

Policy



U.S. Farm Program Benefits: Links to Planting Decisions & Agricultural Markets

Direct government payments to the U.S. farm sector topped \$20 billion in 1999 and are forecast to exceed \$20 billion again in 2000. Nearly 40 percent of these direct payments have been disbursed as emergency assistance under three supplemental legislative packages enacted since October 1998, partly in response to low agricultural commodity prices. The supplemental assistance augmented direct payments from existing farm programs such as production flexibility contract payments and loan deficiency payments, and payments from conservation programs such as the Conservation Reserve Program. Besides direct payments, support to the sector comes from crop insurance premium subsidies, marketing loan gains, and price supports for selected commodities (dairy, peanuts, sugar, and tobacco).

Direct payments and indirect benefits have boosted farm income during the last 2 years. But analyses of links between U.S. farm programs and agricultural production indicates that effects on resource allocation and agricultural markets vary across programs. Analyses by USDA's Economic Research Service (ERS) of four

farm programs—production flexibility contracts, crop insurance, marketing loans, and disaster assistance—focus on how agricultural markets can be affected through program-related economic incentives that may alter production decisions. Subsequent impacts on prices, domestic use, and exports largely reflect market adjustments to production changes.

Ag Programs Affect Land Use & Crop Mix

Some farm programs primarily influence aggregate land use, with less effect on the mix of crops planted. For example, transfers that are not commodity-specific can increase the overall level of agricultural production by increasing the wealth (financial well-being) of farmers, thereby expanding agricultural investment and boosting use of land and other inputs. Greater wealth does not affect the relative returns from producing alternative crops, so in general, allocation of the additional acreage among competing uses is still determined by market signals. However, potential financial risk may be perceived differently by people who have different levels of wealth, and changes in farmers'

wealth levels may affect their response to risk.

Programs more closely linked to production of specific crops may not only affect total land use but also distort the mix of crops planted. Program benefits that are directly linked (coupled) to production of specific crops increase expected returns to those commodities. Therefore, production decisions for those commodities are based on expected returns from both the marketplace and government payments.

Government program payments for one commodity may also influence decisions to produce others (cross-commodity effects), since relative net returns change. Farmers with land constraints would likely respond to a coupled payment by altering the mix of crops planted, switching toward program crops or to crops with higher benefits. Farmers who could expand land use would likely increase acres planted and also shift the mix of crops toward those with relatively high benefits.

In addition, changes in agricultural production can arise from programs that influence expectations. For example, programs that reduce risk can lead to production impacts by raising the lowest level of expected returns, thereby reducing financial risk. Expectations about the nature of future programs may also affect current production decisions. For example, if farmers expect future payments to be based on current plantings, they may be induced to increase plantings of those crops.

Four Farm Programs That Factor into Planting Decisions

Production flexibility contracts—authorized under the 1996 Farm Act—fundamentally changed agricultural income support programs by replacing crop deficiency payments (related to commodity-specific plantings and farm prices) with production flexibility contract (PFC) payments (based on enrolled acreage and generally not related to current production and prices). Land eligible for PFC payments includes acreage enrolled in annual farm programs for any year from 1991 through 1995, and total PFC outlays are

