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MANDATORY SUPPLY CONTROLS AND TRADE

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The term "mandatory supply controls" refers to a program where farmers are obligated to control acreage in a manner specified by the government. Under current "voluntary acreage reductions," farmers are induced by economic incentives to take land out of production. In the United States, mandatory supply control proposals have always been coupled with a referendum in which a majority of farmers must accept the program before it is implemented. Therefore, mandatory supply control proposals inevitably require a higher price for producers than those under current programs, since a higher price is required in order to entice farmers to accept the proposal in a referendum.

A recent proposal of this type was Senate File 2869, proposed by Senator Harkin of Iowa. The proposal was to raise loan rates to 70 percent of parity in 1987 and increase the parity rate 1 percentage point annually to a maximum of 80 percent of parity. This proposal also carried a provision for subsidizing exports in order to prevent the inevitable loss of export markets when production is cut back to achieve these high domestic price levels.

Scope of the Analysis

Since the purpose of this brief paper is to generate discussion on the trade effects of mandatory supply programs, the analysis is limited to wheat and feed grains and is conducted under very simplified assumptions. This analysis cannot be interpreted as an evaluation of Senate File 2869, since it does not follow the complete provisions of that program. For comparison purposes, three alternatives scenarios are analyzed:

(1) Mandatory supply controls with high prices for a single commodity,
(2) mandatory supply controls with high prices for all competing crops, and
(3) mandatory supply controls with export subsidies to maintain the export levels under current programs.

The emphasis of the first two cases is to compare the export response to higher prices when only one price is increasing and when all crop prices are increasing together. The emphasis of the third case is to compare the costs of payments to farmers under current programs to the cost of payments on exports required to prevent export losses under the mandatory supply program. One argument for mandatory supply controls has always been that it is a way of saving government funds, while providing farmers with higher income. With the export subsidy provision, it is not clear whether the program would cost more or less than current programs.

The support prices assumed for all three cases are presented in table 1. These begin at 70 percent of parity for individual commodities in 1986/87. The prices increase across time both because the parity percentage rate is rising by 1 point per year and because the parity index is rising with the producer price index projections. The CARD/FAPRI regional trade models for feed grains, wheat, and soybeans were used for the analysis.

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Table 1--Assumed U.S. support prices for mandatory supply programs

Commodity	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
					Dollars per unit					
Corn (short ton/bu)	3.46	3.55	3.70	3.87	4.03	4.21	4.45	4.71	4.99	5.34
Wheat (short ton/bu)	4.74	4.86	5.08	5.30	5.52	5.77	6.10	6.45	6.84	7.32
Soybeans (short ton/bu)	8.54	8.76	9.15	9.56	9.94	10.41	11.00	11.62	12.32	13.11
Cotton (short ton/lb)	.87	.89	.93	.97	1.01	1.06	1.12	1.18	1.25	1.34
Rice (short ton/cwt)	13.51	13.86	14.47	15.12	15.73	16.46	17.40	18.39	19.50	20.86
Dairy (short ton/cwt)	16.31	16.74	17.47	18.25	18.98	19.87	21.00	22.20	23.54	25.19
Soymeal (short ton/st)	210.93	216.36	227.38	231.11	245.26	255.23	268.44	279.89	292.30	310.50

Mandatory Supply Controls With No Export Subsidy

When there are no export subsidies, the reduction in U.S. supplies and the increase in prices reduce world import demand, increase competitors' exports, and reduce U.S. exports. The final impact on U.S. exports is dependent upon the export demand elasticity. Since the price response in the regional trade models used for this analysis depends on the underlying supply and demand elasticities in the importing and exporting countries, the export response price depends both on which prices are changing and the duration of the price change. Previous analysis with these models indicates that the response for price change is greater when only one price is changing and increases with duration of the price change.[2]

