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## THE U.S. WHEAT AND CORN PROGRAMS: SOME DOMESTIC WELFARE AND INTERNATIONAL TRADE IMPLICATIONS

Kathleen Carey

### Abstract

This paper explores changes in traditional commodity programs from the perspective of domestic welfare. A theoretical model was developed which describes domestic welfare changes that follow from policies consistent with reductions in international price distortions. The model was applied to the 1985 Farm Bill. This provided an historical example of a policy change that simultaneously improves domestic welfare and reduces protectionism.

*Key words:* decoupling, welfare, wheat, corn

Historically, the United States government has employed a variety of policy instruments to promote the domestic goal of farm income support. The response of government over six decades to agricultural sector interests has had massive redistributive consequences for taxpayers and consumers as well as for farmers. In addition, the objective of income transfer to domestic farmers has driven agricultural trade policy and in the process produced a wide range of trade distortions.

Some recent agricultural trade liberalization recommendations (Blanford, deGorter, and Harvey; deGorter; Grennes) point out that there need not be a conflict between the goals of farm income support and freer trade. These objectives are compatible if distortion between domestic and foreign prices is avoided. Decoupling of payments to farmers from production levels would reduce domestic as well as international price distortions while retaining individual national control over the level of income transfer to farmers. A radical form of decoupling is lump-sum payments that bear no direct relationship to production. Alternatively, farm policy reform can concentrate on decreasing the price incentives to overproduce. Both approaches would simultaneously reduce trade distorting effects.

McDowell et al. contrast historical, market-determined, and sector-wide stabilization programs which decouple farm income support from farm-level decision making for the period 1970-1982.

Their simulation analysis provides insight into the comparative effects of these policy approaches on income level and stability. They concluded that stabilization policy is superior to historical policy in reducing income variability and superior to market-determined policy for purposes of generating farm income. Despite the advantages of the stabilization approach from an economic viewpoint, the adoption of a policy that bears no relationship to production is handicapped politically because it has the appearance of a welfare program.

This paper explores possibilities for improving domestic welfare and reducing trade distortions simultaneously through modification of existing commodity programs. The focus here is on grains, since the bulk of U.S. government support is designated for that sector. Furthermore, since the U.S. is a large country in the international grain trade, prices in the U.S. drive world prices (Gardner, 1987, Chapter 11). The next section describes policy instruments and establishes a theoretical framework which is followed by an examination of welfare consequences of specific policy changes. The theoretical results are applied to the 1985 Farm Bill and its effects on the wheat and corn sectors.

### THEORETICAL FRAMEWORK

Policy instruments in the U.S. grain sector are threefold. Under the loan rate instrument, the Commodity Credit Corporation (CCC) is required by law to accept grain from eligible producers in exchange for a loan price fixed in legislation. The loan rate therefore functions as a support price. CCC grain stocks increase in years when the market price falls below the loan rate plus interest. The government also provides subsidies or deficiency payments. These are the difference between a legislated target price and the higher of the loan rate or the market price. The target price, a guaranteed producer price, provides an incentive to produce the crop. Finally, acreage reduction programs require that farmers set aside a percentage of base acreage in order to become eligible for either CCC loans or deficiency pay-

ments. Farmers choose to participate in the program if the expected benefits of participation exceed the expected costs. The three policy tools operate simultaneously, affording policymakers a variety of policy options.

The relevance of the loan rate to farm policy depends upon whether or not the market price is higher than the loan rate. In years when the market price remains above the loan rate, consumers respond to the market price, and producers respond to both the target price and the market price. In years when the loan rate effectively supports the market price at the level set in legislation, it is equivalent to the market price and becomes an important tool to which both consumers and producers are responsive. The theoretical model that follows develops this latter case.