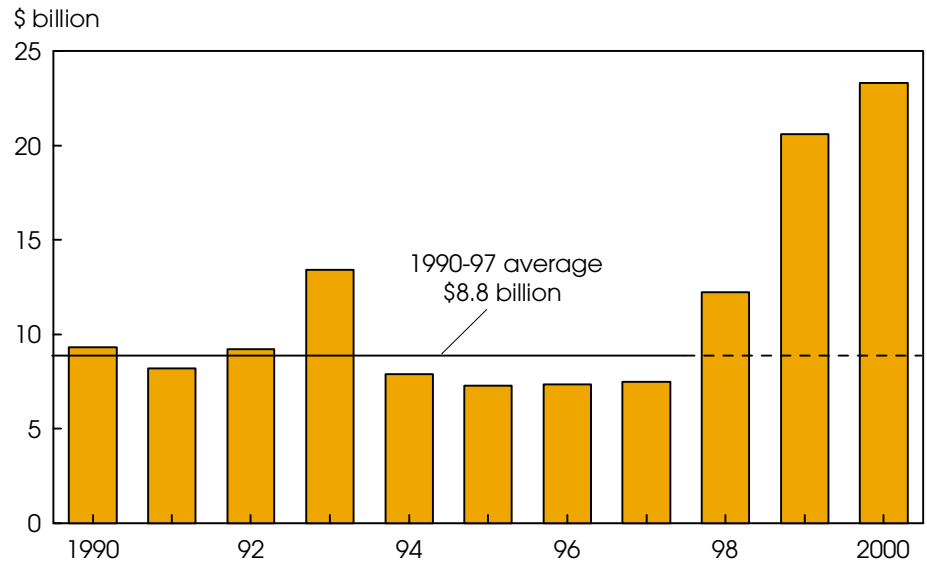
capped at slightly over \$36 billion for 7 years, 1996-2002. To be eligible for payments, farmers entered into production flexibility contracts that require them to comply with conservation, wetland, and planting flexibility provisions, as well as to keep enrolled land in agricultural uses or idle.

Because PFC payments do not depend on current production or prices, it can be argued that they have no influence on farmers' production decisions. However, since PFC payments raise farmers' income and financial well-being, they can potentially affect agricultural investment and thereby enhance production. Lenders are more willing to make loans to farmers with higher guaranteed incomes and lower risk of default. Greater loan availability facilitates additional agricultural production. Increased income from PFC payments also allows farmers, particularly those constrained by debt or limited liquidity, to more easily invest in their farm operation. The resulting increased investment in farming operations contributes to higher agricultural production in the long run.

The increase in wealth resulting from PFC payments also can change farmers' views of the financial costs associated with risk, and the change in risk attitude may affect the mix of crops produced. The guaranteed income stream from PFC payments may make farmers more willing to undertake production of riskier crops that provide the possibility of higher expected returns.

Initially, the effect of a decoupled payment is the same as a lump-sum payment—i.e., revenue rises, but output is unaffected because per-unit net returns do not change. The increase in revenue raises farmers' consumption, investment, and savings, with the largest share typically going to consumption. Thus, the potential for PFC payments to influence production decisions depends largely on savings and investment decisions and on the strength of the wealth effect. Acreage impacts are relatively small across a range of assumptions for these factors. Even if it is assumed that savings and investment are increased by as much as one-fourth of PFC payments, and applying a range of acreage responses to changes in producers' wealth, estimates of the possible

Direct Government Payments to Farmers Have Tripled Since 1997



Calendar-year data. 2000 forecast. Major categories include deficiency payments, production flexibility contract payments, emergency assistance, loan deficiency payments, and CRP and other conservation payments. For related WTO notifications since 1995 (crop-year basis), some of these payments are treated as green box, some as blue box (in 1995 only), and others as amber box (AO December 1998).

Economic Research Service, USDA

increases in aggregate plantings range from 225,000 acres to 725,000, a small portion of total cropland (less than 0.3 percent).

Farmers allocate the increased acreage across crops by expected market returns. However, lower prices that result from the increased production would lead to some moderation of production effects and other market impacts.

PFC payments may also affect crop production decisions by requiring land to remain in agricultural uses. While this requirement permits cropland to be idled, the PFC payments may be sufficient incentive to prevent some land from being converted to permanent nonagricultural uses. Once the decision is made not to convert, the farmer then may decide to produce on that land if expected revenue exceeds production costs. Even if the land is idled, it is available to return to agricultural production if economic conditions warrant.

