

## **Decoupled Payments as Income Transfers: Conceptual Framework of the Study**

This section presents the conceptual framework of the analysis, explaining how income transfer payments in general change household income, wealth, risk attitudes, and expectations, and lead to changes in household consumption, saving, investment, and work. We also describe our methodology for analyzing the impacts on households and U.S. agricultural production.

### **Decoupled Payments: Fundamentally Different From Coupled Payments**

Decoupled payments are fundamentally different from the traditional, “coupled” commodity programs that have historically provided most income support to U.S. agricultural producers. Decoupled payments are fixed income transfers that do not subsidize production activities, inputs, or practices. They are “lump-sum” transfers because no production decision or change in market price can alter the size of the payment due to eligible producers. This program design effectively cuts the link between payments, production, and prices, and makes the payments a direct transfer of income to the farm household. In contrast, coupled subsidies directly affect production decisions by changing the prices received by the producer for commodities or the prices of inputs, either of which change the marginal returns from production. Price signals attract resources into subsidized sectors and lead to higher levels of production and lower world prices. Some types of coupled programs also impose supply controls, which raise commodity prices for consumers. (See box, “Increased Market Orientation of World Agriculture.”)

### **Income Transfers and Income and Wealth Effects**

Income transfers are not unique to agriculture. Many U.S. programs are designed to redistribute income and wealth to specific recipients. Most of these are targeted to household socioeconomic characteristics, such as poverty, unemployment, and old age. Research on social welfare programs has addressed several issues of relevance for the U.S. decoupled farm program. Foremost, it has focused attention on the ways that changes in income and wealth affect household consumption, savings, and work effort (Atkinson and Stiglitz; Myles; Danziger et al.).

Transfer payments are one component of household income, which can also include farm and nonfarm

wages, interest and dividends, and gifts and bequests (fig. 1). Similar to other sources of income, a household makes decisions about the expenditure of its government benefit on consumption or savings, taking into account its tax liabilities. In general, these expenditure decisions can be understood within a lifetime planning framework, with households choosing to consume the payment now or to save and invest it to pay for future consumption. The consumption and savings tradeoff is influenced by the characteristics of the household such as age, its subjective preferences (such as risk attitudes), and the expected yield on investments.

A transfer payment immediately increases a household’s ability to both consume and save. Market expectations about the size and the duration of future income transfers are reflected in the household’s asset values, and consequently its wealth. Higher wealth also influences current consumption and savings. It increases the household’s propensity to consume current income by reducing its need for savings to finance future consumption. Consumption includes both goods and leisure. Government transfer payments in effect make leisure, like other goods, more affordable. They increase the value of leisure relative to the marginal value of additional wage earnings and in theory lead to a reduction in hours worked.

A household’s savings represent its plan to pay for consumption in the future. In the lifecycle framework, a household typically consumes a large share of its income in its early years, when income is still low. Households have a higher savings rate in midlife, when earnings typically peak (although the level of consumption can be highest in these years as well). The savings rate declines in later years when incomes fall and hours of work are reduced. In addition, when a household’s income has high year-to-year variability, it has an incentive to accumulate precautionary savings for short-term consumption smoothing, allowing it to maintain some threshold consumption when income is low. A household typically allocates its savings across an investment asset portfolio, and its savings rate is sensitive to the expected (risk- and tax-adjusted) rate of return on its investments.

Changes in income and wealth can also change a household’s tolerance for risk. Farmers’ risk aversion is sometimes argued to affect production decisions, and wealth-induced increases in risk tolerance are argued to influence production levels, input use, or crop mix. Instead, from a household’s perspective, changes in risk tolerance due to an income transfer are

## Increased Market Orientation of World Agriculture

Many countries in addition to the United States have reformed their farm subsidies in an effort to increase the market orientation of their agricultural sectors. In recent years, countries have introduced a wide variety of domestic programs that have lessened the degree of producers' price insulation. Only subsidies that do not depend on current prices, factor use, or production can be considered fully decoupled from farm production decisions. Most countries have achieved a greater degree of market orientation but their subsidies still depend on either current price or current production.

Domestic subsidies are compared here according to their links or "coupling" to current prices or production. Subsidies fully decoupled from price are fixed payments made irrespective of market price conditions. Payments fully decoupled from price, such as EU compensatory payments, are still essentially coupled if current production is required in order to receive benefits. Japan has moved to partially de-link its support from current prices by basing subsidy levels on recent moving averages of market prices. Payments fully coupled to price, such as the U.S. counter-cyclical payments, insulate producers from price signals because payments increase when prices fall and vice versa. U.S. counter-cyclical payments are decoupled from current production, but most countries typically require some current production for households to receive price subsidies.