Consider the static case of the U.S. as a large country in the international market for grain. The U.S. is an exporting country that faces the excess demand of the rest of the world. Assume that supply is at trend level, that the CCC is acquiring stocks, and that the loan rate is set such that it operates as a price floor. The government can manipulate supply through the use of three policy tools. Let  $P^l$  represent the loan rate. This is the price paid by domestic consumers and foreigners purchasing U.S. grain, and it is also the price received by nonparticipating suppliers. The target price,  $P^t$ , is the price received by suppliers who participate in the government program by agreeing to set aside a percentage,  $R$ , of their base acreage where  $0 < R < 1$ .

The demand facing suppliers may be described as

$$(1) Q^d(P^l) = Q^h(P^l) + Q^f(P^l).$$

$Q^h$  is the domestic component of demand and  $Q^f$  is the foreign component. Domestic supply is represented by

$$(2) Q^s(P^l, P^t, R, P^a) = Q^p(P^l, P^t, R, P^a) + Q^n(P^l, P^t, R, P^a)$$

where  $Q^p$  is participating farmer and  $Q^n$  is nonparticipating farmer supply.  $P^a$  is the price farmers expect to receive by planting alternative crops. Participant supply responds positively to  $P^t$ , the guaranteed producer price; nonparticipant supply responds positively to  $P^l$ , the price received by nonparticipants. An increase in  $R$  or a decrease in  $P^l$  will reduce the incentive for program participation and increase the nonparticipant component of supply. Conversely, a decrease in  $P^l$  or  $R$  will induce farmers to enroll more acreage in the government program. Both components of supply respond positively to a decrease in  $P^a$ . The participant supply

curve can be conceptualized as a function of price  $P^l$ , with  $P^l$ ,  $R$ , and  $P^a$  causing shifts in the curve, and the nonparticipant supply curve as a function of price  $P^l$ , with  $P^l$ ,  $R$ , and  $P^a$  causing the curve to shift.

Government purchase of grain,  $Q^g(P^l, P^t)$ , is such that the market will clear at the support price,  $P^l$ . Equilibrium occurs where

$$(3) Q^s = Q^d + Q^g.$$

Equation (3) is equivalent to equilibrium condition

$$(4) Q^s - (Q^h + Q^g) = Q^f,$$

or, excess supply in the U.S. is equal to excess demand in the rest of the world. The world price of grain is equivalent to the U.S. price, which is supported at  $P^l$  by CCC intervention.

### WELFARE EFFECTS OF POLICY CHANGES

This section takes a welfare theoretic approach to analyzing the effects of changes in the policy variables. Pioneering work in applying this approach to agricultural programs was done by Wallace (1962) with more recent contributions by Gardner (1983) and Lichtenberg and Zilberman (1986).

Analysis begins with an objective function, or social welfare function, where producer surplus, consumer surplus, and the net revenue position of the Treasury resulting from a given policy are the independent arguments. The interest is in a policy that reduces trade distortions in a manner that does not compromise domestic welfare. In evaluating consumer welfare, we therefore ignore benefits to foreigners. We assume further that welfare weights are the same for all three interest groups. The social welfare function is defined

$$(5) SW = CS + PS + BS$$

where  $CS$  is domestic consumer surplus,  $PS$  is producer surplus accruing to participating and nonparticipating farmers,  $BS$  is the federal budget surplus and

$$(5a) CS = - \int Q^h dP^l,$$

$$(5b) PS = \int Q^p dP^l + \int Q^n dP^l, \text{ and}$$

$$(5c) BS = -Q^p(P^t - P^l) - (1 - \theta)(Q^p + Q^n - Q^d)P^l, 0 \leq \theta \leq 1.$$

The first term in the budget surplus expression is the cost to government of deficiency payments; the second term is the cost of the CCC loan program. The parameter  $\theta$  represents the value of the grain in the hands of the CCC expressed as a percentage of  $P^1$ ;  $(1 - \theta)P^1$  is the real cost to taxpayers of the grain acquisition.

