Effects of Decoupled Farm Payments on Aggregate Agricultural Supply

This section integrates our findings on the consumption, savings, and investment behaviors of program participant households in a simulation analysis of payment effects on aggregate production. Decoupled payments influence recipient household levels of consumption, savings, investment, and work effort—choices that can change the resources the households make available to farm operations.

Production Effects With Efficient Markets

The links between decoupled payments and agricultural production are indirect and depend on household responses to the payment. These indirect links are strengthened when factor market failures or rigidities create incentives or conditions that favor agricultural activities over alternatives. Gardner (1992) argues that the most compelling evidence of efficiency in U.S. agricultural factor markets has been the elimination of the income gap between farm and nonfarm households. The mobility of farm labor through exit or engagement in off-farm employment has contributed to the equalization of farm and nonfarm income. Increased use by farm households of off-farm investment opportunities has helped to equalize rates of return on farm and nonfarm capital assets. The cautious borrowing and lending behavior of farmers and lenders since the 1980's farm credit crisis has also strengthened agricultural capital markets and helped to equilibrate the supply and demand for farm credit (Collender). These views on the efficiency of U.S. agricultural factor markets are consistent with the economic circumstances of PFC recipient households as described by ARMS data.

To estimate the production effects of decoupled payments, we use a dynamic, intertemporal CGE model that simulates the efficient functioning of U.S. agricultural factor markets. The model is used to simulate permanent, annual decoupled payments of $6 billion, approximately the amount of decoupled payments in 1997, the model base year. The simulation finds that the payments have no effects on agricultural production in either the short run or the long run. However, the increase in household asset values leads to a small and permanent increase in farm household consumption levels (0.8 percent higher than in the absence of payments) and a decline in the proportion of income being saved, but with no effects on agricultural investment. (See box, "Production Effects of Coupled Farm Subsidies.)

Production Effects of Coupled Farm Subsidies

The modest production impacts of decoupled payments can be put into perspective by comparing these impacts with the effects of coupled U.S. subsidies. The two largest coupled subsidy programs provided during the FAIR Act were the marketing loan program (coupled to price) and crop insurance premiums (input subsidies).

U.S. marketing loan benefits ranged from around $5 billion to over $8 billion annually in the last several years. When commodity prices are below commodity loan rates, program benefits augment market receipts. Marketing loans in effect provide a per unit revenue floor, and truncate the lower end of the distribution of expected revenues. By reducing variability and increasing mean expected producer revenue, the loan program creates an incentive to produce program crops. The U.S. marketing loan program is estimated to have increased the annual acreage planted to eight major field crops by 2 to 4 million acres (about 1-2 percent) (Westcott and Price).

The U.S. crop insurance program expended about $1.5 billion in 2001, about two-thirds the value of the $4.1 billion in 2001 PFC payments. Premium subsidies are proportional to premiums. Thus, since premiums are higher for riskier crops, the absolute levels of crop subsidy are highest for those crops. As a result, this premium structure encourages the production of riskier crops and production in riskier regions. Crop insurance subsidies are estimated to have added about 960,000 acres (about 0.4 percent) to annual production of eight major field crops, with wheat and cotton expanding the most (Young, Vandeveer, and Schnepf).

Why are supply responses to coupled programs relatively low? For decades, there has been analysis of the low supply response of agriculture, which contributes to large swings in commodity price when demand conditions change. The roles of fixed costs, inelastic factor supply, technological conditions, and the fragmented and competitive structure of the sector in creating low supply response were noted by Johnson in 1950. Climate and land characteristics place physical limits on aggregate supply and crop substitutability. Supply has also been influenced historically by government programs that have interfered with market price signals and constrained planting decisions.

Recent estimates of aggregate and crop supply response, such as Lin et al., show that U.S. crop supply responsiveness to price has increased. The increase in acreage supply response has been especially large with respect to cross-prices, meaning that farmers have become more flexible in changing their crop mix in response to changes in relative prices. Changes in farm programs have been an important factor allowing greater supply response; nonetheless, aggregate supply response remains inelastic.

The payments also lead to a permanent increase of about 8 percent in aggregate U.S. farmland values. Other recent ERS research has estimated that all farm programs, coupled and decoupled payments combined, increased land values for program crops by about 20 percent, or $62 billion (Barnard et al.). Although the two estimates result from different economic models, their results are roughly proportional in magnitude. PFCs accounted for about one-third of farm payments during the FAIR Act, and our simulation includes all farmland. Note that the capitalization of payments into land values does not itself distort cropping patterns, except through a barrier to entry into horticulture, because planting flexibility allows for idling or shifting production to nonprogram crops. However, the higher land values associated with cropland (including idling) likely means that the exit of base acres into nonagricultural uses, such as residential or commercial use, has slowed.

Production Effects With Capital Market Constraints

Overall, the labor and capital markets in which U.S. farm households operate may be efficient, but they are unlikely to operate perfectly or to be perfect for all individual farmers. Inefficiencies in U.S. capital markets, in which some or many farmers are capital constrained and would choose to use the payment to increase onfarm investments, generate the strongest potential link between the payments and production. As a sensitivity experiment, we assume the extreme case in which decoupled payments, net of taxes and consumption, and assuming zero pass-through from tenants to landlords, are fully invested in agriculture. Under this scenario, if all farmers are unable to exercise portfolio choice in allocating their investments, or if they are credit constrained and invest only in agriculture, payments would still have a minimal (0.1-0.2 percent) impact on aggregate production through 15 years, with smaller impacts in subsequent years. If payments are continued indefinitely, the largest effects of the payments would be to increase land values (fig. 16).

Decoupled payments to credit-constrained farmers would increase capital investment in farming by, at most, 0.25 percent in the short run over what would otherwise be invested. Excess investment in agriculture is self-correcting in the long run, since it pushes down returns to agricultural capital. This reduces the farm household's incentive to save and invest and increases current consumption, resulting in a longrun increase in farm investment of about 0.1 percent.

Figure 16

Even if decoupled payments are invested only in agriculture, they would have small and declining effects on investment and output, but lasting effects on land values