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Variability in wheat export demand elasticity: Policy implications

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ABSTRACT

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Agricultural economists and policy makers in the United States believe that the magnitude of the export demand elasticity is one of the most important parameters used in farm policy decisions. However, past empirical estimates show wide variation in the size of the U.S. export demand elasticity. Reasons for this wide variation go beyond differences in model specification, estimation methods, and period of estimation to involve factors such as trade policies and changes in the supply and demand conditions of foreign countries. In view of the continual variation in magnitude, the elasticity of export demand should be viewed as a variable rather than as a parameter. In this study, U.S. wheat export demand elasticities are computed using a world wheat trade model. The estimates show that the elasticities vary significantly over time. They also reveal that elimination of trade barriers would more than double wheat export demand elasticities.

1. INTRODUCTION

The elasticity of demand for U.S. exports is expressed as the percentage change in the quantity of exports brought about by a 1% change in export prices, given that other shift variables remain unchanged. The value of this elasticity is computed along the excess demand schedule facing the United States, which embodies the net effect of all supply and demand adjustments of both importing and other exporting countries. Thus, the coefficient describing the price responsiveness of export demand summarizes the reactions of importing and exporting countries to a price change at the U.S. border.

It has been widely believed among agricultural economists and policy makers in the United States that the magnitude of the export demand elasticity is

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one of the important parameters used in farm policy decisions. This is because policy makers would like to know how much the demand for U.S. exports of a commodity will change for a specific change in the U.S. price of that commodity. For example, during the 1985 farm bill debate the price responsiveness of foreign demand for U.S. agricultural products was the single most important issue; it was finally assumed that export demand elasticities for U.S. farm products were greater than unity in absolute values (Thompson, 1988). Based on this assumption, the loan rates for wheat, feed grains, soybeans, cotton and rice were lowered on the premise that lower loan rates would lead to a decline in export prices and an increase in the volume and value of U.S. exports of these commodities.

Thus, the magnitude of the export demand response, whether elastic or inelastic, is considered to be crucial not only for trade policy decisions and export marketing strategies but also for determining certain domestic policy provisions, such as price supports and acreage reduction programs. As Gardiner and Carter (1988) point out, the elasticity of U.S. export demand is also of interest to many other trading nations. However, despite its importance there is no professional consensus on the magnitude of the export response. Past empirical estimates of long-run U.S. export demand elasticity range from −0.23 to −6.72 for wheat, −0.86 to −10.18 for coarse grains, and −0.47 to −2.80 for soybeans (Gardiner and Dixit, 1987).

Reasons for this wide range of empirical estimates include differences in model specification, estimation techniques, period of estimation, and methods used in computing the export demand elasticity. Another reason is that export demand elasticities vary over time because of continual changes in numerous factors that influence their values. As Gardiner and Dixit (1987) enumerated, these factors include the overall change in world trade volume and in U.S. share of trade; changes in foreign countries' populations, income growth, employment, inflation, tastes, technology, and weather conditions; changes in other countries' government policies, such as price supports, tariffs, quotas, and subsidies; transportation costs, and adjustments in policy regimes in response to world market conditions. As a result of changes in these factors, the export demand schedule facing the United States will shift and/or rotate, and the elasticity of export demand will depend on the new equilibrium level of the export price and quantity, as well as the shape and position of the excess demand schedule. In view of this continuous variation in elasticity, some agricultural economists have emphasized that it is important to consider the elasticity of export demand as a variable rather than as a parameter (Tweeten et al., 1984; Meyers, 1988; Tyers and Anderson, 1988). McCalla (1988) notes that agricultural economists may have been disabused of even believing there is a single number for the elasticity of export demand.

The objectives of this study are (1) to illustrate variation over time in the U.S. wheat export demand elasticity using a world wheat trade model, and

(2) to examine how trade liberalization in the world wheat market would affect the elasticity of wheat export demand. In the next section, the structure and components of the world wheat trade model are explained. The method used in estimating the elasticities is described, and the estimated wheat export demand elasticities from the trade model are presented and compared to those from other studies. In Section 3, current trade barriers in the world wheat market and the procedure used to model trade liberalization are discussed. The estimated values of wheat export demand elasticity under free trade are also presented in this section. The empirical results show that trade liberalization will increase U.S. wheat export demand elasticity substantially. Conclusions and policy implications are summarized in the final section.

