Hickenbotham at USDA's Farm Service Agency; Barrett Kirwan and Gary Schnitkey at the University of Illinois at Urbana-Champaign; Kevin Hintzman at USDA's National Agricultural Statistics Service; and Erik O'Donoghue, Ron Durst, Patrick Sullivan, David McGranahan, Utpal Vasavada, and Marca Weinberg at USDA's Economic Research Service. We also appreciate the editorial and design assistance from Angela Anderson, Molly Garber, David Nulph, and Cynthia A. Ray.

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Summary

What Is the Issue?

Direct payments are commodity program payments made to farmers, which are not tied to current production or market prices but are based on historical cropping patterns of major commodities, or “base acres,” with per-acre rates fixed in legislation. Direct payments have accounted for a significant portion of total farm program payments since 2003, ranging from 21-45 percent of total farm program payments. In 2010, \$4.8 billion in direct payments were paid to producers, accounting for 39 percent of total farm program payments and 6 percent of U.S. net farm income. A number of proposals for the next Farm Act have called for elimination of the direct payment program. This report considers the potential contribution of direct payments to farm revenues and land values across commodities and regions and estimates the financial impact on participating farms should direct payments be eliminated.

What Did the Study Find?

Although some farms’ financial position may be adversely affected should direct payments end and not be replaced by a program providing similar levels of remuneration, our analysis suggests that the majority of farms currently receiving direct payments would not see a substantial decline in their overall financial well-being. Based on variation in income and cropland values, an end to the direct payment program likely would have more of an impact in some regions than in others.

- On a per-acre basis for 2004-08, direct payments were equivalent, on average, to 6.8 percent of all direct payment program crop revenues (crops that establish eligibility for direct payments). Many counties in the Northern Plains, Southern Plains, Southeast, and Mountain regions received direct payments per acre that were equivalent to at least 7 percent of direct payment program crop revenues per acre, on average, for 2004-08.
- Direct payments per acre vary significantly by commodity. In 2008, rice and peanuts received the largest direct payments per acre (\$96.25 and \$45.85, respectively), but combined they only accounted for about 2 percent of total base acres. Corn, wheat, and soybeans accounted for more than 80 percent of total base acres in 2008, but received lower direct payments per acre (\$24.39 per acre, \$15.21 per acre, and \$11.54 per acre, respectively).
- The estimated contribution of direct payments to cropland values over 2004-08 has been relatively small in the Corn Belt and Lake States, while it was larger in areas of the Northern and Southern Plains and the Delta.

Based on 2009 Agricultural Resource Management Survey (ARMS) data, if direct payments were eliminated, some farms receiving direct payments (DP farms) could see a negative impact on their financial performance as a result of reduced income and land values.

- About 21 percent of farms received direct payments, which averaged \$8,700 per DP farm in 2009.

- Relatively more DP farms were in a stronger financial position in 2009 than farms that did not receive direct payments. As of 2009, about 64 percent of farms receiving direct payments enjoyed a favorable financial status (defined as positive income and a relatively low debt-to-asset ratio of less than 40 percent), compared with 55 percent of farms that did not receive direct payments.
- The payment loss would lead to about 11,000 DP farms, or 2 percent of all DP farms, losing their favorable financial status. This loss appears slightly larger, at 4 percent, when measured against just those DP farms that had a favorable financial status in 2009.
- Our findings indicate that most shifts in financial status for DP farms from elimination of direct payments would be a result of lost income and not from lower farmland values.
- The number of farms considered vulnerable—farms with negative net farm income, a debt-to-asset ratio greater than 40 percent, and most likely to experience financial stress—would increase by about 2,600 (less than 1 percent of all DP farms).
- DP farms in the Delta and Southeast regions would be most affected by an end to direct payments, which would cause about 13 percent of Delta DP farms and 10 percent of Southeast DP farms that had favorable status in 2009 to lose this status. These farms would see the most impact because direct payments per farm are higher, on average, in these regions.

Although the potential loss of income and decline in land values could be significant for some farms, new programs (not assessed in this report) that have been proposed in Farm Act deliberations could help maintain farm income stability if direct payments are eliminated. Producers can also take actions—like diversifying crops or seeking off-farm work—to diminish the loss of direct payments. Further, the U.S. farm sector has benefited from growth in average farm income and farmland values over the last 5 years, and DP farms that have experienced this growth would be less likely to see a decline in their financial status from the elimination of direct payments now than what our 2009 data show.

How Was the Study Conducted?

Our analyses were based on data from various USDA agencies. Farm program payment information from 2004 to 2008 was provided by USDA's Farm Service Agency (FSA), crop production information was obtained from USDA's National Agricultural Statistics Service (NASS) 2007 Census of Agriculture, and annual field crop price, yield, and acreage data from NASS Quick Stats (2004-08). Cropland values data for 2004-08 came from the USDA/NASS June Area Survey. USDA's Economic Research Service (ERS) provided farm income estimates. Detailed farm survey data came from the 2009 Agricultural Resource Management Survey (ARMS), a joint effort by ERS and NASS. The goal of this study was to identify the potential magnitude of the impacts of ending direct payments rather than to estimate precise impacts; as such, our analysis includes a number of simplifying assumptions, including that output prices and most input prices remain fixed and that producers would not make changes to their farm operations as a result of direct payments ending. Our approach also drew from previously published studies on farm finance and management and incidence of Government payments.

Introduction

For the past 10 years, direct payments (DPs)¹ have been paid to producers who operate land that historically has been used to produce major agricultural commodities, or base acres.² Unlike most other farm program payments, direct payments transfer income to eligible producers and largely are paid without regard to the producer's current production decisions or commodity market conditions. Many proposals for a 2012 Farm Act have called for the complete elimination of direct payments.

We examine the potential impact of an end to direct payments on farm revenues and farmland values, and simulate how the loss of DPs could impact a producer's financial position if direct payments were not replaced with comparable programs providing a similar level of remuneration. In the simulation, we consider two types of impacts on a producer's financial position. First, program elimination would reduce producers' incomes. This loss could be partially offset for producers who rent most of the land they operate, as the loss of direct payments could result in a reduction in rent expenses. Second, program elimination could put downward pressure on the value of base acres and, hence, farmland values, potentially reducing producers' solvency. Consideration of the latter impact is key to understanding the potential impacts of an end to direct payments because the financial health of the agricultural sector is closely linked to farmland values. Farmland values accounted for 84 percent of total farm assets in 2009 and farmland serves as a primary source of farm loan collateral.

While the impact of eliminating direct payments on the revenues and income of participating farms is relatively straightforward to calculate, the impact on farmland values are less certain. Over 50 years of research collectively has shown that farm program payments have had a positive influence on farmland values, although estimates of the level of influence vary widely (see review in Moss and Katchova, 2005). This literature principally addressed farm programs for which payment levels were related to production practices and market prices. Given the relatively short time period that direct payments have been authorized, evidence of how direct payments affect farmland values is limited.

