Economics of Base Designation

The base designation decision can be framed as a payment maximization issue. The choices facing each decisionmaker were completely determined by the farm's program history and its planting and production histories. The objective of farmland owners' base acre designations was to maximize the expected flow of direct and counter-cyclical payments. After designating base, the objective of farmers making current planting decisions was to maximize farm enterprise income (including any expected marketing loan benefits). Base acreage designated under the 2002 Act is constrained from being planted to fruits and vegetables under certain conditions, and farmers must also adhere to some conservation standards. Beyond these two constraints, farmland owners designating base face no restriction on the use of acreage in crop production. Moreover, for an individual farmer, current plantings have no influence on the flow of direct and counter-cyclical payments. The base designation decision of the 2002 Act and a farm operator's subsequent production decisions are independent decisions.[7]

The base designation decision included decoding technical jargon, gathering information, and performing basic arithmetic. From there, the process is analogous to filing Internal Revenue Service tax forms. The decision to itemize deductions or to take the standard deduction depends on which option results in a lower tax liability. Similarly, the acreage and yield designation decisions depend on which alternative results in the greatest flow of program payments. Many farmland owners and operators found the process confusing. In response, USDA, in collaboration with Texas A&M University, developed the Base and Yield Update Option Analyzer, a Web-based tool for evaluating base and yield options for direct and counter-cyclical payments under the 2002 Farm Act (USDA; Richardson et al.). This computer-based tool helped producers analyze the economic consequences of selecting different base and yield options.

The optimum choice among options can be determined in three steps. First, determine which of options 1, 2, 3, and 5 results in the greatest payment flow. Second, using 1998-2001 acreage for option 4 base acres, determine which yield designation results in the greatest payment flow. These two maxima can be determined by eliminating inferior options. Third, of these two maxima, choose the one that provides the greater payment flow.

Direct payments are fixed, but counter-cyclical payments are contingent on national marketing year average prices. The calculation of the expected future value of counter-cyclical payments requires forecasting season average prices several years into the future. We estimated the expected counter-cyclical payments as the average counter-cyclical payment that would have been paid had counter-cyclical payments been paid for the 1991-2000 marketing years.[8] The simulated payments are calculated using the national marketing-year average prices received for each program commodity. While yields and prices received for individual farms can differ significantly from national averages, the basic process is nevertheless the same for the individual farm. However, such calculations are generally unnecessary. The comparison of expected payment flows associated with each base commodity is relatively straightforward. With the exception of

[7]As noted previously, expectations of future opportunities to update base could influence current planting decisions if the expected value of future payments exceeds any income foregone in the current period.

[8]Peanuts prices for 2002-04 were used since peanut prices prior to that time period were largely determined by the price supporting marketing quota.

wheat and sorghum payments, the value rankings of direct payments and of direct plus maximum counter-cyclical payments are identical (fig. 9). Rice base always pays more than cotton base; cotton base pays more than corn base; corn base pays more than sorghum base, etc. Direct payments are thus a sufficient substitute for the sum of direct and counter-cyclical payments. Direct payments fail to be a perfect proxy in some combinations of base endowments, yields, risk preferences, and price expectations. Consequently, if one maximizes direct payments, one nearly always maximizes direct plus expected counter-cyclical payments.

