

Effects of Decoupled Payments on Household Consumption, Savings, and Investment

Participating Farm Households Have Low Rates of Consumption Out of Income

Households allocate their income to consumption, savings, and taxes. Consumption includes household spending on food and household supplies, rent and mortgage, nonfarm transportation, and medical expenses. ARMS data for 2001 show that, on average, farm households receiving decoupled payments had relatively low consumption expenditure shares, consuming less and likely saving more out of their income than do nonfarm households. PFC participants consumed \$26,884 out of pre-tax household income of nearly \$59,620. In comparison, all U.S. consumer units⁴ consumed \$39,518 out of pre-tax incomes of \$47,507 (Bureau of Labor Statistics).

ARMS data on the consumption and income of participating farm households also show the important effect of the life cycle on household consumption decisions (fig. 6). On average, farmers of all ages are net savers. Older and younger households consume more of their income, while middle-aged households (in their peak

⁴The "consumer unit" is based on the BLS definition of financial dependency within a household and therefore absolute consumption and income is not comparable to the household consumption and income estimates from the U.S. Census Bureau and USDA. Rather, compare the shares of income allocated toward consumption.

earning years) consume a smaller share. Note that the lifecycle framework does not predict identical consumption levels across all ages; rather, it predicts differences in the share of income consumed versus saved.

Decoupled Payments Increase Household Consumption Expenditures

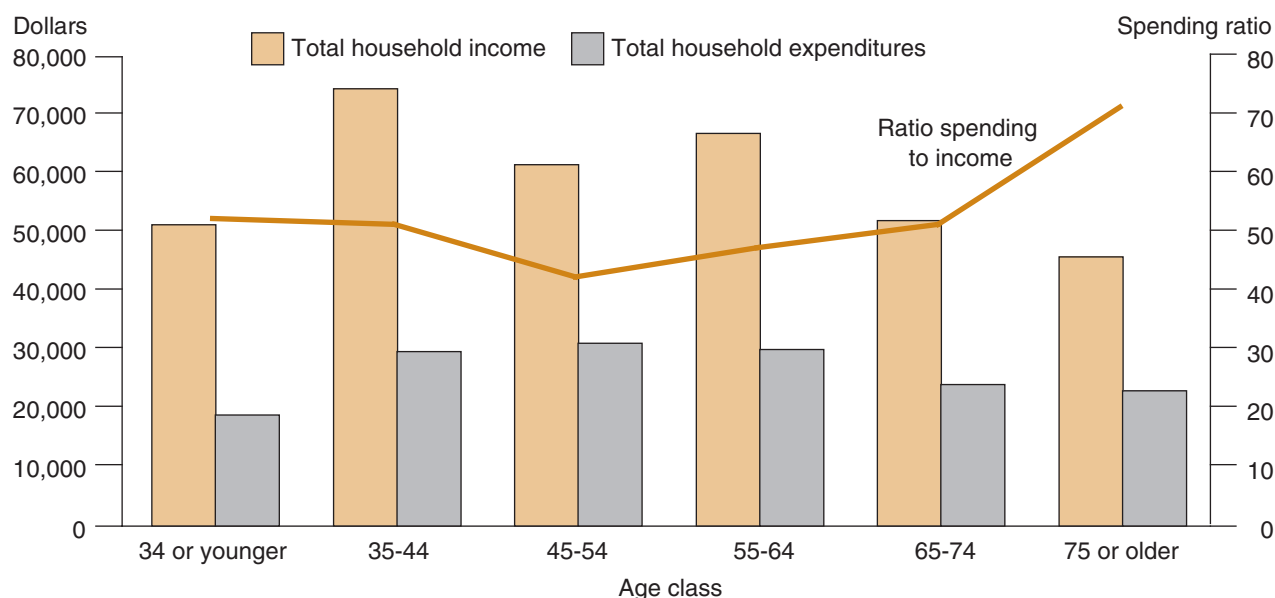
In theory, income transfers can be expected to increase spending by making consumption more affordable. They raise lifetime income and reduce the rate of saving required to pay for future consumption, especially if the payments are perceived to be permanent.