Crop and revenue insurance play a prominent role in U.S. agricultural policy as part of the farm safety net. The 1994

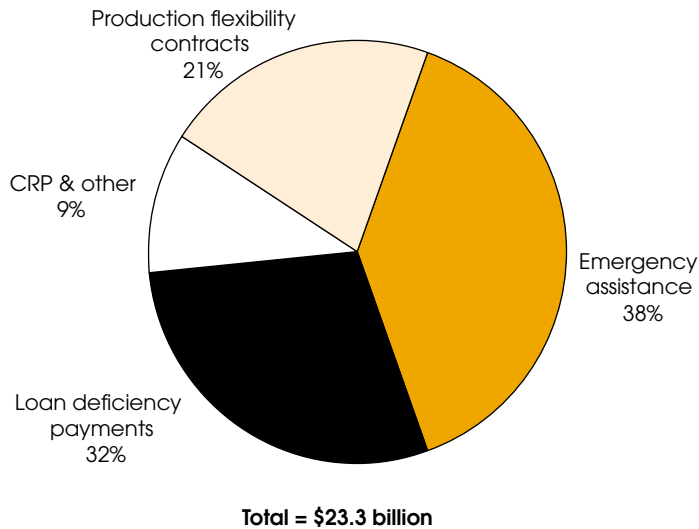
Crop Insurance Reform Act provided low-cost (government-subsidized) catastrophic coverage for crop producers and instituted restrictive legislative procedures for enacting disaster assistance. Crop insurance coverage and premium subsidy levels have increased dramatically in the intervening years. The Agricultural Risk Protection Act of 2000 recently expanded crop insurance funding by more than 80 percent.

Insurance changes the distribution of expected revenues by reducing financial risk associated with crop production variability. Government crop insurance subsidies are likely to alter producer behavior because they lower the cost of purchasing coverage. The cost reduction represents a benefit to producers that raises expected returns per acre and provides an incentive to expand area in crop production.

Crop insurance subsidies are calculated as a percentage of the total premium, and premiums vary across crops and farms to reflect different risks of loss associated with each crop and each insurable acre. As a result, the premium subsidy is higher for coverage of production of riskier crops and for production on riskier land. This

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Emergency Aid to Account for Largest Share of Government Payments to Farm Sector in 2000



Forecast.
Economic Research Service, USDA

structure for premium subsidies favors production on acreage with higher yield variability and may encourage production on land that might not otherwise be planted. Crop insurance subsidies also tend to increase plantings in regions with riskier production environments—e.g., prone to extreme weather conditions such as drought or flooding.

ERS recently conducted a preliminary assessment of the impact of Federal crop insurance subsidies on crop production. To estimate changes in production attributable to crop insurance subsidies, regional, crop-specific, premium subsidies were added to expected net returns and incorporated into a regional supply response model. The model allows intra- and inter-regional acreage shifts and cross-commodity price effects in a simulation of multiyear impacts on acreage and production.

The analysis suggests that when the new crop insurance premium subsidies are in place in 2001, the combined effect of all insurance premium subsidies will add approximately 900,000 acres (0.4 percent) annually to aggregate plantings of eight major field crops. Wheat and cotton account for most of the increase, together

accounting for about two-thirds of the increased area. Cotton acreage shows the largest relative increase (almost 2 percent). Premium subsidies raise planted acreage relatively more in the Southern Plains than in other regions.

Marketing loans are the current version of commodity loan programs that have been among the primary domestic support programs in the U.S. since the 1930's. Over the past 15 years, loan programs for major field crops have moved away from supporting prices and have switched to marketing loans that provide income support but do not support prices. While costs of marketing loan programs through 1997 were generally quite small, program costs have jumped significantly in the last few years because of low commodity prices. Total marketing loan benefits rose from less than \$200 million for 1997 crops to more than \$3.8 billion for 1998 and over \$7 billion for 1999 crops.