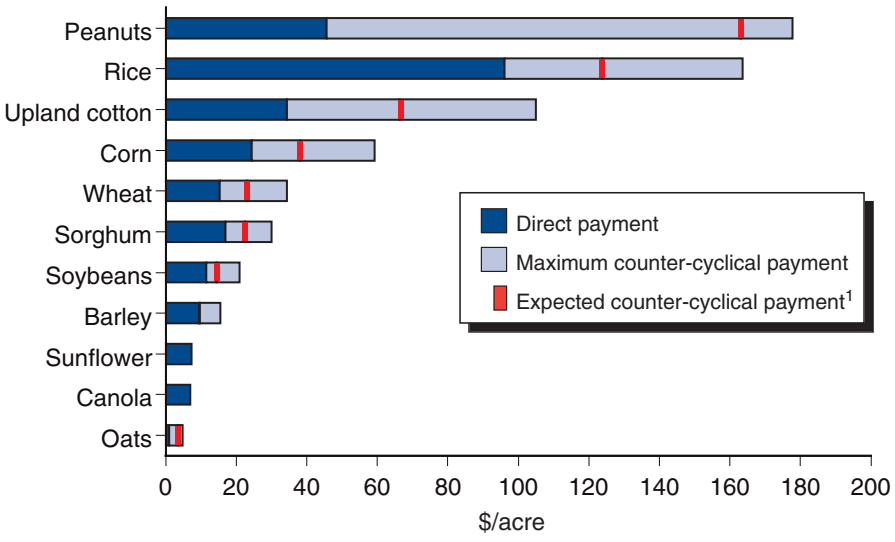
Finding the Optimum Among Options 1, 2, 3, and 5

Option 2 is the default designation. The choice among options 1, 2, 3, and 5 is straightforward: to the extent possible, one discards low-payment base acreage and replaces it with higher paying oilseed base acreage. Option 3 is the corner solution and option 5 is an interior solution to the oilseed base substitution issue. Returning to the example in table 2, if the farm has national average program yields (see fig. 9), then direct payments for its existing wheat base acres ($15.26) are worth more than potential payments for soybean base acres ($11.51), and option 2 is thus worth more than options 3 and 5. It is possible, however, that an individual farm will have program yields for soybeans sufficiently greater than its program yields for wheat so that options 3 or 5 dominate option 2.

Rice, cotton, and corn base are almost always worth more per acre than soybean base; the rare exceptions arise when program yields for these three crops are very low relative to soybean program yields.[9] Thus, when rice, cotton, or corn constitutes a large share of a farm's PFC acreage, option 2

Figure 9

Value per acre of direct and counter-cyclical payments, 2002 Farm Act[1]



[1]Assumes national average payment yields for direct and counter-cyclical payments. Expected counter-cyclical payments are based on average 1991-2000 prices, except for peanuts, which are based on actual counter-cyclical payments in 2002-04.

Source: Compiled by USDA's Economic Research Service from the Farm Service Agency.

[9]Peanut base is an exception. Peanut base was designated separately from other commodities, but logic for peanuts is similar to the logic for other high-payment commodities—rice, cotton, and corn. Peanut base is very valuable, second only to rice for direct payments, a commodity with which it does not compete for land. Thus, a peanut planting history dominates all other alternatives. While peanut base was allocated separately from other commodities, a farmer with a history of peanut production had a strong incentive to retain sufficient cropland acreage to allocate base to historic peanut plantings.

dominates options 3 and 5. Indeed, rice and cotton base acres exceeded 2002 planted acres in several States and regions by a considerable margin. Conversely, producers who took advantage of the planting flexibility provided by the 1996 Farm Act and expanded or started to produce cotton were likely to have selected option 4 to increase cotton base.

A corollary of the high-payment rule is that it is almost always advantageous to trade low-payment commodity base acres—oats and barley—for higher paying soybean base acres to the extent the farm's 1998-2001 soybean plantings would allow. Thus, when either oats or barley constitutes a large share of a farm's PFC acres, options 3 and 5 dominate option 2.

Finding the Best Yield Designation Under Option 4

If a farmland owner selected option 4, base acres would equal the 1998-2001 average plantings of eligible crops on the farm. Direct payment rates per unit are fixed in the 2002 Act. While counter-cyclical payment rates are determined by market conditions, their maximum unit values are also fixed by the 2002 Act. Thus, the only decision variable facing the farmland owner under option 4 is the program yield designation for counter-cyclical payments, from the alternatives discussed earlier.