Consistent with theory, ARMS data show that across most of the farm household income distribution, farm households that received PFCs in 2001 consumed more than nonparticipating farm households of similar income levels (fig. 7).⁵ Among the lowest income farm households, recipients' median consumption expenditure (regionally adjusted to reflect cost-of-living differences) exceeded nonrecipients' by about \$2,500. Differences tended to be greatest in the middle of the income distribution. There was no difference in spending at the highest income quintile, presumably because the payments

⁵This increase in consumption expenditure shown by ARMS is also consistent with the views expressed by farm managers in a panel convened by Johnston and Schertz in 1997. The managers reported that payments were being used for a variety of purposes, but there were no indications that recipients were saving them to offset periods of low income or for a possible end to subsidies in 2003.

Figure 6

Household life cycle influences participants' spending habits



Source: ARMS, 2001.

had proportionately smaller impacts on household income and wealth.

Consumption expenditure patterns across income levels also suggest that decoupled payments may substitute for precautionary saving for farm households. While some spending can be expected to adjust as income varies, a certain level of household spending would be maintained to preserve continuity in accustomed living standards, perhaps by drawing down precautionary savings or borrowing. The gap in spending between participants and nonparticipants in most income quintiles may include use of the payments to sustain consumption levels during temporary downswings in income.

Farm Households Invest On- and Off-Farm

Farmer decisions to save a portion of their decoupled payment can increase the supply of investment capital to the farm business. However, the decision of how much to save out of income is closely tied to the decision on where to invest savings.

Households allocate their savings to investment asset portfolios that consist of one or more assets. Portfolio diversification is a means for a household to maximize the total expected returns on its investments by balancing the risk and expected return that characterize each asset. Farmers, like other investors, can be expected to follow an economic criterion of equalizing risk and

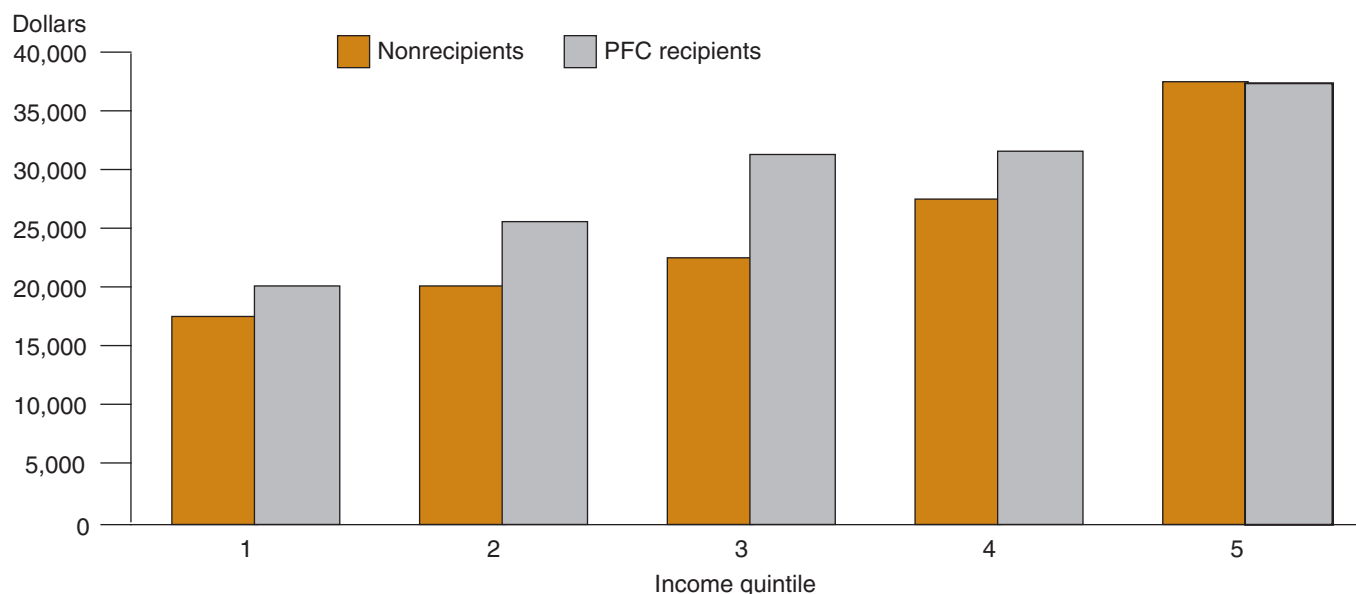
tax-adjusted rates of return across investments. An asset offering a higher rate of return, adjusted for risk and taxes, than that earned by the existing asset portfolio presents an opportunity to increase overall profits by reallocating investments across the portfolio until all assets have the same return.