Changes in any of the policy instruments will affect domestic welfare. However only changes in variable  $P^1$  will alter the amount of trade distortion since world price as well as the domestic price is supported at that level. For the policy goal of maximization of social welfare through use of the loan rate, the relevant first order condition for a maximum is

$$(6) \quad \partial SW / \partial P^1 = \\ -Q^h + \int Q_1^p dP^1 + Q^n - Q_1^p P^1 + Q_1^p P^1 + Q^p \\ -(1 - \theta) (Q_1^p P^1 + Q^p + Q_1^n P^1 + Q^n - Q_1^d P^1 - Q^d) \\ = Q^f + \int Q_1^p dP^1 - Q_1^p P^1 - Q_1^n P^1 + Q_1^d P^1 \\ + \theta (Q^g + Q_1^g P^1) = 0,$$

where subscripts indicate partial derivatives. The value of the parameter  $\theta$  depends on the amount of revenue the government receives in future years when stocks may be sold in times of drought or unanticipated increase in export demand minus the transaction costs of purchasing and disposing of the stocks, storage costs, waste, and social costs due to disruption of markets into which surpluses are sent. Gardner (1987, p. 64) points out that these latter costs are high which implies a low value of  $\theta$ . If the value of the stocks is exhausted by the losses, then  $\theta$  is equal to zero.<sup>1</sup> If this scenario is adopted, equation (6) reduces to

$$(7) \quad Q^f + \int Q_1^p dP^1 - Q_1^p P^1 - Q_1^n P^1 + Q_1^d P^1 = 0.$$

Equation (7) can be simplified for the case of a participant supply curve linear in  $P^1$  and  $P^t$ . The integral  $\int Q_1^p dP^1$  is equivalent to the expression  $Q_1^p P^1$ , and equation (7) can be rewritten

$$(8) \quad Q^f = Q_1^n P^1 - Q_1^d P^1.$$

Equation (8) implicitly defines the optimal loan rate. The condition under which a reduction in the

loan rate will result in an improvement in welfare expressed in elasticities form is therefore

$$(9) \quad Q^f / Q^d < \eta_{n,1} (Q^n / Q^d) + |\eta_{d,1}|,$$

where  $\eta_{n,1}$ , and  $\eta_{d,1}$  are the loan rate elasticities of nonparticipating supply and of demand, respectively. Equation (9), the first order condition for maximization of domestic welfare with respect to the loan rate, indicates that an improvement in welfare is possible through use of the loan rate instrument while maintaining a constant target price. The lower the share of exports in disappearance and the higher the demand elasticity, the greater the opportunity for welfare gain through a reduction in the loan rate, as more benefit is captured by domestic consumers through the lower price. The higher the loan rate elasticity of supply of nonparticipants, the less they will be hurt by a lower price. Lowering of the loan rate to reduce trade distortions might be particularly opportune in the case of corn. A large share in world exports is provided by the U.S., yet most corn produced in the U.S. is utilized domestically.

This paper focuses on the loan rate because of its direct effect on world prices. While the goal of reducing trade distortions can be undertaken through adjustment of this policy tool, the target price instrument can be established for the purpose of supporting farm income. Adjustment of the target price will not affect the world price, which is established at  $P^1$  in the case we are considering, but it has domestic welfare and redistributive consequences. Partial equilibrium effects of changes in this variable for the case  $\theta = 0$  yields the following

$$(10) \quad \partial SW / \partial P^1 = Q^p + \int Q_1^n dP^1 - Q_1^p P^1 - Q^p - Q_1^n P^1.$$

In the case of a nonparticipant supply curve linear in  $P^1$  and  $P^t$ ,  $\int Q_1^n dP^1 = Q_1^n P^1$  and

$$(11) \quad \partial SW / \partial P^1 = -Q_1^p P^1 < 0.$$

Equation (11) indicates that reduction of the target price is welfare improving. Because the cost to government of the deficiency payments exceeds the benefits to farmers, the target price is an inefficient mechanism for supporting farm income. Direct payments that do not elicit an excess supply could achieve the same benefit level for farmers at lower taxpayer expense.