Some coupled programs allow planting flexibility—farmers can choose crop mixes and their program participation. Farmers' resource allocation therefore becomes, to some extent, a "tilling for benefits" decision. When fully coupled price subsidies are combined with rigid crop mix requirements, as in the 1990 Act deficiency payments, there is no room at all for market price signals or program benefits to allocate resources. U.S. farmers'

base production had to be planted to the same crop for which they had base acres, or farmers would forego benefits. The "normal flex acres" (15 percent of base) in the 1990 Act were not eligible for deficiency payments, but loan benefits remained available if the acres were planted in a program crop. The "optional flex acres" (an additional 10 percent of base) in the 1990 Act also allowed farmers to plant any crop. Deficiency payments were foregone if this acreage was switched to an alternative crop, although producers did not lose this acreage from their base.

"Decoupling" can be defined in terms of the actual impact of the program on production levels or the way a subsidy program is implemented. Implementation rules offer a neutral way to compare farm programs, and they are the basis for WTO criteria on exemption from expenditure limits. Actual production impacts can vary by country for reasons that are not related to program design but are instead related to local market conditions.

Market conditions can cause even fully decoupled payments to have supply impacts, but these conditions are outside the control of policymakers. In Mexico, for instance, the PROCAMPO payments have significantly affected agricultural investment because they have enabled credit-constrained farmers to invest onfarm (Sadoulet, de Janvry, and Davis). Although this increased investment can lead to production impacts, Mexico notifies the payments as "green box" compliant to the WTO because of the program's implementation rules.

The description of programs' links to production and prices in the table is based on a stylized representation of complex programs. Programs often have multiple components with different links to production or prices. For example, components of U.S. 1990 Act deficiency payments had different eligibility rules, and only some appear in the table.

### Increased market orientation of domestic support: Subsidies' links to current prices and production

Links to prices	Links to production			
	Full planting flexibility, including idling	Full planting flexibility, excluding idling	Planting flexibility within program crops	Limited or no planting flexibility
Payment not linked to current price	U.S. PFC and U.S. 2002 Act direct payments	Mexican PROCAMPO	EU compensatory and set-aside payments, Japan payments for mountain and hilly areas, Japan area payments for other crops grown on riceland and for manufactured milk	
Payment linked to recent trends in market price			Japan income stabilization programs, Japan vegetable and milk price stabilization programs	
Payment linked to current price	U.S. counter-cyclicals, U.S. Market Loss Assistance	Canadian NISA	EU intervention prices, U.S. marketing loan benefits, Japan deficiency payment for beef calves, soybeans, and hogs	U.S. 1990 Act deficiency payments—optional flex and nonflex acres

likely to affect all of its decisions about consumption, savings, and work effort, and its allocation of savings across its investment portfolio, not just its decisions about farm production.

The income and wealth effects of transfer payments on households can lead to second-round effects when payments redistribute income among households with different preferences. These preferences can influence the level and composition of aggregate demand and supply, savings, and investment and the rate of economic growth. Farm payments, for example, increase the savings of a population with a propensity to invest on farm compared with most taxpayers. Also, changes in farmers' liquidity may ease conditions under which credit is supplied to the sector. In addition, distortion to the general economy can result from the taxation required to finance the income transfer and to the costs of program administration.<sup>1</sup>

Despite the similarities between decoupled farm subsidies and some of the major U.S. income transfer programs, the programs also differ in important ways. PFCs target current farm operators instead of general socioeconomic characteristics and so by design have a link to a production sector of the economy. PFCs also transfer financial resources to households that on

<sup>1</sup>For a recent perspective on the optimal taxation problem and farm subsidies, see Moschini and Sekokai's analysis of the taxation problem for small and large open economies. Coady and Harris analyzed the welfare costs associated with funding Mexico's PROGRESA cash transfer program.