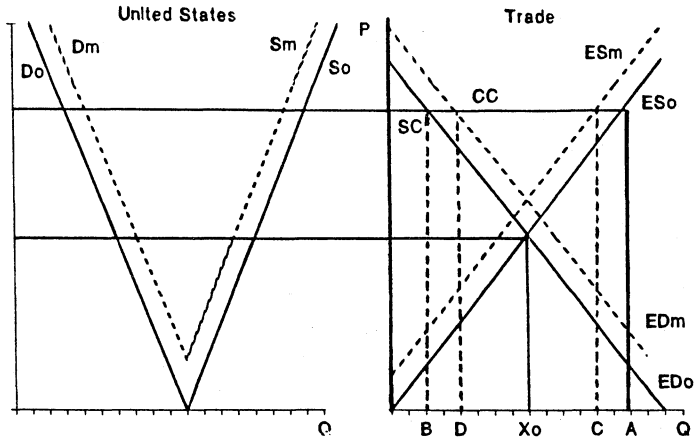
Figure 1 illustrates the comparison between case 1 and case 2. The single-commodity effect, when only the own-commodity price is changing, is indicated by the point SC. In this case, exports decline from X_0 to B and the required supply reduction is A-B, given the initial supply and demand curves. The cross-commodity result, when all prices are increasing together, is denoted by the point CC. In this case, the higher prices of other commodities shift the demand to the right and the supply to the left in U.S. and foreign markets, resulting in an export decline from X_0 to D and an implied supply reduction of C-D.

The results of the analysis for wheat are presented in figures 2-5. The decline in wheat net imports is very similar in the two cases, since there is relatively little cross-price effect with other commodities among the wheat-importing countries (fig. 2). Competitor's wheat exports expand dramatically under the single-price case, but show relatively little change when other crop prices are increasing as well. This is a consequence of the strong cross-price effects with other grains in the major wheat exporting countries (fig. 3). U.S. wheat exports drop to zero by 1995 in the single-commodity case and remain near the low 1985 level under the cross-commodity case (fig. 4). In this case, the U.S. export share would continually fall throughout the period. The value of export results (fig. 5) indicate that the implied price response of U.S. exports is elastic when only wheat prices are changing, causing export values to decline, but are inelastic when all prices are changing, causing the value of wheat exports to rise.

[2]Meyers, William H., S. Devadoss, and Michael Helmar. "The U.S. Export Response to Prices and the Impacts of Trade Liberalization: A Regional Trade Model Analysis." Working Paper No. 86-WP15. Center for Agricultural and Rural Development. Sept. 1986.

Figure 1

Mandatory supply controls with no export subsidy



where: o and m subscripts denote demand and supply with other prices constant, and with other prices at higher mandatory level, respectively.

Pm is the mandatory price.
Po is the initial price.
Xo is the initial export level.