ARMS asset portfolio data for 1999 show that farm households receiving PFCs exercise considerable choice in investing their savings. Participating households had an average asset portfolio of \$768,710, while total debt averaged \$108,679. (The difference is the average net worth of farm households, equal to \$660,031.) Most (about 70 percent) of the portfolio consisted of farm assets, including land (the largest asset on average), buildings, machinery, and inventories (fig. 8). Nonfarm assets include the dwelling in which the producer's family lives. Participants' asset portfolios also have a significant (and growing) presence of nonfarm assets that include stocks and bonds, retirement assets, and liquid assets such as savings accounts and certificates of deposit. Nonfarm assets made up an average of about 30 percent of recipient households' investment portfolios in 1999.

PFC recipients' farm operations account for a large share of their existing stock of investment, but surveys indicate that farm households' investment choice at the margin, with any additional funds saved, would differ

Figure 7

Across most of the income distribution, participants had higher spending than nonparticipants



Note: Quintiles are constructed by dividing total income (farm and nonfarm) of all U.S. farm households into five equal-sized groups, with quintile 1 containing the lowest income households and quintile 5 containing the highest income households.

Source: ARMS, 2001.

from current portfolio shares. The 1988 FCRS asked U.S. farm households how they would spend a one-time \$25,000 windfall. At that time, farm households would have willingly allocated more savings out of additional income to off-farm investments. Farmers reported that 55 percent of the \$25,000 would have been saved, with most of the amount going to investments that were not part of the farm operation.

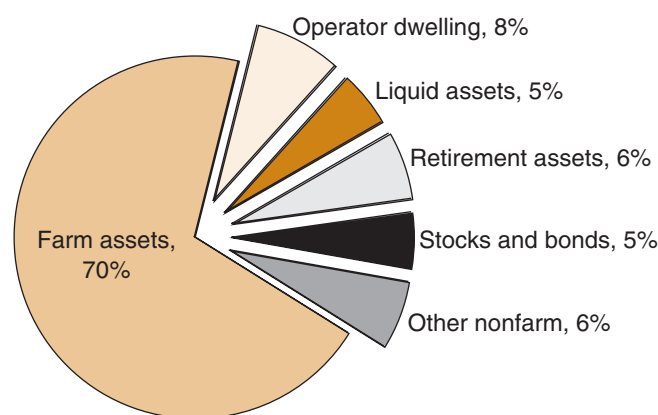
There are reasons to expect that farm households may be unlikely to allocate PFCs toward additional investments to their farm business. Foremost, decoupled payments do not increase prices or market returns on investment in farming so do not increase demand for farm investment. It is also likely that in the case of a household's onfarm assets, the rate of return on its investment is sensitive to the quantity invested, and the scope for profitable new investments may be limited. In contrast, nonfarm investment markets, particularly financial markets, are much larger and households are less likely to be concerned that additional allocations to nonfarm investments will diminish marginal returns.

How Decoupled Payments Can Increase Onfarm Investment

Because a decoupled payment does not directly change the price of agricultural commodities, it does not change the rate of return earned by agricultural assets or labor. Thus, it provides no price incentives for a reallocation of existing investment. Beneficiaries that desire to invest a portion of their payments can allocate it to the portfolio asset that best meets their economic objectives, drawing on the full range of onfarm and off-farm investment opportunities that exist for PFC recipients.

Figure 8

Farm households with PFCs allocate savings across an investment portfolio



Note: Average assets = \$768,710.
Source: ARMS, 1999.