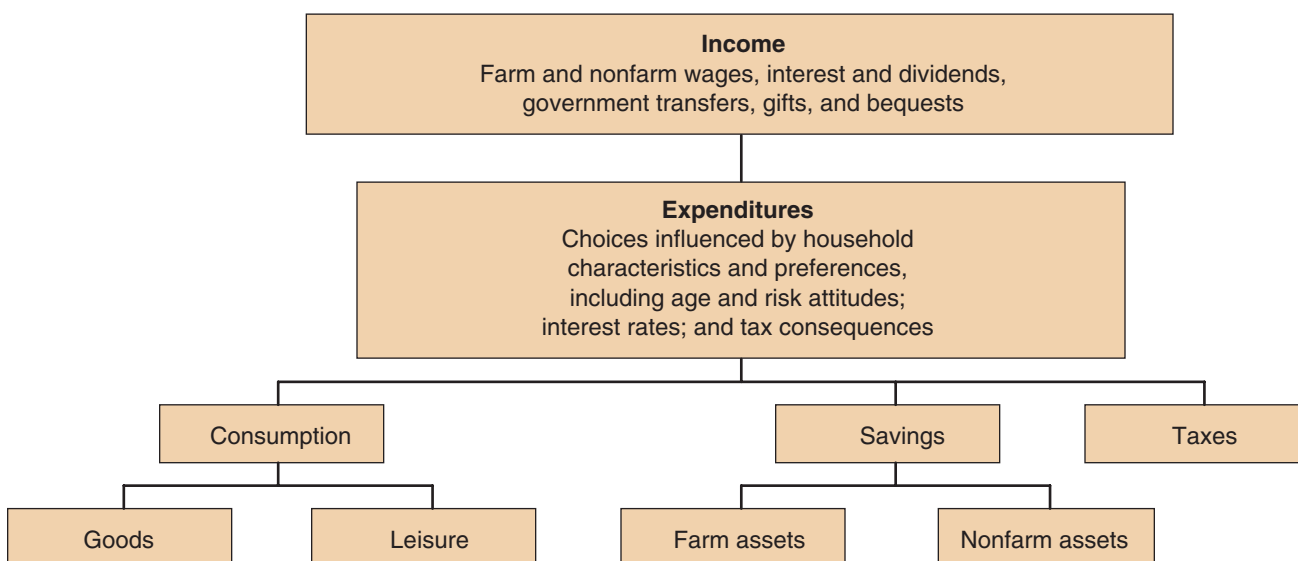
average have incomes that are comparable to those of the general population, and they increase the net worth of those households. In 2001, the average income of households receiving PFC payments was \$59,620, slightly higher than the average U.S. household income of \$58,208 (DeNavas-Walt and Cleveland). Farm households, despite having similar incomes, have much greater wealth (Mishra et al.). The net worth of participant farm households averaged \$660,450 in 1999, compared with \$282,500 for all U.S. households in 1998—or less than half that of farm households receiving PFCs (Kennickell et al., 2000).

Decoupled subsidies also differ from many other U.S. income transfer programs because eligibility for PFC payments is transferable. Payments are linked to the operation of base acres, and payment rights can be acquired through buying or renting base acreage. Participants in base-acre purchase and rental markets are in effect bidding on expected benefits from the payments associated with that acreage, and changes in the asset value of base acres are reflected in the wealth of participants.

### Market Distortions

Some of the arguments made about the production effects of decoupled payments are based on the existence of “market failures,” which are inefficiencies, rigidities, or incomplete information in capital, insurance, and labor markets in agriculture. Market failures make it more likely that a farm household receiving

Figure 1  
**The flow of household income and expenditures**



lump sums will allocate the additional liquidity to its farm business rather than allocate the payments across all economic activities.

One distortion, for example, occurs when credit-constrained farmers lack access to capital at competitive rates and conditions, perhaps because banks have insufficient information about the actual credit risk posed by an individual. This can leave some producers unable to invest in profitable farm production activities. Increased access to capital from decoupled payments might allow such farmers to increase farm investment and expand agricultural production (Sadoulet et al.; Rude). Likewise, rural labor market rigidities may influence how a recipient household allocates its labor and leisure as its income and wealth increase (Vercammen). For example, if work schedules in onfarm or off-farm jobs are rigid, farm households wanting to cut total labor hours may find it feasible to do so only by eliminating one job entirely rather than reducing hours worked.

Although not addressed in this report, taxes related to income, capital gains, social security, and bequests can also affect production by influencing household response to the income transfer. In the United States, Federal income, self-employment, and estate and gift taxes are the most important taxes affecting farmers (Durst and Monke). Historically, U.S. tax policies provided incentives for farmers' investment in depreciable capital. Reforms in 1986 significantly reduced these incentives by lengthening the depreciation periods and eliminating investment tax credits, but the Taxpayer Relief Act of 1997 again increased incentives to invest in farm capital. The 2001 tax reform gradually reduces Federal income taxes over a 10-year period and suspends the estate tax. While the 2001 reform was not specifically aimed at farmers, they will benefit from one or more of its provisions (Monke and Durst).

These market imperfections may be correlated with the scale of farming operations. In addition to domestic concerns about farm structure—the role of large and small farms in agriculture—economies of scale could also affect the efficiency of the sector. If all farms or only small farms are affected by credit constraints, decoupled payments may have no effect on structure. But if only large farms are credit constrained, then payments may give them the necessary liquidity to achieve further consolidation. Whether payments have allowed recipients to achieve scale economies is not known.

## Methodology

We analyze the effects of decoupled payments on agricultural production and trade by looking at ways that the payments can provide an incentive to increase farm production. Production is affected when the payments that increase the income and wealth of participants change farm households' consumption, saving, investment, and hours worked. These household decisions can change the resources supplied to agriculture and lead to changes in aggregate agricultural production and trade.