Figure 2

Wheat net imports

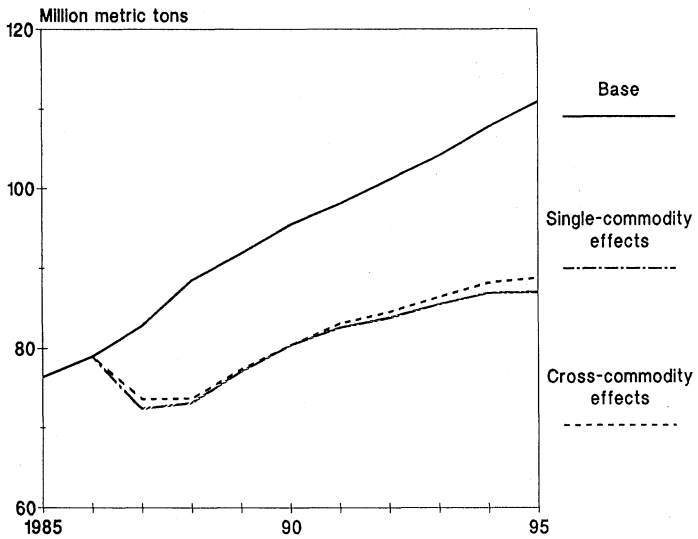


Figure 3

Competitor wheat exports

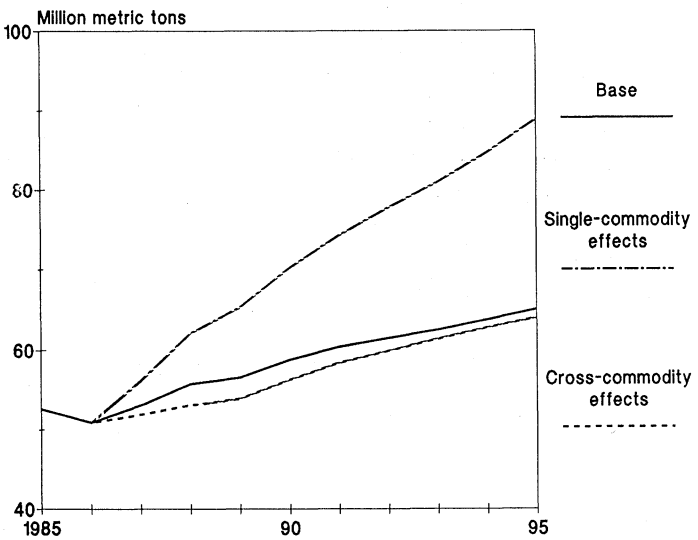


Figure 4

United States wheat exports

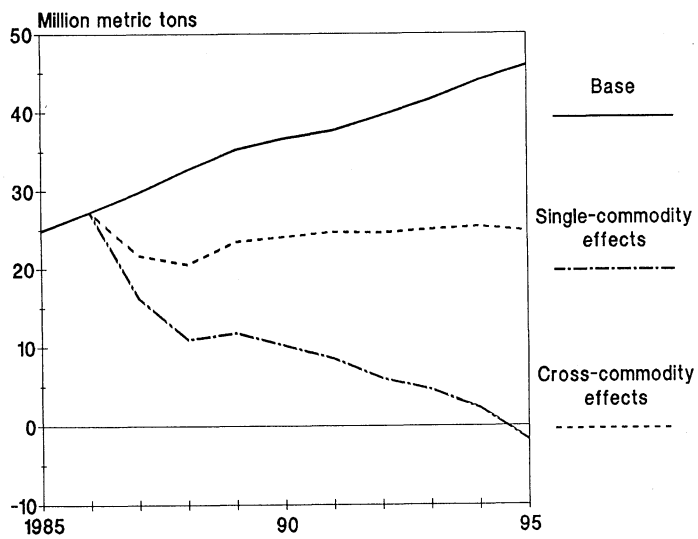
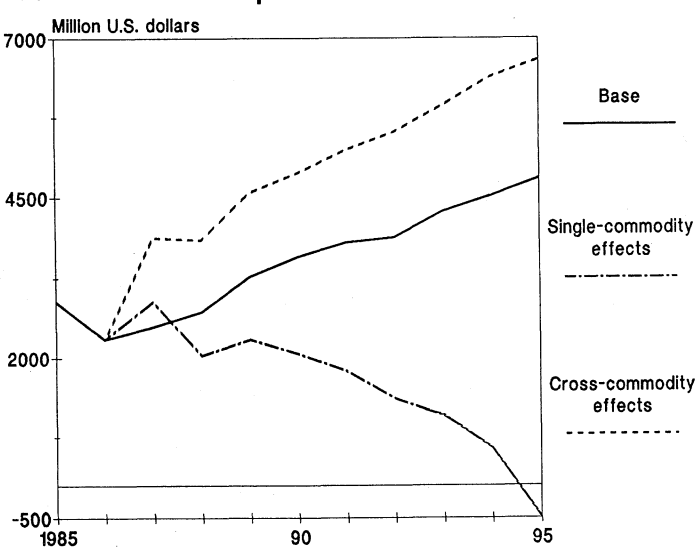


Figure 5

Value of wheat exports



The results for feed grains and corn are fairly similar (figs. 6-9). In the case of feed grains, competitors' exports increase in both cases, although the increase is smaller in the cross-commodity case. The United States has a greater share of world production and trade in feed grains, so exports do not fall as rapidly as wheat in the single-commodity case. The implied export elasticity in the single-commodity case is near 1; but, again, the implied elasticity in the cross-commodity case is inelastic.

Since these models are primarily based on empirical data over the past 20 years, it is likely that the estimated equations underestimate the response of supply to such large price changes as these. These is no historical experience of similar magnitudes of changes in prices, so the prices used in these analyses are outside the range of data used in estimating these supply and demand relationships.

Mandatory Supply Control With Export Subsidies

The provision for export subsidies is proposed to mitigate the criticism that this kind of policy would drastically reduce export levels and market share. This provision, of course, also adds another cost dimension, which will offset the savings generated by eliminating the target price-deficiency payments scheme. The analysis here is designed to compare these two costs under the assumption that the export levels in the baseline under current programs would be maintained.