In some cases, producers may have objectives that extend beyond equalizing rates of return across a portfolio. Producers receiving PFC payments may invest in additional capital for their farm operations not because the investment will bring a high return but because it will allow them to offset a portion of current income, an option allowable with some restrictions under the U.S. tax code. Producers in this case are following the portfolio rule as above but are now equalizing the after-tax rate of return to assets. Payment recipients may also choose to pursue unprofitable farming practices, at least in the short term, because the additional cash flow allows them to ignore market price signals. These producers may derive some nonpecuniary return from farming, have unwarranted and optimistic price expectations, or their investments outside the existing portfolio may carry high transaction costs.

Farm investment can also increase if the supply of credit increases. Lenders may perceive recipients as being more credit worthy as a result of PFCs because the payments increase collateral values for land owners and increase repayment capacity, reducing lenders' exposure to risk of loan defaults. This could lead financial institutions to lend capital at a lower interest rate or alternatively to lend more capital than otherwise at the existing interest rate. Note, however, that household credit supply for consumer purchases would also increase.

So far, our discussion of investment portfolios has described how producers react to efficient capital markets. However, capital markets may have imperfections, such as incomplete information of lenders about borrowers, causing some producers to be credit constrained. At the prevailing interest rate, farmers are unable to take advantage of profitable farm investment opportunities. Under these conditions, PFC payments enable increased onfarm investment.

No Evidence of Aggregate Investment Effects in U.S. Agriculture

As a practical matter, it is difficult to measure the above effects of PFC payments on recipients' farm investment because many of the investment demand and supply effects we describe occur simultaneously. We can, however, compare the farm and nonfarm portfolios of PFC recipients with those of farm households not receiving a PFC payment. This allows us to determine whether the scenarios where lump-sum payments would lead to increased agricultural investment appear to be reflected in aggregate behavior. The rationale for controlling for program participation status is not because the groups are similar to each other—there are

basic differences in farms producing program crops versus other farms—but because the capital market conditions in which these farms operate are similar. If capital market imperfections exist and are significant, then it would be expected that PFC participant farm households would be unlikely to hold nonfarm assets in their portfolios. However, figure 9 shows that the nonfarm assets held by participating and nonparticipating farm households are similar.

Another way to test for credit constraints among program participants is to compare investment in farm equipment per acre across high- and low-cost participating farm operations. Costs of production can be expected to correlate with the presence of credit constraints since lenders consider production costs in their lending decisions. If credit constraints are significant, it would be expected that high-cost operations might have been forced over time to invest less in machinery and equipment compared with low-cost operations. ARMS data show no significant differences in capital stocks among high- and low-cost operations receiving PFC payments (fig. 10). Investment in machinery and equipment per acre of land farmed was virtually the same for low-cost operations (\$146) as it was for high-cost operations (\$149), and their land values were also comparable.