2. STRUCTURE AND COMPONENTS OF THE WORLD WHEAT TRADE MODEL

The wheat trade model is a nonspatial, partial equilibrium model: nonspatial because it does not identify trade flows between specific regions, and partial equilibrium because only one commodity is modeled. The basic elements of a nonspatial equilibrium supply and demand model are illustrated in Fig. 1. The U.S. export supply curve (ESUS) is the difference between domestic supply (SUS) and demand (DUS) in the United States, which represents the quantity supplied in the world market at various price levels. Other exporters' supply and demand schedules are given in the lower panel. The curve ESO is the combined excess supply of all competing exporters, which is derived as the difference between the supply and the demand of all exporters. The import demand schedule (EDT) of all importers is their total demand minus

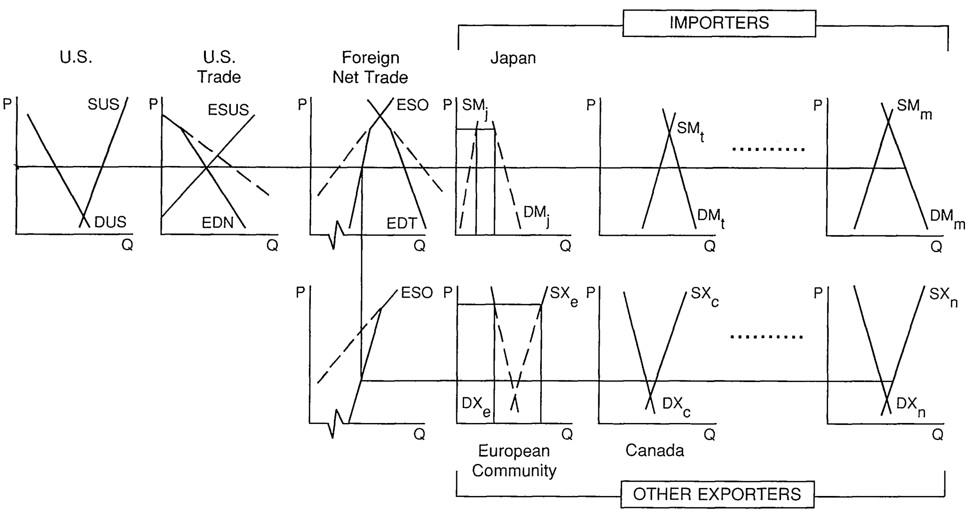

Fig. 1. Determination of equilibrium prices and quantities in the wheat trade model.

total supply. Other competitors' export supply and importers' import demand are represented in the top panel, third diagram from the left. The export demand schedule (EDN) facing the United States is the difference between the import demand of all importers and the export supply of competitors. The kinked and less elastic nature of the EDN is due to the restricted trade policies pursued by some foreign countries, which insulate domestic prices from world price variability (see below for details). A trade equilibrium is allowed by the clearing of excess demands and supplies generated within each region. The algebraic form of the necessary components of the model is given below.

Consider importers ($i=1, ..., m$) with $\mathrm{FOD}_i(\mathrm{PD}_i, X_{1i})$ = domestic food demand, $\mathrm{FED}_i(\mathrm{PD}_i, X_{2i})$ = domestic feed demand, $\mathrm{SD}_i(\mathrm{PD}_i, X_{3i})$ = domestic stock demand, and $S_i(\mathrm{PS}_i, X_{4i})$ = domestic supply.

The excess demand function (EDT), the sum of domestic demand minus domestic supply of all importers, can be written as:

$$\mathrm{EDT}=\sum_{i}^{m} [\mathrm{FOD}_i(\mathrm{PD}_i, X_{1i})+\mathrm{FED}_i(\mathrm{PD}_i, X_{2i})+\mathrm{SD}_i(\mathrm{PD}_i, X_{3i})-S_i(\mathrm{PS}_i, X_{4i})] \tag{1}$$

where X_{ki} = vectors of demand shifters ($k=1, 2, 3$), X_{4i} = vector of supply shifters, PD_i = domestic market price, $\mathrm{PS}_i=\mathrm{PD}_i+\mathrm{DC}_i$ = supply price, and DC_i = difference between supply price and domestic market price.