We base our analyses on data from current farm operations, but an end to direct payments also could impact landowners who do not farm. For example, nonoperating landowners who rent out base acres on a share-rent basis may receive a share of direct payments, and those renting out base acres on a cash basis may charge a higher rate for operators who receive direct payments. While we lack the empirical data to estimate the impact of direct payments on nonoperating landowners, theoretically, their income and solvency could be affected as well.

¹Direct payments, also referred to as "fixed direct payments" and "fixed payments," were authorized under the 2002 and 2008 Farm Acts as a part of the Direct and Countercyclical Payment (DCP) Program and under the 2008 Farm Act as part of the Average Crop Revenue Election (ACRE) Program. Production flexibility contracts (PFCs), which were similar to direct payments, were paid out under the 1996 Farm Act until 2002. In this brief, we focus on the impact of changes to direct payments.

²See table 1 for a list of specific commodities.

Background on the Direct Payment Program

Direct payments are one of many farm income support programs.³ Direct payments are considered decoupled farm assistance, as they are not tied directly to current production or market prices. Policies that provide greater production flexibility to farmers were first introduced in the early 1990s. Decoupled farm assistance grew in favor following ratification of the Uruguay Round Agreement on Agriculture and the passage of the Federal Agricultural Improvement and Reform Act of 1996, as global efforts to reign in trade-distorting farm policies increased. These programs provide an income transfer to farm operators and bolster farm incomes. The increased income from direct payments may lead to higher farmland values, since payments are attached to base acres (see box, “Measuring the Impact of Government Payments on Farmland Values”).

³For more information, see the ERS topic page on Farm & Commodity Policy at <http://www.ers.usda.gov/topics/farm-economy/farm-commodity-policy.aspx>.

Measuring the Impact of Government Payments on Farmland Values

Economic theory suggests that Government program payments raise farmland values through what economists call the “capitalization” of program benefits. According to capitalization theory, the price of farmland is determined by two factors.

The first factor: the expected returns from owning farmland. The returns include cash flow from the production of farm goods and services, the potential for converting farmland to residential or commercial use, and any other form of income generated from owning farmland. Government payments are one form of additional income that increase the expected cash flow for farmland owners, and direct payments are more constant than payments tied to market conditions. Even when payments are made to the producer, landowners can adjust rents to capture a greater share of the expected returns from Government programs.

The second factor: the opportunity cost of capital, or alternatively, a discount rate. This factor reflects (1) the time value of money (or discounting for uncertainty related to future market conditions) and (2) an adjustment to the expected returns to represent other less risky investment alternatives. For example, farmland owners may consider forgoing potential earnings from agricultural production and purchase risk-free Government bonds. The model is often referred to as the capitalization formula, or the fundamental value equation.

$$\text{Price of farmland} = \frac{\text{Expected returns}}{\text{Opportunity cost of capital}}$$

This model forms the basis for evaluating how changes in expected returns resulting from changes in Government program payments leads to higher (or lower) farmland prices. Although the capitalization model is widely used in economic research, a number of studies identified its potential shortcomings, including the failure to account for risk aversion and transaction costs (Chavas and Thomas, 1999), persistent excess returns over time (Falk, 1991), and inflation (Burt, 1986).

Direct payments are paid based on historical cropping patterns of major agricultural commodities, or base acres (see box, “How Direct Payments Work”). According to data reported by USDA’s Farm Service Agency (FSA) and Economic Research Service (ERS), \$4.8 billion in direct payments were paid in 2010, accounting for 39 percent of total FSA farm program payments and 6.1 percent of U.S. net farm income.⁴ Since 2003, direct payments have accounted for 21 percent (in 2005) to 45 percent (in 2011) of total farm program payments. For 2002-08, on average, 266 million base acres were enrolled annually nationwide (about 23 percent of U.S. agricultural land) (Nickerson et al., 2011).⁵ The number of enrolled base acres changes slightly year to year for various reasons, including enrollment of base acres in the Conservation Reserve Program (CRP) and land-use changes that result in loss of eligibility. Base acres are concentrated in major crop production regions, though 94 percent of U.S. counties had some base acres enrolled in 2002-08. Throughout the Corn Belt and the Northern and Southern Plains, many counties had over 250,000 base acres.

⁴Direct payments accounted for the largest portion (39 percent) of FSA program payments in 2010, followed by CRP payments (28 percent).

⁵To be eligible for direct payments, farm producers must enroll eligible base acres annually.

Direct Payments Vary Based on Historic Production Patterns

Cropping patterns are influenced by geographic location through such factors as weather, soil quality, and climate. As a result, certain regions specialize in the production of particular commodities, and thus base acres, although

How Direct Payments Work

Direct payments represent a “direct” income transfer not related to current market conditions or to current production practices, with certain restrictions related to nonagricultural uses and planting fruits and vegetables. Producers receive direct payments based on historical cropping patterns which are used to establish a count of acres (called “base acres”) and (payment) yields of selected commodities for each farm.

Under program provisions for 2012 (set in the 2008 Farm Act), total direct payments for a crop’s base acres on a farm (as defined for FSA program purposes) are determined using the formula:

Direct payment = Payment rate x payment yield x payment acres,
where payment acres = Base acres x 85 percent.

For example, the current direct payment rate for corn is \$0.28 per bushel as set in the 2008 Farm Act. If a farm had 100 corn base acres with an historical payment yield of 110 bushels per acre, the farm’s total direct payment for corn would be:

\$2,618 = \$0.28 x 110 bushels x 100 acres x 0.85, regardless of how many acres on the farm were planted to corn.

A more detailed description of the direct payments provision can be found at http://www.fsa.usda.gov/FSA/newsReleases?area=newsroom&subject=landing&topic=pfs&newstype=prfactsheet&type=detail&item=pf_20081219_insup_en_dcp.html and at http://www.fsa.usda.gov/Internet/FSA_File/dcp_wild_rice.pdf.

cropping patterns can change over time. Figure 1 indicates which commodities accounted for the largest share of total enrolled base acres by county over 2004-08.⁶ Base acres always are designated by a particular commodity, and we refer to these commodities as “DP program crops.”⁷ Similar to more general production patterns, corn base acres dominated in the Corn Belt,⁸ while wheat base acres were more prevalent in the Northern and Southern Plains, as well as parts of the Mountain region. Cotton and peanut base acres were prevalent across the South. Rice base acres were predominant in a few counties in the Mississippi Delta, as well as in the Pacific and Southern Plains.