Knowledge about U.S. farm households has been substantially increased by Farm Costs and Returns Surveys (FCRS) and, since 1996, by the annual Farm Business and Farm Operator Household Data survey, a component of the Agricultural Resource Management Survey (ARMS). ARMS is USDA's primary vehicle for data collection on a broad range of issues about agricultural resource use and costs, farm financial conditions, and the characteristics of farm operators and their households. ARMS captures the diversity in U.S. farm households, and includes both program participant and nonparticipant farms. (See box, "Diversity in U.S. Agriculture.") Many of the survey questions asked of farm households change annually. Therefore, the survey results described in this report are frequently identified as being based on a specific year of ARMS data.

This report synthesizes the findings of three analytical approaches. First, we analyze ARMS data to describe recipients' characteristics and financial situations, including patterns of land ownership and rental, consumption, saving, investments, and onfarm and off-farm labor force participation. These parameters are then used to describe the household allocation of income such as decoupled payments, and the distribution of PFC benefits. Second, we use cross-section data from ARMS to empirically estimate the impacts of decoupled payments on farm households' on- and off-farm labor supply and leisure hours.

Third, to estimate the impact of the decoupled payments on agricultural production, we simulate the program using a dynamic, intertemporal computable general equilibrium (CGE) model.<sup>2</sup> This type of economywide model provides a consistent framework that integrates U.S. farm household decisions on consumption, savings, and investment, with agricultural production. The model also incorporates one of the "distorted market" scenarios, that of farm households restricted to investing only in

<sup>2</sup>See appendix for a description of the model.



agriculture, and compares the impact of decoupled payments on production relative to when households allocate savings across diversified investment portfolios.

Our approach has some data and methodological limitations. Foremost, our descriptive analysis assumes that farm households allocate their decoupled payments in the same way they allocate their total income. But their overall propensity to consume is likely an average of different propensities to consume from various income sources (Thaler). These other sources may include wages and retained business earnings from farm and nonfarm businesses, pensions, interest, as well as government payments. Carriker et al. find that farm families have higher propensities to consume from their relatively predictable government payments and off-farm incomes than from their more volatile farm income, presumably because the former reduce the need for precautionary savings. In addition, households' allocation of an additional dollar of income, or their marginal propensities to save, invest, and work, may differ from their overall average allocation of income and hours.

ARMS data provide a rich cross-section survey of the farm sector, including program participation data. Panel surveys, by tracking households over time, can show more directly (compared with cross-section surveys such as ARMS) how individuals adjust to economic shocks, including policy shocks. However, cross-section data have important advantages over panel data. First, cross-section data can be used to show the largely stable lifecycle patterns of consumption, income, and wealth as described in this report. Second, cross-section surveys such as ARMS excel at presenting a balanced representation of contemporary agriculture, while panel surveys must take special care to remain balanced as their survey population declines. Third, no panel currently matches ARMS for breadth and depth of farm business and farm household detail.

Finally, the CGE simulation provides a stylized analysis of the impacts of the PFC payments. In particular, there is a single aggregate agricultural sector in the model.

### Diversity in U.S. Agriculture (Participant and Nonparticipant Farms)

Participation in government programs is not universal within the U.S. agricultural sector because not all farms have historically produced feed grains, wheat, rice, or cotton. In fact, in 2001, only about 21 percent of the 2.1 million U.S. farms operated acreage either currently or formerly devoted to these crops. U.S. farms differ widely in what they produce, their size, technologies, resources, and business arrangements. One way to show this diversity is by looking at three classes of farms (see table).

Commercial farms are those farms with more than \$250,000 in annual sales. These farms made up about 10 percent of all U.S. farms in 2001, but 72 percent of the total agricultural output because their farms tend to be larger, with an average of 750 acres harvested. Household incomes are greatest for this group, averaging \$130,887. Intermediate farms have sales of less than \$250,000 but are operated by someone for whom farming is the main occupation. This group made up 31 percent of all farms and 22 percent of the agricultural output in 2001, harvesting 189 acres on average. Household incomes, at \$40,272, were less than a third of households with commercial farms. The remaining 59 percent of "rural-residence" farms are smaller, harvesting an average of only 33 acres of cropland in 2001. Incomes of rural-residence farms averaged \$69,423.

#### Characteristics of farm diversity

Farm class	Share of all farms	Share of production	Average household income from all sources	Average acres in production	Share of farm type that received PFC payments	Average PFC payment
	-----Percent-----		Dollars	Number	Percent	Dollars
Commercial	10	72	130,887	750	45	25,957
Intermediate	31	22	40,272	189	34	6,713
Rural-residence	59	6	69,423	33	11	2,259
Total	100	100	64,465	149	21	9,176

Note: PFC payment averaged only over participant farms.  
Source: ARMS, 2001.