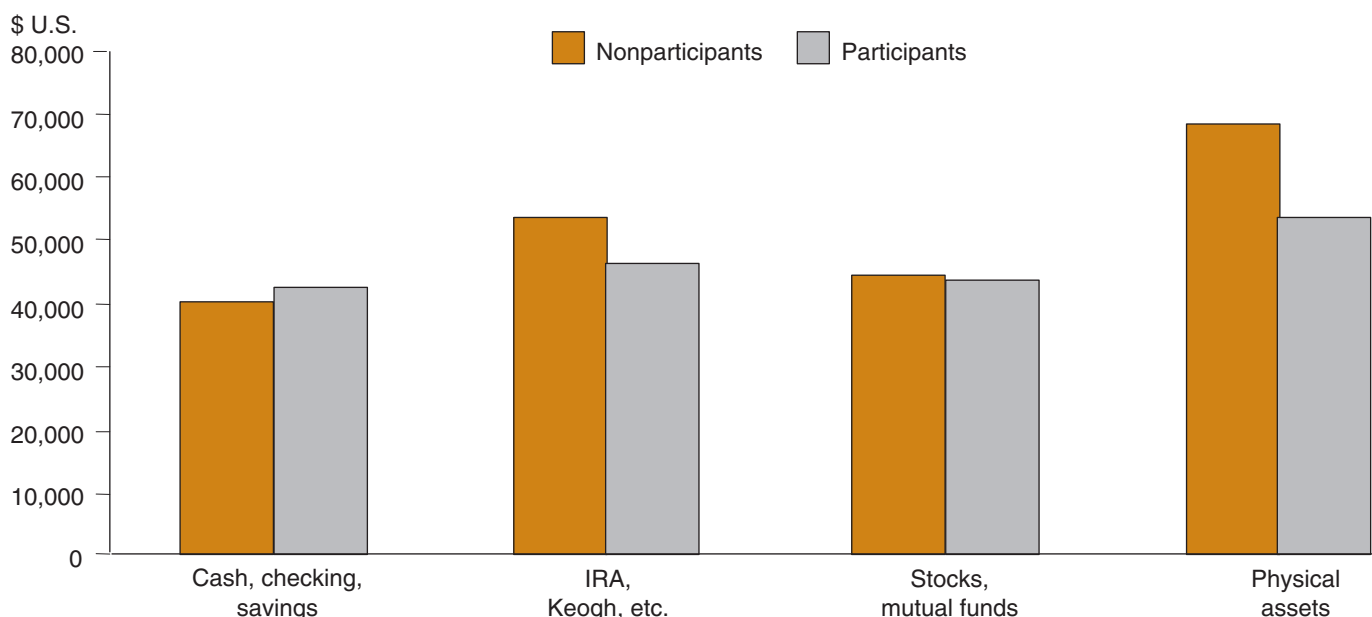
In addition, if there were credit constraints, decoupled payments would allow program participants to replace

machinery and equipment more often than nonparticipants. Although the composition of physical assets was different for program participants versus nonparticipants and participants' per acre stock of investment in machinery and equipment was higher (\$144 versus \$106), the rate of replacement as indicated by the ratio of new purchases to existing stock was similar, 11 percent. Replacement rates can influence production because newer equipment tends to embody technological changes that enhance productivity. Because replacement rates were similar, the PFC payments did not appear to stimulate added investment in machinery and equipment.

The U.S. farm sector is composed of farms with different debt loads and debt-carrying capacity. Some are likely to be credit-constrained farms so that at least some proportion of U.S. producers will respond to PFCs by increasing their farm investments. However, ARMS data show that most participating U.S. farms are likely to be financially stable and therefore an inability to take on more debt does not seem to be a concern in aggregate. In 2001, about 60 percent held debt that represented less than 40 percent of their debt repayment capacity, while only about one-fifth of farms carried debt representing 80 percent or more of their capacity (fig. 11). Because this measure excludes nonfarm sources of income or assets, it is likely a low estimate of debt capacity since the calculation includes only cash-flow from the farm business.

Figure 9

The portfolio of nonfarm assets is similar between commodity program participants and nonparticipants



Source: ARMS, 1999.

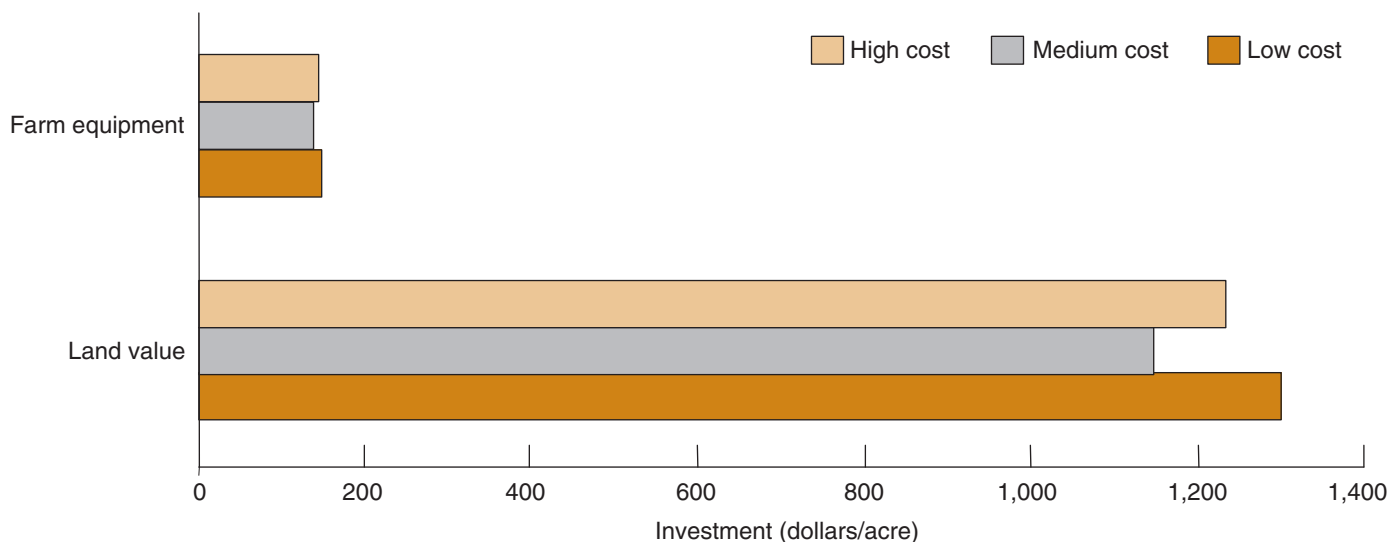
Decoupled Payments, Credit Constraints, and Farm Structure