<sup>1</sup>Incorporation of the potential benefits due to future sale of government surplus would require a dynamic model. The assumption that  $\theta$  equals zero does not imply that government should not purchase stocks at world prices for security purposes.

The acreage reduction requirement has supply effects opposite to those of deficiency payments. An increase in R reduces  $Q^p$  by the incremental set aside requirement in addition to the acreage that farmers choose to remove from the program. This acreage may be used for production of other crops, or it may be planted with the same crop, increasing  $Q^p$ . A larger R decreases participating producer surplus and increases that of nonparticipants. The effects on the budget surplus are positive, due to the decrease both in deficiency payments and in government acquisitions. The net welfare change depends on the specific supply effects of R. If gains to taxpayers and nonparticipants outweigh losses to participants, then acreage controls can be used to counter social losses due to target prices. The controls offset the increased production incentive brought about by the target price. Simultaneous use of both controls is a second best policy in which one distortion serves to reduce rather than increase social losses due to the other. For further discussion of the supply effects of the acreage reduction requirement, see the work by McIntosh and Shideed and by Burt and Worthington.

### EMPIRICAL APPLICATION

Three major pieces of farm legislation have been passed during the last decade. The 1981 Farm Bill provided for annual increases in loan rates and target prices. Because the loan rate drives the world price,

foreign competitors were guaranteed price increases which subsequently encouraged increases in production. The Food Security Act (Farm Bill) of 1985 revised this legislation for the next five years by slashing the loan rates and maintaining higher target prices. The concern behind the legislation was that the existing program was distorting market signals leaving the U.S. at a competitive disadvantage. The Farm Bill of 1990 more specifically addressed budgetary pressures by decreasing the acreage eligible for support payments. The 1985 legislation, because of its focus on the loan rate, provides an excellent example of the use of this policy tool. This section applies the above theory to the 1985 Farm Bill. Net welfare is determined by examining the effects of the policy change on each of the following groups: domestic consumers, participating farmers, nonparticipating farmers, and taxpayers. The bulk of the loan rate drop went into effect in the 1986/87 crop year. For that reason the focus is on welfare changes occurring in 1986/87. Table 1 lists the target prices, loan rates, and percentage acreage reduction requirements in the wheat and corn sectors for the 1985/86 through 1990/91 crop years.

Welfare changes for the three affected groups are determined in the remainder of this section. In these calculations, all price and income measures are converted to 1985 dollars. A domestic demand function was estimated in order to evaluate domestic con-

Table 1. Price Support Program: 1985-1991

	Target Price	Loan Rate	Acreage Reduction Requirement / Paid Land Diversion <sup>a</sup>	Land Diversion Payment	Participation Rate <sup>b</sup>
<b>Wheat</b>					
1985/86	4.38	3.30	20.0/10.0	2.70	73
1986/87	4.38	2.40	22.5/ 2.5	2.00	85
1987/88	4.38	2.28	27.5/ —	—	88
1988/89	4.23	2.21	27.5/ —	—	86
1989/90	4.10	2.06	10.0/ —	—	78
1990/91	4.00	1.95	5.0/ —	—	80
<b>Corn</b>					
1985/86	3.03	2.55	10.0/ —	—	69
1986/87	3.03	1.92	17.5/ 2.5	.73	86
1987/88	3.03	1.82	20.0/15.0	2.00	90
1988/89	2.93	1.77	20.0/10.0	—	87
1989/90	2.84	1.65	10.0/ —	—	80
1990/91	2.75	1.57	10.0/ —	—	76

Source: USDA, Agricultural Outlook.

<sup>a</sup>In addition to the target price and loan rate supports, additional payments per bushel foregone were made for a percentage of the required acreage diversion for some years.

<sup>b</sup>Percentage of base acres enrolled in Acreage Reduction Programs.