The domestic market price, PD_i, is linked to world price as:

$$\mathrm{PD}_i=G_i(\mathrm{PW}\, e_i, Z_i) \tag{2}$$

where PW = world price, e_i = exchange rate, and Z_i = vector of policy variables that influence the price transmission.

The excess supply (ESO), the sum of domestic supply minus domestic demand of other exporters ($j=1, ..., n$), excluding the United States, can be derived as:

$$\mathrm{ESO}=\sum_{j}^{n} [S_j(\mathrm{PS}_j, X_{4j})-(\mathrm{FOD}_j(\mathrm{PD}_j, X_{1j})+\mathrm{FED}_j(\mathrm{PD}_j, X_{2j})+\mathrm{SD}_j(\mathrm{PD}_j, X_{3j}))] \tag{3}$$

The price linkage equation of the exporting countries is given by:

$$\mathrm{PD}_j=G_j(\mathrm{PW}\, e_j, Z_j) \tag{4}$$

The variable definitions are as before, except that subscript j refers to the exporting countries.

The excess demand function (EDN) facing the United States is given by:

$$\begin{aligned}\mathrm{EDN}&=\mathrm{EDT}-\mathrm{ESO} \qquad (5)\\ &=\sum_{i}^{m} (\mathrm{FOD}_i+\mathrm{FED}_i+\mathrm{SD}_i-S_i)-\sum_{j}^{n} (S_j-\mathrm{FOD}_j-\mathrm{FED}_j-\mathrm{SD}_j)\end{aligned}$$

The export supply function (ESUS) originating from the United States can be derived as:

$$\text{ESUS} = S_{us}(P_{us}, X_{4us}) - [\text{FOD}_{us}(P_{us}, X_{1us}) + \text{FED}_{us}(P_{us}, X_{2us}) + \text{SD}_{us}(P_{us}, X_{3us})] \quad (6)$$

The variable definitions are as given before, except that subscript us refers to the United States.

The world market equilibrium is given by the identity:

$$\text{ESUS} = \text{EDN} \quad (7)$$

which corresponds to point A in Fig. 1.

The U.S. domestic market price is linked to the world price as:

$$\text{PW} = G_{us}(P_{us}, Z_{us}) \quad (8)$$

The model includes domestic supply and demand functions for major trading and producing countries and regions. The countries or regions included in this study are the United States, Canada, Australia, Argentina, the European Community (EC-12), India, Japan, China, the U.S.S.R., Eastern Europe, Africa and the Middle East, other Asia, high-income Asia, other Western Europe, and the rest of the world (ROW).

Supply is determined as yield times acreage harvested, which is endogenously estimated. One of the salient features of the model is the inclusion of government programs in estimating the acreage functions. Particularly in the United States, program participation rates are endogenously estimated as a function of expected wheat net returns. Area planted under programs is determined from participation rate, base acres, and acreage reduction rate. Nonprogram planted acreage is endogenously estimated. Total planted area is the sum of program and nonprogram planted area. The theoretical specification of food use is based on the consumer theory of utility maximization subject to budget constraint. The variables that enter the demand functions are own price (wheat price), prices of competing goods, and income. Since feed is used as input in livestock production, the theoretical specification of feed demand is estimated as a function of own price, prices of competing feed products, and livestock product prices. Stock demand is endogenized in the model by using speculative and transactions motives of inventory demand theory. Current price, expected production, and government stocks are used to capture the speculative motive. Current production is used to explain the transaction motive.

Equilibrium prices, quantities, and net trade are determined by equating excess demands and supplies across regions (equation 7) and explicitly linking domestic market prices in each region to the world price (equations 2 and 4). Except where they are set by governments, domestic prices are linked to world prices via price linkage equations including bilateral exchange rates and transfer service margins. Inclusion of price linkage equations in the model allows one to endogenize the stabilizing and insulating behavior of government policies. Where some degree of insulation of domestic prices from external market conditions exists, the free adjustment of trade flows is restricted by limiting the quantity traded at the given level of domestic prices. The price linkage equation defines the degree of price transmission of external market conditions into the internal system. Trade occurs whether price transmission is allowed or not. The quantity traded adjusts only to internal conditions if there is no price transmission.