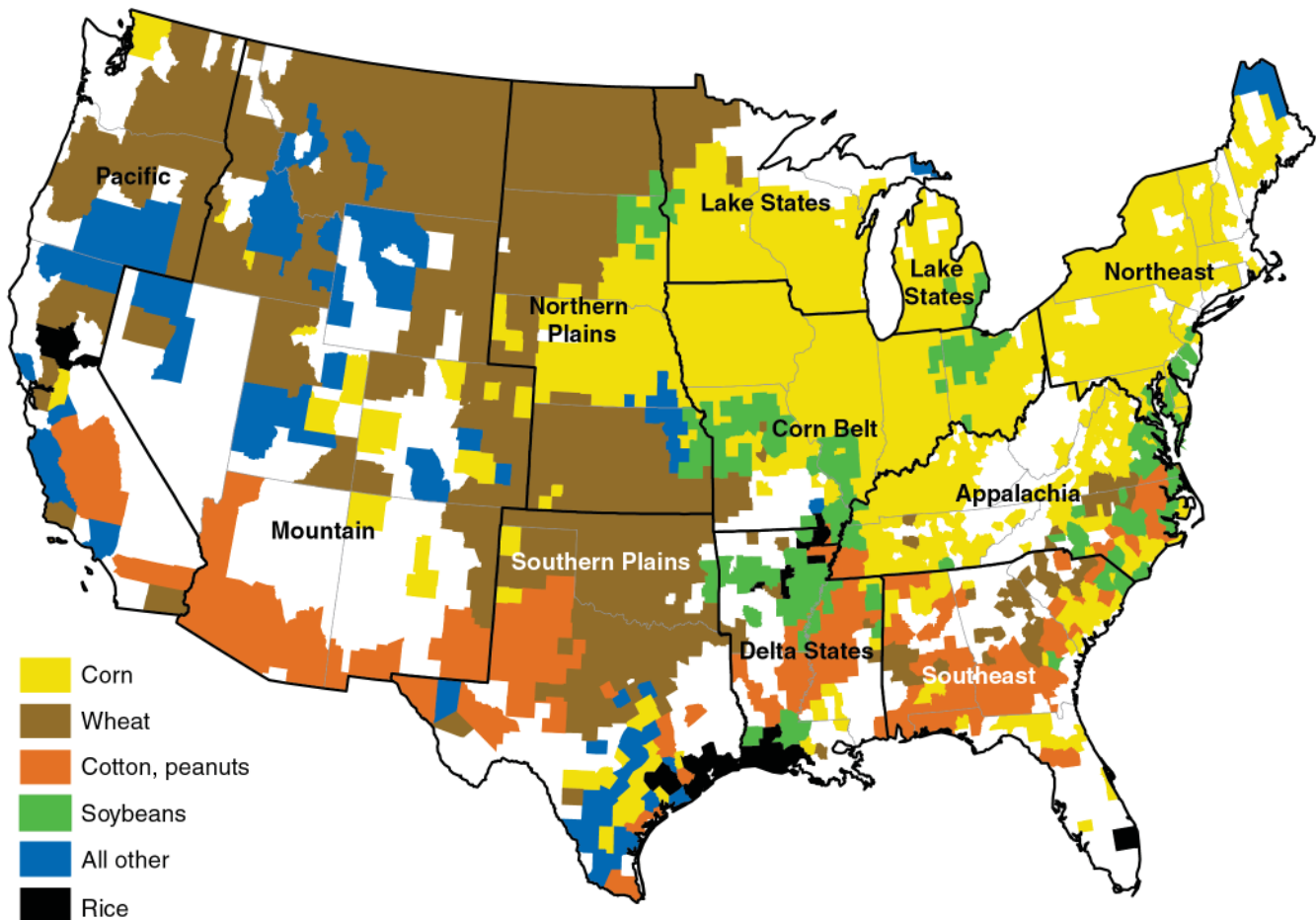
Direct payments per acre vary significantly by commodity (table 1). In 2008, rice and peanuts received the largest direct payments per acre (\$96.25 and \$45.85, respectively), but accounted for a small share of total base acres (1.7 percent and 0.6 percent, respectively). Corn, wheat, and soybeans accounted for more than 80 percent of total base acres in 2008, but received lower direct

⁶We limited our spatial analysis to counties with more than 5,000 cropland acres (as reported in the 2007 Census of Agriculture) and 2,000 base acres (2004-08 average) to exclude counties where direct payments were not economically significant. Average cropland acres per county, for all U.S. counties, were about 130,000 acres in 2007, based on the 2007 Census of Agriculture.

⁷DP program crops were referred to as “covered commodities” in the authorizing legislation.

⁸We refer to USDA Farm Production Regions. For more information, see http://webarchives.cdlib.org/wayback/public/UERS_ag_1/20111128195215/http://webarchives.cdlib.org/wayback/public/UERS_ag_1/20111128195215/http://www.ers.usda.gov/Briefing/ARMS/resourcereions/resourcereions.htm.

Figure 1
Base acres, by major commodity and U.S. county, 2004-08



Note: Counties with fewer than 2,000 base acres of the leading commodity or with fewer than 5,000 acres of cropland in the 2007 Census of Agriculture are shown in white.

Source: USDA, Economic Research Service calculations based on USDA, Farm Service Agency direct payments base acre data.

Table 1

Base acres and direct payments, by commodity, 2008

Commodity	Base acres (million)	Percent of total base acres	Average direct payments per acre
Corn	85.9	32.8	\$24.39
Wheat	74.2	28.3	\$15.21
Soybeans	51.3	19.6	\$11.54
Upland cotton	18.2	7.0	\$33.86
Sorghum	11.7	4.5	\$16.87
Barley	8.5	3.3	\$9.68
Rice	4.4	1.7	\$96.25
Oats	3.0	1.2	\$0.99
Peanuts	1.5	0.6	\$45.85
Other ¹	1.0	0.4	—
Total	259.8	100	\$19.57

¹Other direct payment-eligible commodities include canola, crambe, flaxseed, mustard, rapeseed, safflower, sesame, and sunflower.

— = Average direct payments per acre are not calculated for these commodities.

Notes: Totals may not sum due to rounding. The 2008 per-acre payments were determined by multiplying base acres by payment yields by 0.85 by payment rates.

Source: USDA, Economic Research Service calculations based on USDA, Farm Service Agency Direct and Counter-Cyclical Payment Program farm crop, contract and producer payment databases.

payments per acre (\$24.39, \$15.21, and \$11.54 per acre, respectively). The direct payment rate for each eligible commodity is set in farm legislation and revisited about every 5 years.⁹

⁹From 2009, farms that enrolled in the Average Crop Revenue Election (ACRE) Program were subject to a 20-percent reduction in direct payments, and most farms with less than 10 bases acres were not eligible for direct payments.