Producers can receive marketing loan benefits either by participating in the marketing assistance loan program (borrowing against a commodity used as collateral) or by opting to receive a loan deficiency payment. By pledging and storing some of their production as collateral for

a loan, farmers can receive a per-unit loan rate for the crop. Loans may be repaid at the loan repayment rate that is based on local, posted county prices for wheat, feed grains, and oilseeds (for rice and upland cotton, at the prevailing world market price). When the loan repayment rate is below the per-unit commodity loan rate, the difference represents a cost to the government and a program benefit (marketing loan gain) to the producer.

Instead of placing the crop under loan, farmers may choose to receive marketing loan benefits through direct loan deficiency payments (LDP's) when loan repayment rates are lower than commodity loan rates. The LDP rate is the amount by which the current loan rate exceeds the posted county price or the prevailing world market price and, thus, is equivalent to the marketing loan gain that could alternatively be obtained for crops under loan.

Assuming that the sales price for the crop is equal to the posted county price, the marketing loan program provides producers with an effective per-unit revenue floor at the loan rate. In practice, however, because of the seasonal movement of crop prices within a year, the marketing loan program has resulted in national average per-unit revenues received by farmers that exceed commodity loan rates (AO December 1999). Farmers take the marketing loan benefit (LDP or marketing loan gain) when prices are seasonally low and then sell the crop later in the year when market prices have risen.

Marketing loan benefits (marketing loan gains and loan deficiency payments) are estimated to have added 4-5 million acres to total U.S. acreage planted to the eight major field crops for 2000. This estimate uses an ERS acreage response model that incorporates current loan rates as well as the higher effective per-unit revenues realized by combining marketing loan benefits with crop-price seasonality.

The magnitude of this estimated acreage impact is specific to the 2000 crop-year situation, with results dependent on the size of expected marketing loan benefits that year. In years of higher prices, impacts of marketing loans on production would be smaller because program bene-

fits would be lower. Conversely, in years of lower prices, impacts would increase.

Within the aggregate increase in plantings estimated for 2000, acreage changes for individual crops reflect relative impacts of marketing loan benefits on net returns among competing crops as well as relative magnitudes of crop-specific acreage responses to those net returns. Wheat acreage gains almost 2 million acres because of its own marketing loan benefits and relatively less competition from other crops. Soybean and cotton acreage are each up about 1 million acres, and corn plantings are up about 500,000 acres.

In each case, the acreage impacts of the crop's own marketing loan benefits are partly offset by acreage effects of marketing loan benefits for other crops, reflecting the competition among crops for plantings. This land-use competition is particularly strong between corn and soybeans, where the mix of plantings is quite responsive to changes in relative prices and relative program benefits.

Disaster assistance programs have had a prominent role in support to U.S. agriculture, addressing, for example, the effects of crop losses from severe weather or pests. Crop insurance reform legislation in 1994 included language intended to eliminate ad hoc disaster assistance, in part because such payments were viewed as partly displacing use of insurance programs. More recently, however, legislation has provided emergency financial assistance to producers for crop losses incurred due to disasters.

Disaster payments are typically dispensed after production decisions have been made, and it can therefore be argued that such assistance does not distort production. On the other hand, if producers have expectations of future assistance based on

past government actions, then the prospect of disaster payments may influence production decisions. With three emergency assistance packages enacted in less than 2 years, farmers may now expect this type of government assistance to be more likely when prices or production are low.

Expectations of disaster assistance when prices or production fall to low levels increase expected producer returns and may lead to higher production than would otherwise occur. Thus, disaster assistance may encourage producers to keep riskier land in production.

The more that disaster aid is viewed as effectively linked to specific production activities, the greater the influence of expected future benefits on production choices. Disaster assistance that addresses crop-specific production problems, for example, can be viewed as similar to crop insurance, affecting planting decisions by reducing risk and likely leading to expanded production of those crops. In contrast, less specific disaster assistance payments would impact aggregate production more generally.