The model is estimated over the sample period 1965–1986 using annual data. The supply, use, and price data for the U.S. component of the model came from various issues of USDA *Agricultural Statistics.* Policy variables such as target prices and loan rates were collected from the fact sheets of Agricultural Stabilization and Conservation Service (ASCS). Supply and use data for foreign countries come from the Foreign Agricultural Service (FAS) of the U.S. Department of Agriculture. Prices are from the Food and Agricultural Organization (FAO) of the United Nations, *Canadian Grain Trade Statistics,* and *EC Grains, Oil seeds, and Livestock; Selected Statistics.* Macroeconomic data for all countries are from the *International Financial Statistics* (IFS) of the International Monetary Fund.

The functional form of the model is linear in parameters. All supply and demand equations are estimated in quantity dependant form in real prices and incomes. The estimation procedure used is ordinary least squares (OLS). The OLS estimation technique is preferred over simultaneous estimation techniques such as two-stage least squares (2SLS) and three-stage least squares (3SLS) because with large number of exogenous variables and limited number of observations simultaneous estimation techniques pose degrees of freedom problems.[1] Furthermore in many countries prices are set by government policies. Only in few countries prices are determined by supply and demand. As a result, any potential gain that could be achieved by simultaneous estimation is offset by the potential loss if there is any misspecification in the model. The presence of serial correlation in the error structure is corrected using Cochrane–Orcutt procedure.

In general, the statistical fit of the model is good, and the estimated coefficients in the behavioral equations conform to the a priori expectations.[2] The estimated supply, demand, and price transmission elasticities are given in Appendix Tables A.1 and A.2, which represent behavioral relationships in the

[1]The principal component technique is frequently used to circumvent the degrees of freedom problem. Since the number of exogenous variables are too large in the wheat trade model, principal component technique was not used to estimate the model.

[2]Space limitations do not allow reporting the complete details of the wheat trade model. Readers interested in the modeling approach, structural coefficients, estimated equations, and model validation may refer to Devadoss, Helmar and Meyers (1939).

model. The empirical model adequately reflects the structure of the world wheat market. Furthermore, since the model is frequently used for forecasting and policy analysis, a rigorous validation test was conducted to test the over all ability of the model to replicate the observed values of the endogenous variables. In the validation run, the structural form of the model is dynamically simulated over the study period. Simulation statistics used to measure the model's fitting performance include root mean square error (RMSE), and root mean square percent error (RMSPE), and Theil statistics. The simulation statistics indicate that the model performs satisfactorily.

Methods often used in the literature to estimate export demand elasticity are direct estimation, computation, simulation, and synthetic methods (see Gardiner and Dixit, 1987, for detail on these methods). In this section, following the earlier work of Tweeten (1967), Johnson (1977), and Bredahl, Meyers and Collins (BMC), 1979, the computation method is used to calculate wheat export demand elasticities. The major difference in this paper is that the underlying supply, demand, and price transmission elasticities come from a specific structural model estimation.

By differentiating equation (5) with respect to PW and converting it into elasticity terms, the short run elasticity of U.S. export demand (EX_{us}) holding the prices of other commodities constant can be expressed as:

$$\mathrm{EX}_{us} = \sum_{i}^{m} \left(\mathrm{EFOD}_i(\mathrm{FOD}_i/X_{us}) + \mathrm{EFED}_i(\mathrm{FED}_i/X_{us}) + \mathrm{ESD}_i(\mathrm{SD}_i/X_{us}) - \mathrm{ES}_i\,\mathrm{EPS}_i(S_i/X_{us})\right)\mathrm{EP}_i - \sum_{j}^{n} \left(\mathrm{ES}_j\,\mathrm{EPS}_j(S_j/X_{us}) - \mathrm{EFOD}_j(\mathrm{FOD}_j/X_{us}) - \mathrm{EFED}_j(\mathrm{FED}_j/X_{us}) - \mathrm{ESD}_j(\mathrm{SD}_j/X_{us})\right)\mathrm{EP}_j \quad (9)$$

where EX_{us}=U.S. export demand elasticity, X_{us}=volume of U.S. exports, EFOD=elasticity of food demand, EFED=elasticity of feed demand, ESD=elasticity of stock demand, ES=elasticity of supply, EPS=response of supply price with respect to domestic market price, and EP=price transmission elasticity.