The Value of Direct Payments Relative to Program Crop Revenue

While direct payments account for a relatively small share of total U.S. farm income, which includes income from livestock and non-DP program crops, they represent a greater source of income and revenue for most producers with base acres. The value of direct payments relative to revenues of “DP program crops” varies significantly by region, suggesting wide regional disparity in revenue impacts should the DP program be terminated.¹⁰ Based on Census of Agriculture data, DP program crops accounted for over 75 percent of all cropland acres harvested in 2007, and direct payments were concentrated in major program crop-producing areas (see fig. 1). Figure 2 illustrates average per-acre direct payments as a percent of DP program crop revenue at the county level, using data from 2004 to 2008. DP program crop revenues were calculated based on NASS county, district, and State-level prices and yields (at the smallest geographic level available).¹¹

Direct payments relative to DP program crop revenues were highest in the Northern and Southern Plains, as well as in parts of the Delta, Southeast, and Mountain regions. Direct payments also were relatively high when compared with DP program crop revenues in rice growing areas. In over half of all counties that received direct payments for at least 2,000 base acres, direct payments were equivalent to at least 6 percent of DP program crop revenues for 2004-08. On average, direct payments were equivalent to 6.8 percent of DP program crop revenues, ranging from less than 5 percent in several counties across various regions to over 10 percent in several Southern States and across the Plains regions. This analysis considered DP program crop revenues only and did not take into account other revenue sources for U.S. farm operations. Farms with more diversified production activities would be less affected by a decline in direct payments.¹²

An end to direct payments may have less of an impact on farm income than on revenues if input costs adjust downward, at least for some producers. For example, if cropland rents decrease in response to the elimination of direct payments, producers who rent a significant portion of the land they operate would experience less of a negative impact on their farm income. Various studies suggest a less-than-proportional decrease in rents if direct payments were eliminated. Westhoff and Gerlt (2011) estimated that the income loss from the elimination of direct payments would amount to about 66 percent of the actual value of direct payments, mostly as a result of declining rents. This estimate is in line with another study that directly examined rental rate impacts of Government payments and found that farmland rental rates increased \$0.25 for every \$1.00 increase in (total) Government payments (Kirwan, 2009).

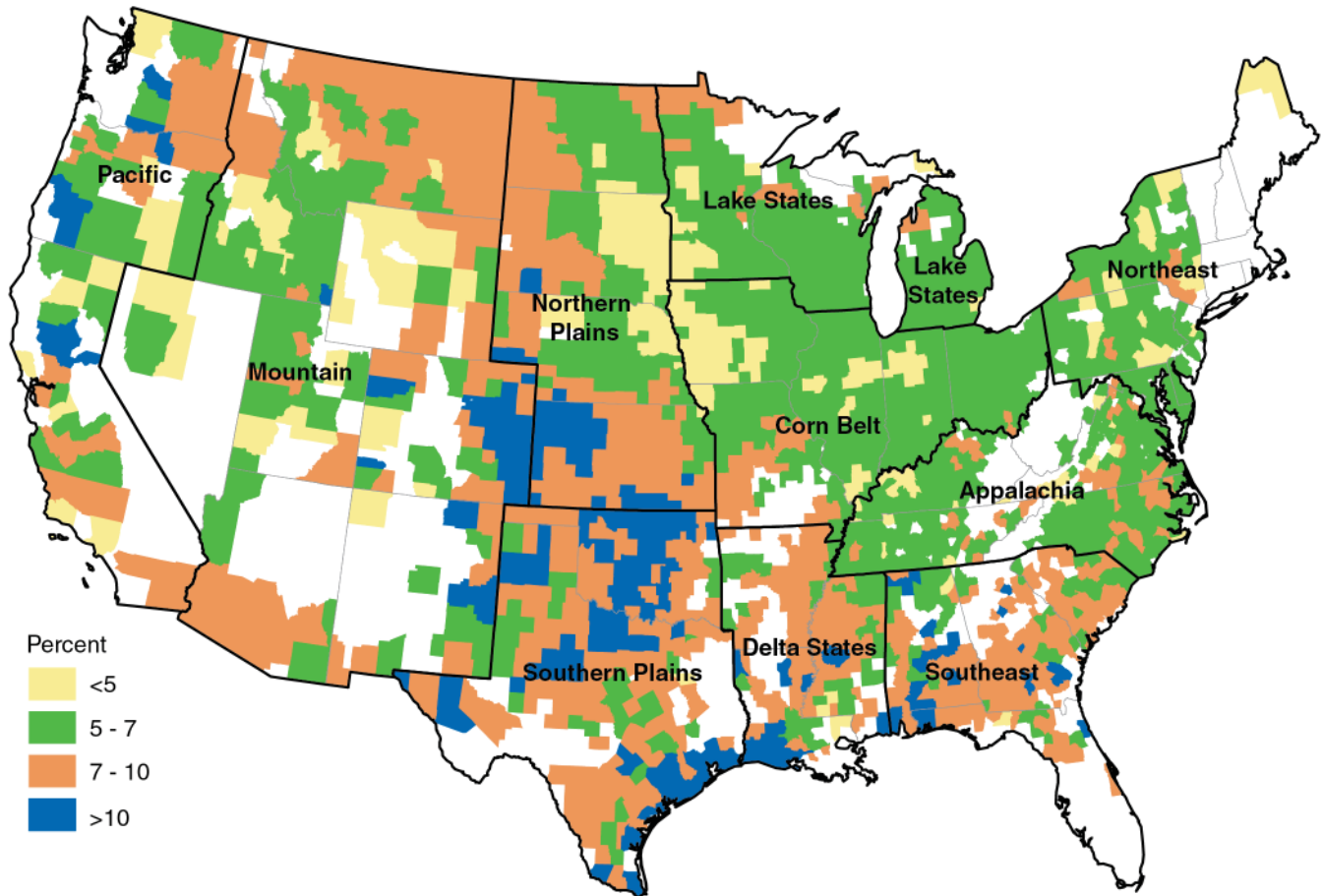
¹⁰Ideally, this analysis would examine regional variation in payments relative to DP program crop income. We considered gross revenues (price times quantity) for DP program crops as opposed to income because county-level per acre costs for specific DP program crops were not available. Nonetheless, this comparison is relevant for understanding revenue impacts of an elimination of direct payments for existing producers of DP program crops with base acres.

¹¹To provide a more accurate representation of the contribution of direct payments to DP program crop revenues, the ratio of direct payments to crop revenues for each program crop was weighted by base acres for each DP program crop. It implicitly assumes that direct payment recipients continue to grow DP program crops on their base acres. While not required, evidence suggests that this was the case for about 75 percent of producers who receive direct payments (GAO, 2012). Although some non-DP program crops may be grown on base acres, data were not readily available for specific crops grown on base acres.