Program Impacts May Overlap

Each of these four U.S. agricultural programs increases U.S. production somewhat by affecting planting decisions in the aggregate and/or in acreage of specific crops. As a consequence, each program exerts some effects on market prices, domestic use, and exports. Production impacts of these programs may overlap somewhat, reflecting the potential for some substitution between the programs, such as expectations of disaster assistance displacing use of crop insurance.

Increased production resulting from these programs will also tend to lower prices,

and price declines, along with planting flexibility provided by the 1996 Farm Act, can cause partly offsetting reductions in production. Nonetheless, production remains higher as a result of these programs, although except for marketing loans, aggregate acreage impacts appear to be small.

Crop insurance and marketing loans create direct incentives to expand production of specific commodities by increasing expected returns per unit of production. Crop insurance changes the distribution of expected income at low yields, with premium subsidies that encourage production of riskier crops and in riskier regions. Marketing loans truncate the distribution of expected per-unit revenues, with program benefits creating an incentive to produce specific crops when prices are near or below loan rates.

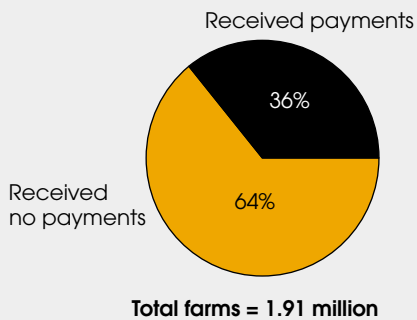
If ad hoc disaster assistance is not expected by the recipients at planting time and occurs after production decisions are made, this type of assistance may have little or no impact on current production. However, if producers of specific crops or in specific regions expect periodic disaster assistance based on past payments, these expectations can influence production.

Production flexibility contract payments create a small incentive to increase aggregate production, with the mix of crops planted based on market signals. Among the four programs, however, market effects per dollar of outlay may be smallest for PFC payments because these program benefits do not depend on market conditions and are less directly linked to farmers' production decisions. **AO**

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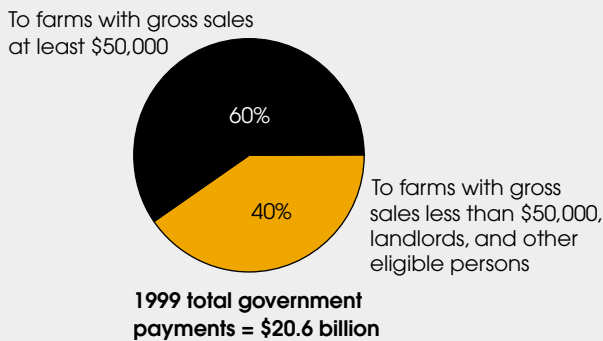
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Most Farms Do Not Receive Government Payments. . .



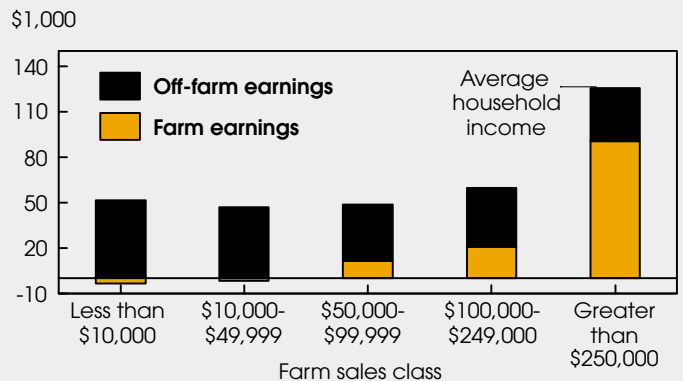
An operation with agricultural sales of at least \$1,000 meets Census definition of a farm.
 Source: 1997 Census of Agriculture, National Agricultural Statistics Service, USDA.