From the model description and expression (9), it is clear that the export demand elasticities are implicit in the model. They depend on supply and demand elasticities, price transmission elasticities, quantities in the exporting and importing countries, and the volume of U.S. exports.

Since the 1979 article by BMC, the above expression for export demand elasticity incorporating the price transmission elasticity has been commonly used. The salient contribution of the BMC study is that trade restrictions and domestic price insulation policies, by constraining the values of price transmission elasticities to less than one, reduce the elasticity of export demand. In this study, the export demand elasticity is computed under two scenarios

– restricted trade and free trade. The restricted trade scenario entails a world wheat market in which some countries are pursuing trade policies that insulate their domestic prices from world price movements, thereby reducing price transmission elasticities to significantly less than one (Table 1). In particular, the price transmission elasticity of the European Community is close to zero because the intervention price set by the Common Agricultural Policy to provide price supports to domestic producers responds only slightly to the world price. The estimated price transmission elasticity of the European Community is 0.02, which is in line with the elasticity estimated by Tyers and Anderson (1988) at 0.09.

Using equation (9), the wheat export demand elasticities are computed

TABLE 1

Price transmission elasticities for selected foreign countries with respect to U.S. wheat Gulf Port prices

Countries	Restricted trade	Free trade
European Community 12		
Wheat intervention prices	0.02	0.98
Argentina		
Wheat farm prices	0.43	1.03
Japan		
Wheat resale prices	0.28	0.99
India		
Wheat farm prices	0.51	0.98

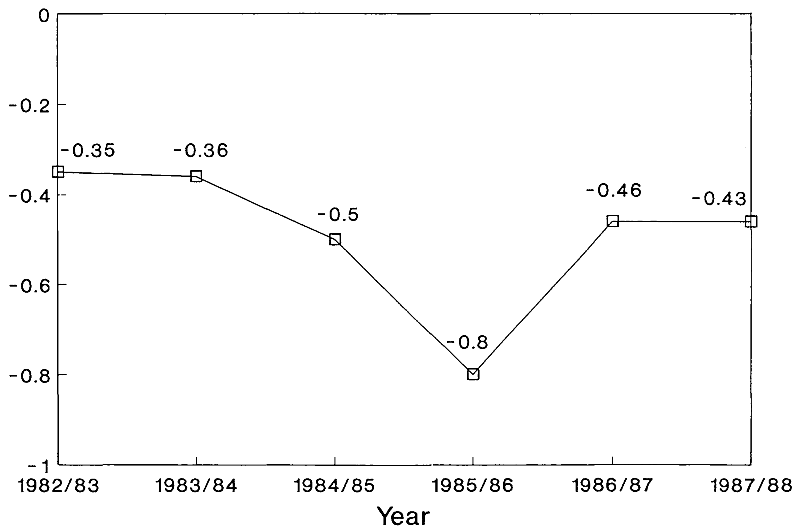

Fig. 2. U.S. wheat export demand elasticity.

TABLE 2

Wheat export demand elasticity estimates compared to those reported by previous studies

Study	Period	Method	Short-run wheat export demand elasticity
Current study (1988)[a]	1982/83–1987/88	Computation	−0.35, −0.36, −0.50, −0.80, −0.46, −0.43
Baumes and Meyers (1980)	1951–76	Estimation (OLS)	−0.35
Burt, Koo and Dudley (1980)	–	Computation	−2.50
Chambers and Just (1981)	1969(I)–1977(II)	Estimation (3SLS)	−0.17
Conway (1985)	1969(I)–1977(II)	Estimation (Stochastic coefficient)	−0.26
Gadson, Price and Salathe (1982)	1963–78	Estimation (OLS)	−0.21
Gallagher et al. (1981)	1960–74	Estimation (OLS)	−0.41
Green and Price (1984)	1986	Simulation	−0.54
Holland and Sharples (1981)	–	Synthetic	−0.50
Holland and Sharples (1984)	1979/80–1981/82	Simulation	−0.70
Honma and Heady (1985)	1964–78	Computation	−0.44
Konandreas and Schmitz (1978)	1955–72	Estimation (OLS)	−3.13
Kost et al. (1979)	1960–75	Simulation	−0.35
Morton, Devadoss and Heady (1984)	1962-79	Estimation (3SLS)	−0.14
Ray and Parvin (1978)	–	Synthetic	−0.50
Seeley (1985)	1985	Simulation	−0.81
Taylor and Talpaz (1979)	1960–74	Estimation (SUR)	−0.15
Tyers and Anderson (1988)[b]	1983 1988	Computation	−0.60 −0.51
Webb and Blakely (1982)	–	Computation	−1.05