¹²This compares with a 3.3 percent overall net farm-income reduction estimated by Westhoff and Gerlt (2011), whose model projected farm income levels from 2012-21. Their scenario assumed ACRE participation rates as of 2010, inflated them by 5 percent for 2011 and 2012, and then held them constant thereafter. While Westhoff and Gerlt (2011) considered aggregate national or regional outcomes, we were interested in the impacts on producers who are more likely to receive direct payments.

Figure 2

Direct payments as a percent of DP program crop revenue, by county-level average, 2004-08



Note: Blank areas identify counties with no direct payments, or fewer than 2,000 base acres or fewer than 5,000 cropland acres in the 2007 Census of Agriculture.

Source: USDA, Economic Research Service calculations based on USDA, National Agricultural Statistics Service Quick Stats data; Economic Research Service and National Agricultural Statistics Service 2007 Census of Agriculture data; and USDA, Farm Service Agency Direct and Counter-Cyclical Payment Program farm crop, contract and producer payment data.

The Potential Contribution of Direct Payments To Cropland Value

Goodwin et al. (2003) demonstrated that an additional dollar per acre in production flexibility contract (PFC) payments (a decoupled payment program similar to direct payments and paid out from 1996 to 2002 under 1996 Farm Act provisions) was associated with a \$5-per-acre increase in farmland values. This measure was associated with a marginal change—a dollar per acre—in PFC payment levels, but may not hold for large changes to such payments, such as a complete elimination of the program. A review of studies by Latruffe and Le Mouël (2009) found that subsidies similar to direct payments and tied to land were more likely to cause farmland values to increase than subsidies tied to market conditions (i.e., current prices and yields).

The potential contribution of direct payments to land values can be estimated by examining the relationship between cropland values and expected earnings from future direct payments. The ratio of “capitalized direct payments” to cropland values provides an estimate of the *maximum* potential contribution of direct payments to land values.¹³ We calculated capitalized direct payments by dividing annual direct payments per base acre per county by an appropriate discount rate that reflected the time value of money (see box, “Measuring the Impact of Government Payments on Farmland Values”). Following Nickerson et al. (2012), we used a 6-percent discount rate.¹⁴ This approach assumes that land values have increased by the full capitalized value of the direct payments. Average county-level per acre cropland values were calculated using NASS June Area Survey data. The measure follows traditional comparisons of cash rents with cropland values that use the U.S. 10-year Treasury note rate¹⁵ (Schnitkey, 2011), while also allowing for a small-risk premium (Gloy et al., 2011).

Similar to the concentration of major DP program crops (see fig. 1), direct payments’ estimated maximum contribution to cropland values varies significantly by region (fig. 3). During 2004–08 in the Corn Belt and Lake States, estimated capitalized direct payments were relatively low (less than 15 percent) in relation to per-acre cropland values. In contrast, estimated capitalized direct payments in the Northern and Southern Plains were equivalent to more than 30 percent of cropland values in many areas. Direct payments also appeared to be significant in relation to cropland values in others areas, such as the Delta States and in a handful of counties in the Mountain region. Thus, farms in some regions might experience sizable reductions in land values if direct payments ended, even if actual reductions were half of our estimate. The regional differences observed in figure 1 are due to variation in both direct payments and land values. Cropland values in the Lake States and Corn Belt were at least twice as large as cropland values in the Northern and Southern Plains in 2007 (Nickerson et al., 2012). Our estimate of the maximum contribution of direct payments to cropland values was comparable with the findings of a study by Latruffe and Le Mouël (2009), which referenced a body of work that found that 12–40 percent of farmland prices in the United States could be attributed to (total) Government payments.

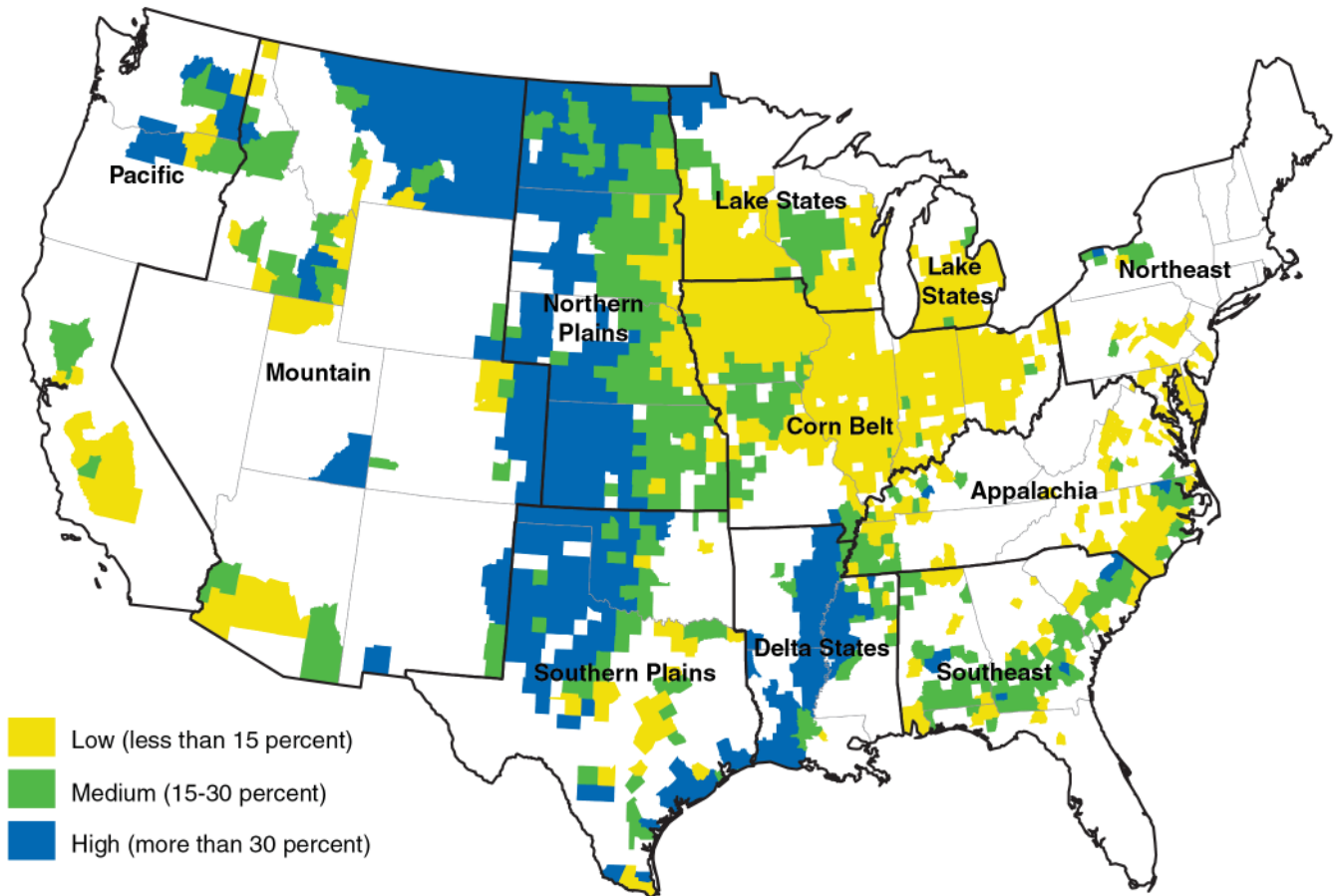
¹³The contribution may be overvalued in at least three ways. First, this formula assumes that a 6-percent discount rate is an appropriate measure of the discount rates of farmland owners. If landowners value future income less relative to current income, then discount rates would be higher and capitalized direct payments would be lower. Second, in addition to landowners, direct payments can also benefit tenant farmers, input suppliers, and consumers (if output prices adjust) instead of being fully capitalized into land values. Third, if landowners expect direct payments to decrease over time, capitalized direct payments would be lower.