. . . And More Than Half of Government Payments Go to Farms With Sales of at Least \$50,000



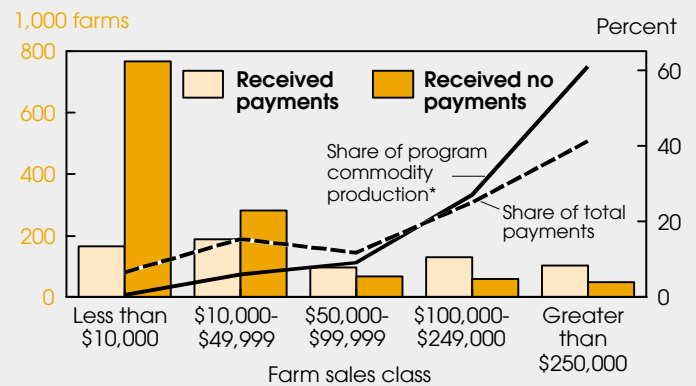
Distribution based on data from 1998 Agricultural Resource Management Study.
 Economic Research Service, USDA

Large Farms Generate Most of Their Household Income From Farming. . .



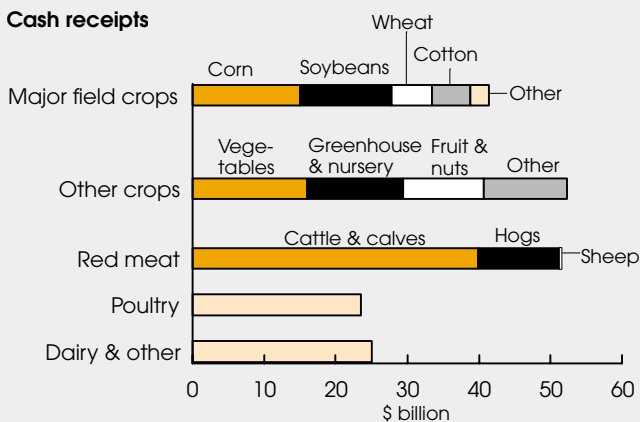
Source: 1997 Agricultural Resource Management Study.
 Economic Research Service, USDA

. . . And Receive a High Share of Government Payments

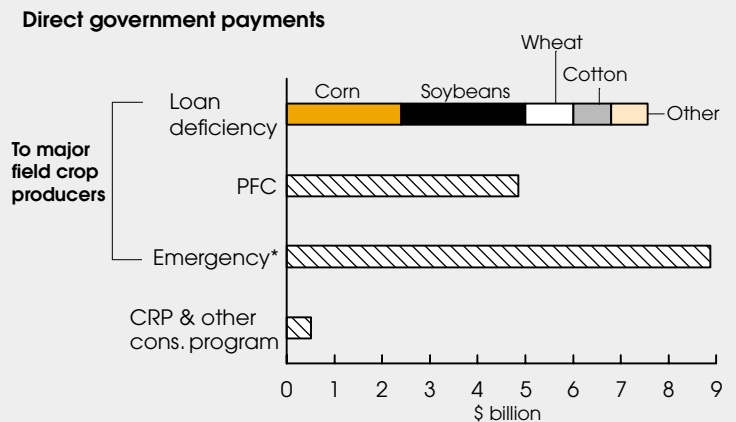


*Includes corn, wheat, soybeans, sorghum, barley, and oats.
 Total 1997 government payments = \$5.054 billion as reported to Census.
 Source: 1997 Census of Agriculture, National Agricultural Statistics Service, USDA.
 Economic Research Service, USDA

Major Field Crops Account for Only One-Fifth of Total Cash Receipts in 2000, but Are Associated with Nearly All Direct Government Payments



2000 forecast. Total cash receipts are \$194.5 billion.
 Other major field crops include rice, barley, oats, and sorghum.
 Economic Research Service, USDA



PFC=production flexibility contract; CRP = Conservation Reserve Program.
 Total direct government payments forecast at \$23.3 billion in calendar 2000.
 *A small portion is for producers of other crops and livestock.