Since the current study estimates short-run elasticity, only short-run elasticities from other studies are compared.
[a]The elasticity estimates from the current study are for each year from 1982/83 to 1987/88.
[b]The estimates reported by Tyers and Anderson as very short run elasticities correspond to the short-run elasticities in this study.

from the wheat trade model for 1982/83 to 1987/88 and plotted in Fig. 2. The demand and supply elasticities from each year, rather than the elasticities evaluated at the mean, are used in computing the export demand elasticities.

The elasticity estimates range from −0.35 in 1982/83 to −0.8 in 1985/86. The estimates do not vary much between 1982/83 and 1983/84, but they increase (in absolute values) to −0.5 in 1984/85 and to −0.8 in 1985/86. The increase in the elasticity between 1983/84 and 1985/86 is more than 120 percent. One reason for this large increase in 1985/86 is that, among other factors, the volume of U.S. exports in that year was very low. U.S. wheat exports declined from 48 million metric tons in 1981/82 to 24.9 million metric tonnes in 1985/86, and the U.S. share of world wheat exports shrank over the same period from 48.2% to 29.4%. The export demand elasticity declines (in absolute values) to −0.46 in 1986/87 and to −0.43 in 1987/88. The decline is in large part due to the recovery of U.S. wheat exports.

The estimated wheat export demand elasticities are compared to those obtained by previous studies (Table 2). Since the current study estimates short-run elasticities, only the short-run estimates from previous studies are compared. The elasticity estimates of other studies range from −0.17 to −3.13. Of the eighteen studies reported in Table 2, only three have export demand elasticities that are greater than one in absolute values (elastic). The study (Konandreas et al., 1978) with the largest export demand elasticity (−3.13) cover the period 1955–72, during which the trade barriers in the world wheat market were relatively sparse. The high elastic export demand (−2.5) of the second study (Burt et al., 1980) may have resulted because it used the regional demand elasticities from Konandreas et al. study. The estimate of the third study (Webb and Blakely, 1982) at −1.05 is very close to unitary elasticity. There are only three studies (Green and Price, 1984; Seeley, 1985; Tyers and Anderson, 1988) in which estimated elasticities for the period correspond to the period of computation used in this study. For 1985, the estimated wheat export demand elasticity of the current study (−0.8) is almost equal to that reported by Seeley (−0.81). For 1986, the estimate of −0.46 is close to that of −0.54 obtained by Green and Price. The 1983 elasticity estimate by Tyers and Anderson at −0.6 is higher than the −0.35 reported by this study; their estimate for 1988 (−0.51) is in line with the elasticity reported by the current study (−0.43).

3. IMPACT OF TRADE LIBERALIZATION

Before examining the values of export demand elasticities under free trade, an explanation is provided on existing trade restriction policies in the world wheat market and the procedure used in modeling trade liberalization.

Several important countries pursue trade policies that inhibit the transmission of world wheat price variability to domestic markets, among them the EC, Argentina, India, Japan, the Soviet Union, China, and Eastern Europe.

It is assumed in this study that the centrally planned economies would not alter their domestic price insulation policies. So, the policies of only the EC, Argentina, Japan, and India are altered for the trade liberalization scenario. Thus, this is not complete free trade but liberalized trade across several large markets.

The EC maintains its domestic support prices well above world prices, which creates a perfectly inelastic excess supply for EC wheat below its support prices (Schmidt et al., 1987). This inelastic excess supply of EC wheat makes the aggregate export supply (ESO) of all competing exporters kinked and less elastic (see Fig. 1). The government of Argentina collects revenues by imposing an export tax on wheat to help fund the government deficit. The export tax is adjusted to insulate the domestic price from the world price fluctuations. Japan maintains its domestic prices well above world prices and thereby generates an inelastic excess demand curve below these prices, resulting in an aggregate world import demand curve (EDT) that is kinked and less elastic. India's policies also insulate domestic prices from world price fluctuations. As a result of restricted trade policies in these countries, the export demand curve facing the United States is kinked and less elastic, reflecting the kinked and less elastic import demand curve of all importers and the export supply curve of all other exporters.