¹⁴The capitalized value of \$1 of direct payments with a 6-percent discount rate is \$16.67.

¹⁵In 2008, the U.S. 10-year Treasury note rate was 3.66 percent.

Figure 3

Maximum impact of capitalized direct payments on cropland values per acre, 2004-08



Notes: Cropland values are an average of both irrigated and nonirrigated cropland values from the USDA, National Agricultural Statistics Service June Area Survey. Blank areas identify counties with no direct payments, insufficient observations for disclosure, or fewer than 2,000 base acres per county. Counties where base acres account for less than a third of cropland acres were excluded, as average cropland values in such counties would be less representative of farms with base acres.

Source: USDA, Economic Research Service calculations based on USDA, National Agricultural Statistics Service June Area Survey data and the USDA, Farm Service Agency base acre and Producer Payment Reporting System Payment files.

The Potential Impact of Eliminating Direct Payments on Farms' Financial Performance

The analyses of potential impacts on revenues and on land values (see figs. 2 and 3) demonstrate wide regional variation in response to an end to direct payments. Taken together, such changes in revenues (and hence, income) and land values can affect a farm's financial performance and its ability to remain in business. These impacts would be greatest if direct payments were to end and compensating streams of payments were not available from other sources (such as from new or modified programs). The most immediate impact would arise from the reduction in income from an end to the payments. For producers who rent land, some of this income effect may be at least partially offset by a reduction in rental payments (e.g., Kirwan, 2009; Westhoff and Gerlt, 2011). For producers who own the land they operate, the loss of direct payments also could harm the farm's financial position if land values—and, consequently, the value of farm assets and wealth—decline as a result.

We analyzed the impact of these changes on farms' financial positions, as measured by the combined impact on net income and solvency measures (i.e., the debt-to-asset ratio). These estimates were conservative in that they ignored the possibility that producers might alter their production activities to maintain income levels.¹⁶ As a benchmark, we simulated the impact of an end to direct payments on the financial position of farms that received direct payments in 2009 and assumed the direct payment program will not be replaced by another source of payments. We used USDA's Agricultural Resource Management Survey (ARMS) data, which provides detailed information on the 466,000 farm operations that received direct payments in 2009.¹⁷

There are a number of differences between farms that receive direct payments ("DP farms") and those that do not. DP farms generated six times more net farm income than non-DP farms in 2009, but also tended to have a slightly higher debt-to-asset ratio (table 2). Consistent with prior years, most DP farms in 2009 were farm businesses—farms where the operators' primary occupation was farming. Farm businesses tended to be more than twice as large and generated almost four times the value of production compared with other farms (see the Appendix for more information on farm businesses).

Measures of financial performance that take into account both a farm's income and its debt-to-asset ratio indicate that relatively more DP farms were in a stronger financial position in 2009 than farms that did not receive direct payments. Financial performance among all U.S. farms varied widely and, regardless of whether a farm received direct payments, some farms were in a less favorable financial position.

We classified U.S. farms into four commonly used financial status categories:

- Favorable: positive net farm income with a debt-to-asset ratio of less than 40 percent;
- Marginal income: negative net farm income with a debt-to-asset ratio less than 40 percent;
- Marginally solvent: positive net farm income with a debt-to-asset ratio greater than 40 percent; and

¹⁶Many more subtle economic changes are also possible. For example, access to credit may be affected for certain producers if direct payments are removed, which could decrease producers' ability to make investments.

¹⁷Landowners who do not operate farms but lease out farmland also may receive direct payments, either directly from FSA if they are share renters or indirectly through higher cash rents. Data are not available to examine how an end to the direct payment program would impact nonoperating landlords who receive direct payments.

Table 2

Financial characteristics of farm operations, by direct payment status, 2009

Characteristic	All farms	Did not receive direct payments	Received direct payments	Farms that received direct payments: estimated impact of elimination of DPs ¹
Farm type:		<i>Number of farms (thousands)</i> ²		
Retirement/residential/lifestyle	1,318	1,160	158	—
Farm business	873	566	308	—
Total	2,192	1,726	466	—
Income measure:				
Mean net farm income	\$20,300	\$9,786	\$59,259	\$51,610
Solvency measure:		<i>Percent</i>		
Mean debt-to-asset ratio	8.7	7.9	12.0	12.3
Financial position: ³		<i>Percent of farms</i>		
Favorable	57.0	55.1	64.2	61.8
Marginal income	36.3	38.4	28.4	30.5
Marginal solvency	2.8	2.2	4.7	4.4
Vulnerable	3.9	4.3	2.7	3.2

¹See box, "Simulation Method" for assumptions used.

²Farm businesses include family and nonfamily farms where the operator reports farming as his or her major occupation (for farm type definitions, see Hoppe and Banker, 2010). An analysis of the impacts on farm businesses only is in the Appendix.

³Financial position defined by income and solvency measures based on farm income and debt-to-asset ratio. Favorable = positive net farm income and debt-to-asset ratio of 40 percent or less. Marginal income = negative farm income and debt-to-asset ratio of 40 percent or less. Marginal solvency = positive net farm income and debt-to-asset ratio greater than 40 percent. Vulnerable = negative net farm income and debt-to-asset ratio greater than 40 percent.

— =not relevant. Note: Totals may not sum due to rounding.

Source: USDA's 2009 Agricultural Resource Management Survey.

- Vulnerable: negative net farm income with a debt-to-asset ratio greater than 40 percent.