This comparison is illustrated in figure 10. It is expected that the mandatory price level would be greater than current target prices. Thus, the payment per unit of export would be higher than the payment per unit made to the farmers under current programs. It is not immediately obvious whether the total cost would be higher or lower, since the quantity of exports X_O is less than the quantity of production on which deficiency payments are made. In figure 10, the supply S_O includes the acreage reduction required for participation in the target price program, and it is assumed that all producers are participating. Thus, when the higher price P_m is guaranteed to producers and export levels X_O are maintained, an additional acreage reduction of A-X is required to clear the market. The difference in the program costs is area G_m less area G_O.

The export subsidy costs are compared to the government costs for grains, soybeans, cotton, and dairy in figure 11. The cost of mandatory supply controls with export subsidies are lower until fiscal year 1992. Thereafter, the costs of the export subsidy program continue to rise, because the payment per unit is increasing at the same time as the rise of exports is increasing. By contrast, the cost of current programs is declining, so the gap between the two reaches more than $14 billion by fiscal year 1995.

Conclusions and Implications

This is obviously not a complete analysis, since it does not take into account the changes in farm income or the cost to domestic consumers of the higher prices in the domestic market. Looking just at the trade implications, it is clear that this approach to provide higher income to domestic producers would lead either to an isolated domestic oriented agriculture or to higher government outlays, which would continue to increase the longer the program was maintained.