Table 2. Demand Estimation for Domestic Disappearance (DD)<sup>a</sup>

Equation	Variable	Coefficient	t-ratio	Elasticity
Wheat	Intercept	247	2.68	—
	Price (dollars per bushel)	-22.7	-3.31	-.170
	Real Income Per Capita (thousands)	13.3	1.44	.178
	DD Lagged	.690	5.41	.673
R2 = .890				
Durbin h-statistic = .0074				
N = 29				
Corn	Intercept	1,419	2.69	—
	(dollars per bushel)	-203	-3.96	.183
	Real Income Per Capita (thousands)	181	3.07	.448
	DD Lagged	.421	2.79	.412
R2 = .866				
Durbin h-statistic = -1.906				
N = 25				

<sup>a</sup>In million bushels.

sumer surplus changes. A linear functional form was chosen to allow for a finite consumer surplus:

$$(12) Q^h = f(\text{Price, Income, Domestic Disappearance Lagged}).$$

Equation (12) was estimated using annual data from the period 1958-1986 for wheat and 1962-1986 for corn.  $Q^h$  is domestic disappearance, the price of wheat is the real price of #1 hard red winter wheat (Kansas City), and the price of corn is the real price of #2 yellow corn (Chicago, Omaha). Measures of these variables were obtained from *Wheat: Outlook and Situation Report* and *Feed: Outlook and Situation Report* (USDA). Income is real disposable income per capita. Data on this variable were obtained from the *Statistical Abstract of the United States* (U.S. Department of Commerce). The results of the OLS demand estimation are listed in Table 2. Because domestic price elasticities are low, exports play a key role in clearing stocks when the loan rate changes.

The target price mechanism was introduced in 1974. Given how recently this policy was implemented, there is only a brief period of time during which all three price support instruments have been in effect. Estimation of their supply effects is therefore difficult. (This difficulty is also reported by Burt

and Worthington who drop the years 1978-1983 from the data set which they used to estimate wheat acreage supply.) To approximate welfare changes we construct supply curves for both the wheat and corn sectors and for both participants and nonparticipants that have the following functional form:

$$(13) Q = K + \alpha P_w + \beta P_c + \delta P_s.$$

$P_w$ ,  $P_c$  and  $P_s$  are the prices of wheat, corn and soybeans, respectively. The values of  $Q$  in equation (13) are determined by breaking actual production  $Q^s$  into participant and nonparticipant components as follows

$$(14) Q^p = (PA^p / PA) * Q^s$$

and

$$(15) Q^n = Q^s - Q^p,$$

where  $PA^p$  is participating planted acreage and  $PA$  is total planted acreage. This decomposition assumes that the ratio of harvested to planted acreage is the same for participants and nonparticipants. Measures of the variables used in calculation of  $Q^p$  and  $Q^n$  were obtained from *Agricultural Outlook* (USDA).<sup>2</sup>

Because the loan rate is in operation as a price floor during the time period of this analysis,  $P^l$  is used as a measure of expected price of wheat and corn at the

<sup>2</sup>Total planted acreage (PA) was obtained directly. The values of actual production ( $Q^s$ ) and participating acreage ( $PA^p$ ) were calculated as follows:  $Q^s = HA * Y$ ,  $PA^p = (r * B) - S$ , where HA (total harvested acreage), r (participation rate), B (base acreage), and S (acreage set aside) were also obtained directly from the data sources. Y is the value of trend yield, which was estimated from linear regressions of yield over time performed for the period 1950-86. The resulting yields for 1985 and 1986 were 37.4 and 38.0 for wheat and 112.2 and 114.4 for corn.