The positive income threshold is an indicator of whether a farm is operating profitably (Hoppe and Banker, 2010). While many factors (such as interest rates, asset and debt composition, and the availability of off-farm income) affect whether farms actually are financially stressed, farms with debt-to-asset ratios greater than 40 percent are more highly leveraged than average and, therefore, are more vulnerable to financial stress (Melichar, 1984). While about 64 percent of DP farms were in a favorable position in 2009, compared with 55 percent of non-DP farms, roughly the same proportion of farms (6-8 percent) were either marginally solvent or vulnerable. Because of their less favorable financial positions, marginally solvent or vulnerable DP farms and marginal income DP farms likely would feel the effects of an end to direct payments more acutely than would farms in a more favorable financial position.

We simulate the impact of an end to direct payments on the financial status of farms that received direct payments in 2009 by estimating the income effect (the change in net farm income from the loss of payments and from a reduction in rent expenses), but we assume production decisions remain fixed. For producers that owned farmland, we also simulate the effect on the

debt-to-asset ratio from a decline in farmland values (see table 2; see box, “Simulation Method”). Refer to the Appendix for the effects just on farm businesses, which were similar to those for all farms reported in table 2.¹⁸

Compared with the status quo (financial status as of 2009), if direct payments ended and land values fell for DP farms that owned farmland, 11,000 DP farms that had favorable status would move to a less favorable financial position. The impact represents about a 2-percent decrease, when measured against all DP farms: that is, the relative number of all DP farms in a favorable position would decline from 64 to 62 percent (see table 2). A farm’s reduced financial status largely would be a result of the income effect from the loss of payments; direct payments averaged \$8,700 across DP farms in 2009. Most DP farms that would lose favorable financial status would move into the marginal income category, as the loss of cash flow precludes them from maintaining a positive net farm income. The number of farms considered vulnerable would increase by about 2,600 farms (less than 1 percent of all DP farms).¹⁹ Most DP farms were operated as farm businesses; more than 66 percent of the farms that would move into an unfavorable financial category with the loss of direct payments would be farm businesses (versus retirement/residential/lifestyle farms).

The impacts appear larger when examining them just for DP farms that had a favorable financial status in 2009. The 11,000 farms moving to an unfavorable financial position represent a 4-percent decline, when measured against just the DP farms that had a favorable financial position in the status quo. The effects are even greater in some regions, because—even with direct payments—some regions have fewer farms with positive incomes and low debt-to-asset ratios. To account for this natural variation when considering regional impacts, we report DP farms losing favorable financial status as a share of DP farms with favorable status in the status quo, as opposed to a share of all DP farms. Regionally, about 4,800 farms in the Corn Belt and 2,300 farms in the Northern Plains, accounting for about 4 percent of DP

¹⁸In general, the financial performance of farm businesses differed from that of retirement and residential/lifestyle farms, suggesting that the impact of an end to direct payments could differ between farm businesses and other farm types. For example, farm businesses tend to have higher debt-to-asset ratios, and a larger percentage of farm businesses are marginally solvent or vulnerable. However, relatively more farm businesses are in a favorable financial position (Hoppe and Banker, 2010). Nonetheless, a comparison of appendix table 1 with table 2 reveals that, although farm businesses had a higher debt-to-asset ratio and net farm income, on average, compared with all farms, an end to direct payments would impact farm financial positions similarly.

¹⁹About 60 percent of these farms would experience a reduced financial status as a result of the income effect and 40 percent as a result of the change in land value that would cause the debt-to-asset ratio to rise above 40 percent.

Simulation Method

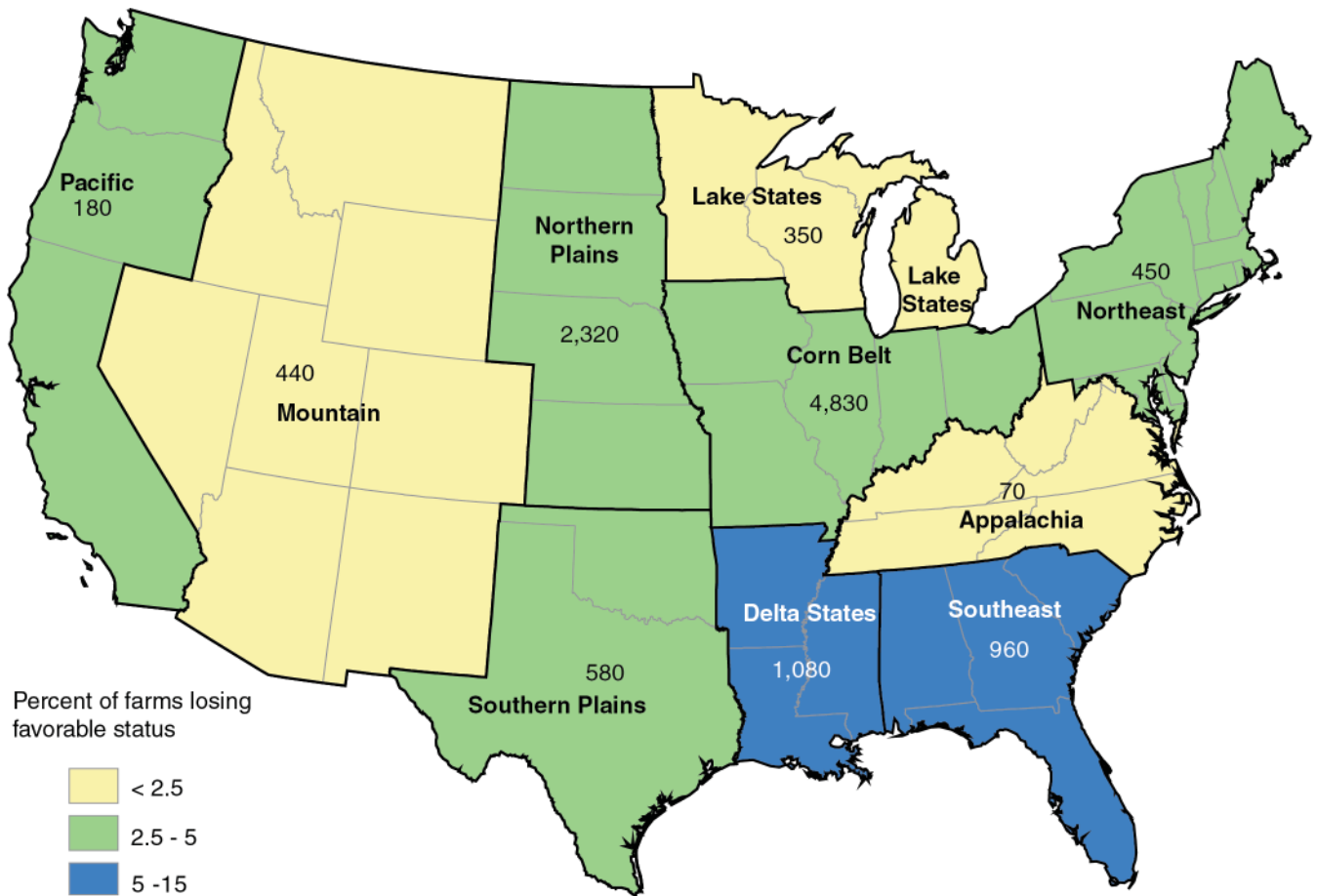
Farmland values used in the simulation include land owned by the operation and land rented to others, but exclude houses, buildings, orchard trees and vines, and trees grown for woody crops. Data were not available on the number of base acres associated with each ARMS farm; our analysis assumes that half the value of owned land was generating direct payments and would be subject to decline if direct payments ended. The estimated decline in land values is based on the average State-level decline calculated using the same data and assumptions reported in figure 3. Some farm operations rent all or a significant amount of the land they operate. In our simulations, full tenants experience no change in their debt-to-asset ratio from a loss of capitalized direct payments. To account for the potential impact on rents if direct payments ended, we assume that full tenants and farms that owned 20 percent or less of the land they operated were renting base acres and that land rental expenses would fall by a third of the value of direct payments (Westhoff and Gerlt, 2011).