In the trade liberalization scenario, the trade barriers and domestic price insulation policies of the EC, Argentina, Japan, and India are eliminated. For the EC, the Rotterdam prices of wheat and corn are used as border prices to replace the respective threshold prices. In addition, since the intervention prices are well above world prices, the Rotterdam prices of what also are used to reflect the intervention prices of wheat. For Argentina, the export tax is removed and the wheat and sorghum export prices are directly linked to the wheat and sorghum Gulf Port prices, respectively. For Japan and India, wheat border prices are constructed by adding transport cost to the Gulf port prices of wheat. A similar procedure is followed in generating sorghum border prices for India. Removal of trade restrictions makes the export demand curve facing the U.S. (Fig. 1) more elastic. Furthermore, these policy changes of moving toward free trade imply that the price transmission elasticities of these countries are close to one (Table 1).

After eliminating price insulation policies, the wheat export demand elasticities are computed again (Table 3). The values of the wheat export demand elasticities each year are two times larger under free trade than under restricted trade. It is important to realize that price transmission elasticities play a key role in determining the values of the export demand elasticities. The results illustrate the conclusion derived by BMC (also see Roe et al., 1986). The estimates still show significant variation across time; for example, the wheat export demand elasticity is -0.96 (inelastic) in 1984/85 and -1.77 (elastic) in 1985/86.

The magnitude of elasticities estimated by the model depends on specifi-

TABLE 3

Wheat export demand elasticity under restricted trade and free trade

	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91
Restricted trade scenario	−0.36	−0.50	−0.80	−0.46	−0.43	−0.43	−0.46	−0.45
Free trade scenario	−1.09	−0.96	−1.77	−1.11	−0.90	−0.91	−0.93	−0.92

Elasticity estimates for the period 1987/88 to 1990/91 are based on the projections from the model. Forecasted values of exogenous variables and assumed values of important farm policy parameters were used in projecting the endogenous variables. Details of the projection are available from the authors upon request.
The wheat export demand elasticities for the period 1987/88 to 1990/91 were estimated hoping that they could be used in GATT negotiations and 1990 farm bill debate.

cation, regional disaggregation, period of analysis, and other factors. The important point to note is that the removal of trade barriers would increase the elasticity of U.S. export demand substantially.

4. CONCLUSIONS AND IMPLICATIONS

This study focused on some of the factors that influence the magnitude of U.S. export demand elasticities using wheat as an example. These factors include the structural supply and demand elasticities in other countries, the quantity of U.S. trade in relation to the quantity demanded and supplied in the ROW, price transmission elasticities, and trade barriers. The empirical results show that the U.S. wheat export demand elasticity has been unstable as market conditions fluctuate. Furthermore, the results indicate that trade barriers of foreign countries aimed at insulating domestic markets from international price movements reduce price transmission elasticities, and lower export demand elasticity. Conversely, trade liberalization in the wheat market would increase the elasticity of U.S. wheat export demand.

This study has examined conditions under which the demand for U.S. wheat exports is elastic and conditions under which it is inelastic. Previous work by Meyers, Devadoss and Helmar (1987) using a multi-commodity model found that this export response can become substantially more inelastic if other commodity prices are not held constant. In the same study export response became substantially more elastic as the length of adjustment time was increased. These results together underscore the sensitivity of the export elasticity to the conditions under which it is evaluated and the importance for researchers to be careful in describing these conditions. Among the numerous factors that determine the magnitude of the elasticity, government policies are clearly the most significant factor that could change the export responsiveness in the future.

The United States has proposed in the GATT negotiations to phase out all domestic and trade policies that affect agricultural trade over a 10-year period. The results of this study indicate that such trade liberalization would increase the magnitude of U.S. export demand elasticities substantially. The most important consequence of this change may be the extent to which the more elastic behavior of exports reduces price variability in world markets. This outcome would benefit countries that are incurring costs from world price variability and should help to mitigate the fear of trade liberalization in countries that are now insulated from world price variability.

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