Table 3. Supply Relationships<sup>a</sup>

	Quantity		Intercept	Price Coefficients		
				Wheat	Corn	Soybeans
<b>WHEAT</b>						
Participants						
1985	1,595	H	1,037	182	-53	-16
	1,595	L	1,355	109	-53	-16
1986	1,819	H	1,182	212	-62	-19
	1,819	L	1,546	127	-62	-19
Nonparticipants						
1985	825	H	536	134	-37	-8.2
	825	L	701	80	-37	-8.2
1986	488	H	317	103	-33	-5.2
	488	L	414	62	-33	-5.2
<b>CORN</b>						
Participants						
1985	5,331	H	4,532	-61	704	-211
	5,331	L	5,065	-61	528	-211
1986	5,776	H	4,910	-67	778	-247
	5,776	L	5,487	-67	583	-247
Nonparticipants						
1985	3,106	H	2,640	-50	557	-123
	3,106	L	2,951	-50	418	-123
1986	2,140	H	1,820	-45	582	-92
	2,140	L	2,033	-45	437	-92

<sup>a</sup>In million bushels where H = higher and L = lower elasticity estimates.

time of planting decisions for nonparticipants. In the participant equation, target prices for wheat and corn are used.<sup>3</sup> (The loan rate for soybeans was used in each equation; a target price program for soybeans was not in effect.) The values of  $\alpha$ ,  $\beta$  and  $\delta$  are determined by incorporating own- and cross-price elasticities used in recent work.<sup>4</sup> Given values of quantities, prices, and coefficients, the supply curves are completed by solving for the intercept terms (K) in equation (13). The components of the supply equations are listed in Table 3.

The supply elasticities of  $P^l$  and R for participants and of  $P^l$  and R for nonparticipants are not known. Shifts in supply due to changes in these variables are therefore captured through the change in the intercept term. In both sectors, the dramatic decrease in

$P^l$  outweighed the increase in R in 1986, causing an outward shift in the participating supply curve and an inward shift in the nonparticipating supply curve.

The changes in consumer surplus and producer surplus are calculated according to the welfare expressions contained in equation (5) where  $Q^b$ ,  $Q^p$ , and  $Q^n$  have the functional forms developed above. (To isolate the effects of changing prices, the income and domestic disappearance lagged values are fixed at their 1985 levels.)<sup>5</sup> The budget surplus as described in equation (5c) is affected through changes in both the cost of deficiency payments and of the loan program. The values of  $Q^p$  and  $Q^n$  in (5c) are as listed in Table 3. CCC acquisitions for 1985 and 1986 were calculated as follows

$$(16) Q^s = Q^p + Q^n - Q^d,$$

<sup>3</sup>For a discussion of the various ways in which prices have been measured in supply response equations in the literature see Shideed et al.

<sup>4</sup>See Gardner (1987, pp. 68-71). The own price elasticity of wheat is .5 and of corn is .4. The cross price elasticities for wheat are -.1 of corn and -.05 of soybeans. For corn, the cross price elasticities of wheat and soybeans are -.05 and -.2, respectively. Alternative estimates of own price elasticities are .3 for both wheat and corn. Each coefficient in (13) was determined by setting the appropriate elasticity equal to the coefficient times the ratio of price to quantity.

<sup>5</sup>Because the CCC loan program does not support the market price at precisely the loan rate, the prices for all 3 crops in the nonparticipant equations and for soybeans in both sets of equations are those actually received by farmers. These sets \$3.08 and \$2.42 for wheat, \$2.23 and \$1.50 for corn, and \$5.05 and \$4.78 for soybeans in 1985 and 1986, respectively (nominal dollars).

**Table 4. Summary of Welfare Changes Under the Wheat and Corn Programs for 1985/1986<sup>a</sup>**

	Higher Elasticity	Lower Elasticity
<b>WHEAT</b>		
Domestic Consumer Surplus	1,209	1,209
Producer Surplus	-423	-480
Participating	616	698
Nonparticipating	-1,039	-1,178
Budget Surplus	-714	-714
Change in Deficiency Payments	-1,970	-1,970
Change in CCC Payments	1,256	1,256
Net Welfare Change	72	15
<b>CORN</b>		
Domestic Consumer Surplus	2,766	2,766
Producer Surplus	-2,224	-2,363
Participating	801	851
Nonparticipating	-3,025	-3,214
Budget Surplus	-85	-85
Change in Deficiency Payments	-4,083	-4,083
Change in CCC Payments	3,998	3,998
Net Welfare Change	458	319

<sup>a</sup>In millions of 1985 dollars.

where  $Q^d$  is domestic and foreign demand (total disappearance).