Figure 6
Feedgrain net imports

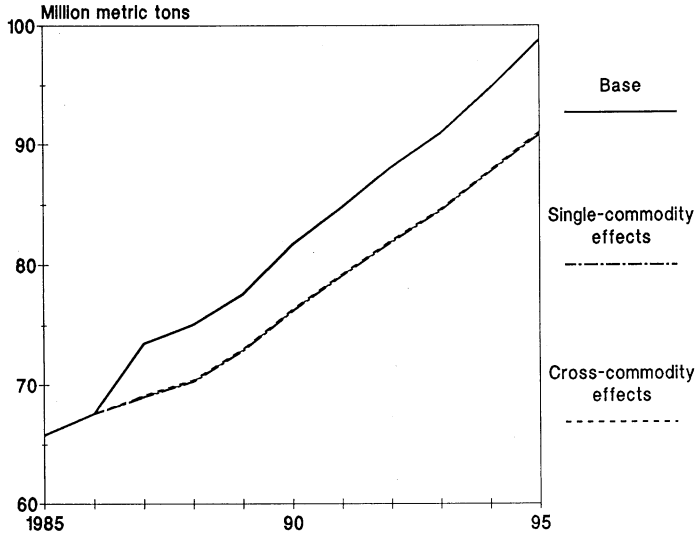


Figure 7
Competitor feedgrain exports

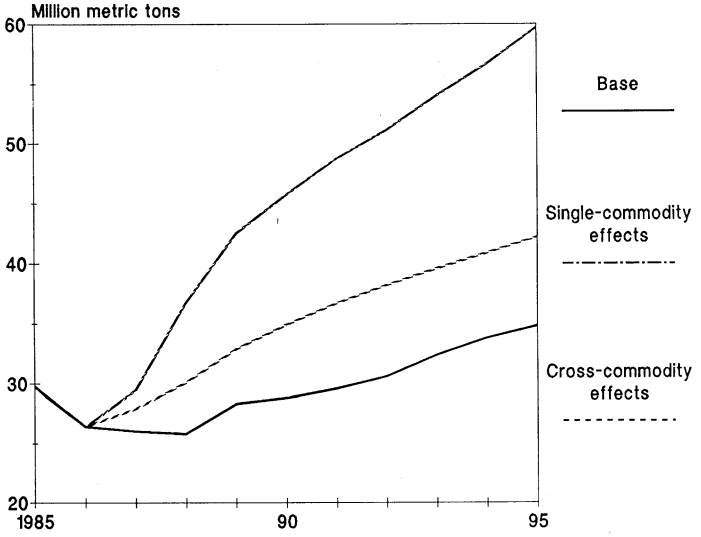


Figure 8
United States corn exports

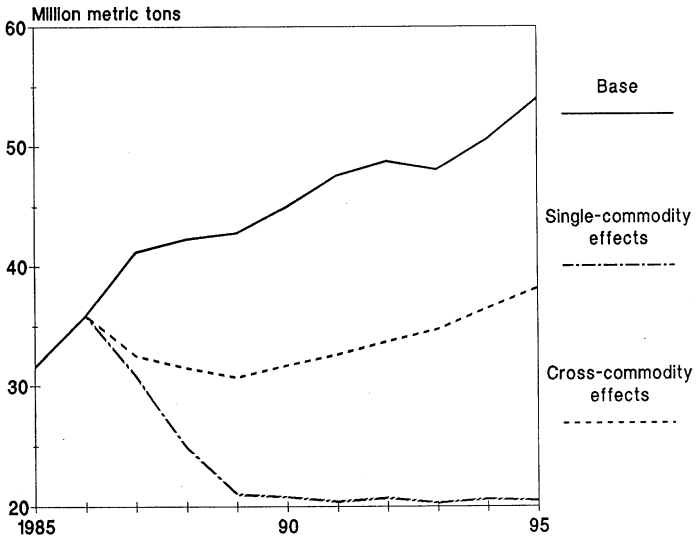


Figure 9
Value of United States corn exports

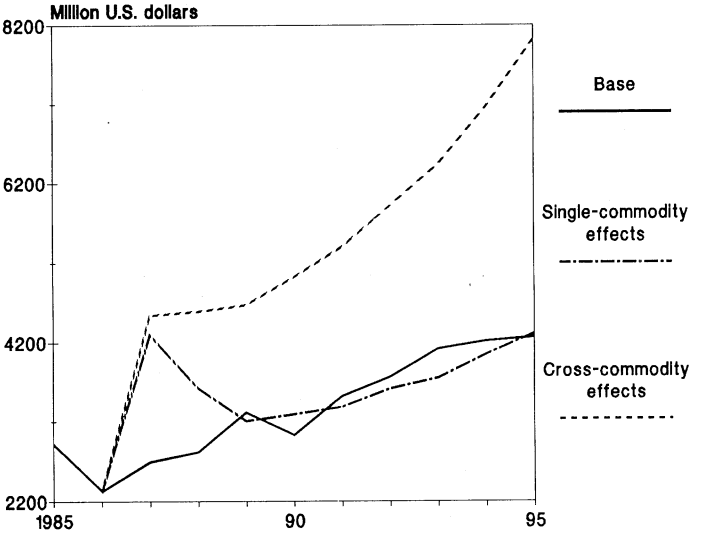
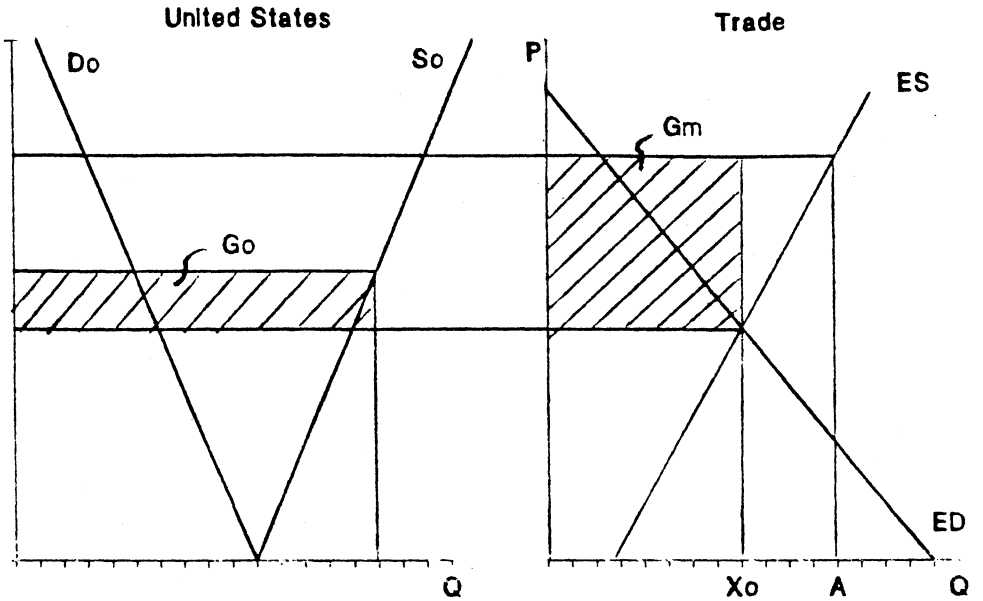


Figure 10

Mandatory supply controls with export subsidy versus current program



where: Gm is mandatory program cost.
Go is the current program cost.
Pm is the mandatory price.
Pt is the target price.
Po is the initial market price.
Xo is the initial export level.

Figure 11

Government cost comparison