The effects of government payments on the structure of U.S. agriculture—the number of small or family farms relative to large, commercial farms—has been part of the public debate over farm subsidies. The effect of decoupled payments in preserving smaller farms cannot

be predicted on the basis of economic theory. On the one hand, payments could provide high-cost producers with the liquidity they need to remain in operation. This would slow consolidation since about two-thirds of PFC-recipient farms in the United States are high- or medium-cost intermediate or rural residence farms. On the other hand, the payments could provide low-cost

Figure 10

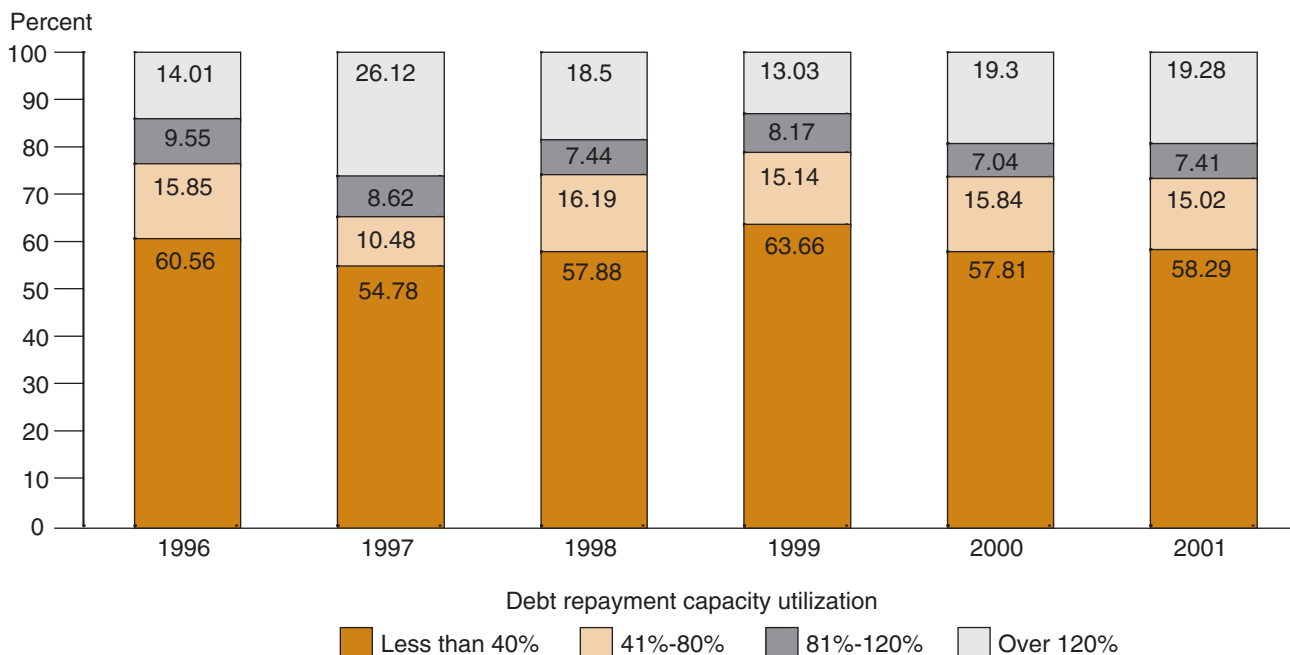
Among participants, there is no evidence of capital constraint (investment per acre) related to cost of production



Source: ARMS, 1999.