Social welfare changes are listed in Table 4. The wheat sector shows a welfare gain of 72 million dollars in the higher elasticity case and of 15 million in the lower elasticity case. Corn experienced gains of 458 million dollars in the higher and 319 million dollars in the lower elasticity case. The larger welfare gains for corn reflect the lower share of exports in domestic disappearance of that crop. Producers in both sectors are net losers because the losses to nonparticipants outweigh the gains to participants. Government is also a net loser since the savings due to lower  $Q^s$  are more than offset by the cost of increased deficiency payments. Wheat receives about 8 times as much new support as corn; the higher deficiency payments for wheat in 1986 were not offset by savings in CCC payments as in the corn sector. Although the corn sector shows a significant welfare gain under the 1986 program, the redistributive effect is a substantial shift in favor of consumers, with a reduction in the welfare of both taxpayers and producers. It was anticipated that the 1985 Farm Bill would provide a major boost to foreign demand and a consequent increase in U.S. exports that would reduce the burden on U.S. taxpayers. The role of increased exports following the price cuts was over-

estimated. For the policy goal of maintaining farm income at a lower program cost, slashing the loan rate while retaining high target prices appears to have been counterproductive.

This analysis has focused on a period when the loan rate was in operation as a support price. In those years when the market price remains above the loan rate, the position of the budget surplus will improve because deficiency payments will be smaller and because government will not be required to support price by acquiring stocks. The role of the target price differs in this case because U.S. participant supply becomes a factor in the determination of world price. In the absence of a binding loan rate which establishes world price, increased supplies induced by high target prices have a downward effect on world price. However, increases in target prices still have the effect of a loss in domestic social welfare.

## CONCLUSION

This paper examined the potential welfare consequences for the U.S. of adjusting policy in a manner that reduces trade distortions. It has shown that in the case in which the loan rate operates as a price floor, it is possible to improve domestic welfare through reducing loan rates in the direction of world market prices. It was also demonstrated theoretically that lower target prices reduce the cost to taxpayers by an amount that exceeds losses to producers. The model was applied to the 1985 Farm Bill effects on the wheat and corn sectors. The major difficulty in analyzing the policy empirically is locating the supply curve. Because program participation is voluntary, farmers face two different price incentives. Little is known about the supply responsiveness of producers to the three separate policy instruments that constitute the farm program. More understanding of these relationships is needed in order to design better policy. The foreign component is also a major factor influencing the effects of U.S. programs. This is also an area in need of more research. Wheat exports in particular account for roughly one half of annual disappearance. Yet because of changing farm policies in importing and other exporting countries, foreign demand is most difficult to pinpoint, and estimates of demand elasticity vary widely.

This paper is a partial analysis of a complicated farm program. It perhaps raises more questions than it answers. The static model developed here has considered only the case in which the loan rate supports the market price. A dynamic model is needed to handle random supply disturbances which cause market prices to rise above the loan rate. Such a model would also be capable of dealing with the issue of the value of grain in the hands of the CCC.



This study has shown that even with existing policy tools, there is not necessarily a tradeoff between the goals of domestic welfare and trade distortion reduction. Trade negotiations should focus on the rate of distortion in trade rather than on the rate of protection of domestic farmers. The two goals of maintaining farm income and reducing farm program costs

are more problematic. The best way to achieve both of these ends is to decouple support payments from production levels. This is an important area for further study. With the very high cost of the U.S. farm program in an era of continued high budget deficits, such a policy approach demands serious consideration.

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