farms that had favorable status in each region to begin with, would lose their favorable financial status with an end to direct payments (fig. 4). In relative terms, farms in the Delta and Southeast regions would be most affected, as about 13 percent and 10 percent of DP farms that had favorable status in 2009, respectively, would lose that status, primarily because larger direct payments are made to farms in these regions than in other regions.

Since 2009, some U.S. regions experienced rapid growth in farmland values following several years of high commodity prices and increasing farm income (Nickerson et al., 2012). This development is likely to mitigate the impact of ending direct payments for many farms.

Figure 4

Estimated number of farms that would lose favorable financial status if the direct payment program ended



Note: Number of farms are rounded to the nearest 10. Regions correspond to those found in figures 1-3, and the numbers represent the number of farms losing favorable financial status in each region, assuming a loss of all direct payments with no compensating source of income and a decline in land values for farm operations that own land (see box, "Simulation Method").

Source: USDA, Economic Research Service calculations based on USDA's 2009 Agricultural Resource Management Survey.

Conclusions

The impacts of an end to the direct payment (DP) program will differ across regions and commodities. Rice, cotton, and peanuts received higher direct payments per acre than other commodities. Across parts of the Northern and Southern Plains, the Mountain, the Delta, and the Southeast regions, direct payments were higher relative to DP program crop revenues and cropland values. As a result, producers located in these regions who currently operate base acres for these commodities might be more affected by an end to direct payments than the U.S. farm population at large.

As of 2009, about 64 percent of farms receiving direct payments enjoyed a favorable financial status with positive income and a relatively low debt-to-asset ratio (less than 40 percent). The remaining 36 percent of DP farms were in a less favorable financial position with negative net income, a high debt-to-asset ratio, or both. Our simulations suggested that if direct payments were terminated, 11,000 farms would move from a favorable to a less favorable financial position. This would decrease the number of farms in a favorable financial position by about 2 percentage points (from 64 to 62 percent of all DP farms), but the impact represents about 4 percent of the subset of DP farms that originally enjoyed favorable status. When all 2.2 million U.S. farms are considered, roughly 0.5 percent would move to a less favorable financial position with the elimination of direct payments. The effect would be more pronounced in the Delta and Southeast, where 10-13 percent of DP farms with a favorable status are estimated to lose their favorable status.

Although the potential loss of income and decrease in land values could be significant for some farms, the impact could be mitigated if new farm policies were implemented that provide similar financial benefits to farm operations. As part of various 2012 Farm Act proposals, many new programs have been proposed that would support stability in farmers' incomes, including new revenue-based programs. Farmland values would most likely be maintained if new programs provide a stream of income similar to direct payments. Producers also can take actions—like diversifying crops or seeking off-farm work—to mitigate the loss of direct payments. Also, overall improvements in the U.S. farm sector since 2009 may help moderate our estimates of the impact of an end to the direct payment program for many farms.

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Appendix: Potential Impact of Eliminating Direct Payments on Farm Businesses' Financial Performance

The financial measures included in table 2 were calculated for all farm types, since all farm types are eligible to receive direct payments and would be affected by an end to the direct payment program. The financial position measures reported in table 2, however, may be less relevant for farms with operators that had significant off-farm income to help them remain financially viable without direct payments (i.e., operators who reported a major occupation other than farming and/or operators who were retired or farmed for residential/lifestyle reasons). To consider the impacts of an end to direct payments on farm operators who are more likely to depend on farming as a primary source of income, we considered impacts on farm business only. The appendix table reports financial measures for farm businesses only. Compared with the measures for all farms reported in table 2, farm businesses had higher net incomes, on average, and a larger percentage of them were in a favorable financial position—both with and without direct payments. Nonetheless, the impact of an end to direct payments on farm businesses would be similar to the financial impact for all farm types; the relative number of all farm businesses with favorable status would decline from 66.7 to 64.3 percent, or by about 2.4 percent. Also, as with all farm types, the impact on farm businesses would be slightly larger when measured against just those farm businesses that had a favorable position; about 3.6 percent of farm businesses that received direct payments and exhibited favorable financial status would lose their favorable financial status.

Appendix table

Financial characteristics of farm businesses, by direct payment status, 2009

Characteristic	All farm businesses	Did not receive direct payments	Received direct payments	Farms that received direct payments: estimated impact of elimination of DPs ¹
Farm businesses (thousands) ²	873	566	308	—
Income measure:				
Mean net farm income	\$46,606	\$26,805	\$83,032	\$72,391
Solvency measure: <i>Percent</i>				
Mean debt-to-asset ratio	11.6	10.3	13.9	14.2
Financial position: ³ <i>Percent of farms</i>				
Favorable	60.4	57.0	66.7	64.2
Marginal income	31.4	35.4	24.1	26.2
Marginal solvency	4.1	3.0	6.0	5.7
Vulnerable	4.1	4.5 ⁴	3.2	3.8

¹See box, "Simulation Method" for assumptions used.

²Farm businesses include family and nonfamily farms where the operator reports farming as their major occupation (for farm type definitions, see Hoppe and Banker, 2010).

³Financial position defined by income and solvency measures based on farm income and debt-to-asset ratio. Favorable = positive net farm income and debt-to-asset ratio of 40 percent or less. Marginal income = negative farm income and debt-to-asset ratio of 40 percent or less. Marginal solvency = positive net farm income and debt-to-asset ratio greater than 40 percent. Vulnerable = negative net farm income and debt-to-asset ratio greater than 40 percent.

⁴The coefficient of variation is greater than 25 and less than or equal to 50, indicating that this estimate is less reliable.

— =not relevant. Note: Totals may not sum due to rounding.

Source: USDA's 2009 Agricultural Resource Management Survey.