Figure 11

Distribution of PFC recipient farms by debt repayment capacity utilization



Source: ARMS, 1996-2001.

producers with the liquidity to buy out high-cost producers and, at the same time, maximize the value of the land assets that high-cost producers offer for sale. Large, commercial farms tend to be low- to medium-cost producers, and these farms account for about two-thirds of production (table 3).

Recent data on U.S. farm structure show no distinctive changes in farm sizes associated with the introduction of decoupled payments (Hoppe and Korb). The trend toward larger farm sizes, most evident in livestock enterprises that typically receive very limited payments, has been continuous since 1935. The largest increase in sales between 1982 and 1997 occurred in very large farms with sales of \$1-\$5 million. These farms are mostly associated with production of crops such as horticulture. Farms specializing in cash grain production account for only 10 percent of all farms in this sales class. Additionally, the share of farms operating more than 500 acres increased in the past 10 years, but this has been the case since the 1940s, with no evident break since the introduction of decoupled payments.

Risk Attitudes Influence Investment Decisions

Risk is a fundamental component of agricultural business. There are many sources of risk, including price and yield risk, risks associated with changes in government policy, and personal injury or health risks. The 1996 ARMS indicates that risk in general is a concern for most producers, although marked differences exist in producer perceptions of the primary sources of risk for their business. Producers of program crops, including wheat, corn, soybeans, tobacco, and cotton, are concerned more about yield and price variability than other categories of risk, while producers of vegetables, greenhouse crops, cattle, and poultry are most concerned about changes in laws and regulations. Across all farms, producers are most concerned about changes in laws and regulations (institutional risk), variability

in crop yields or livestock output (production risk), and uncertainty in commodity prices (Harwood et al.).

The debate on decoupled payments has focused on the potential for the increase in income and wealth of participants to increase the level of risk they are willing to assume, which might result in higher levels of agricultural production. Various case studies that measured farmers' attitudes toward risk in specific enterprises have generally found that farmers are risk averse and that risk tolerance increases as their wealth increases (Chavas and Holt, 1990, 1996; Saha et al.; Pope and Just). Using relationships between wealth and acreage planted estimated by Chavas and Holt (1990), Westcott and Young report that increased wealth from decoupled PFC payments may have increased total agricultural land use in the United States by 225,000-725,000 acres (less than 0.3 percent annually).

Despite the prominence of risk aversion in the debate on decoupled payments, the link between changes in risk tolerance and production is not yet well understood. ARMS data on participating farms shows that many producers use market mechanisms, such as forward contracts and hedging, to directly manage their risk exposure, suggesting that risk aversion is not solely addressed directly through production decisions. In fact, ARMS data show that use of these market mechanisms increases with the level of wealth, which seems to further weaken the link between the decoupled payment and production via risk. Furthermore, the diversification observed in the investment portfolios held by participating farms suggest that changes in risk attitudes can be expected to be evidenced throughout their portfolios, as holdings are readjusted to maintain equalized, risk-adjusted rates of return. Much more needs to be learned about the relationship between wealth and risk attitudes and the household's risk management strategies before we can draw firm conclusions about the risk effect of decoupled payments on production.

Table 3—Distribution of PFC-participating farms by cost level

Cost level	Commercial		Intermediate		Rural-residence	
	Population	Production	Population	Production	Population	Production
<i>Percent</i>						
High cost	2	3	18	5	20	2
Medium cost	9	24	21	13	8	2
Low cost	9	42	9	9	4	1

Note: Population and production shares each sum to 100 across farm types and cost.

Source: ARMS, 2001.