Public Funding of Foreign Market Development Programs

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In the 1980s, after some fifteen years of relatively flat spending in real terms, the federal government increased expenditures for non-price export promotion of agricultural commodities eleven-fold. This paper provides a brief history of government programs designed to expand agricultural exports, the economic rationale for public involvement in these activities, and the critical issues surrounding program evaluation.

Historical Background

Market development programs seek to boost exports of U.S. agricultural and food products by expanding foreign consumer and industry demand for those products. This is accomplished through advertising, nutritional information, store promotions, technical assistance, and other non-price market development activities. The U.S. Department of Agriculture's Foreign Agricultural Service (FAS) operates two non-price market development programs: the Foreign Market Development (FMD or Cooperator) Program and the Market Promotion Program (MPP).

Funding for the FMD was first authorized in 1954 under section 104 of the Agricultural Trade Development Assistance Act. Since the early 1960s, authority for the FMD came from section 601 of the Agricultural Act of 1954. The Market Promotion Program (MPP) was authorized in the 1990 Food Agriculture Conservation and Trade Act. From their respective authorizing legislation, the FMD and MPP are expected to encourage the development, maintenance and expansion of commercial export markets for agricultural commodities.

In the 1990 Food Agriculture Conservation and Trade Act, legislators also gave priority for MPP funding to organizations demonstrating the incidence of an unfair trade practice. This continued the legacy of the Targeted Export Assistance (TEA) Program which was first authorized in 1985 as a means of helping agricultural producers counter the adverse effects of other nations' unfair trade practices. The 1994 appropriations bill required all MPP applicants, with the exception of small-sized firms, to demonstrate the incidence of an unfair trade practice as one requirement for MPP funding. The 1990 FACT Act also recognized the unique partnership between FAS and the agricultural marketing organizations by specifying that the MPP is expected to provide "cost-share assistance to eligible trade organizations that implement a foreign market development program."

Market Development Program Activities

FMD and MPP market development activities are classified as "non-price" be-

cause they focus on potential buyers' tastes and preferences rather than on product price or credit availability. Export market development program activities are conducted by organizations of commodity producers (such as the Washington State Apple Commission), regional organizations of state departments of agriculture (for example, the Western United States Agricultural Trade Association), and private companies. FMD funding is aimed chiefly at nonprofit commodity organizations that promote generic products such as cotton, rather than promoting specific corporate brands. In contrast, close to 40 percent of MPP funds are invested in jointly-funded corporate promotions.

Market development activities include consumer promotions, trade servicing and technical assistance. Consumer promotions include in-store demonstrations and displays, media advertising, recipes and nutrition information, and event sponsorships. Export promotion activities directed to consumers may promote brand as well as generic products. Trade servicing activities acquaint importers and dealers with the attributes of U.S. agricultural products and help them procure U.S. products. Technical assistance teaches prospective customers about specific uses for U.S. agricultural commodities. Generally, MPP promotions are aimed at foreign consumers, although some MPP funds target hotel and restaurant chefs, food processors and importers. FMD activities focus chiefly on food manufacturers, processors and importers in foreign countries.

Export Market Development Program Levels and Expenditures

The FMD is considered part of the annual FAS budget, while the MPP is a separate budget item funded by the Commodity Credit Corporation (CCC). Funding levels (expenditures) for the FMD have remained relatively constant, averaging $30 million from 1989 through 1993 (Table 1). Annual MPP funding was steady between 1989 and 1992, but began to dip in fiscal 1993. (Annual funding for TEA was $110 million in 1986-88 and $200 million in 1989-90.) The 1995 MPP appropriation of $85.5 million is less than half the annual MPP appropriation for 1989 through 1992. The 1995 FMD program level is two-thirds the average annual FMD expenditures for recent years.

Market Development Program Allocation Criteria

From their respective authorizing legislation, the FMD and MPP are expected to encourage the development, maintenance and expansion of commercial export markets for agricultural commodities. Allocation criteria for the MPP are further defined by regulations established by FAS and legislation. Beginning with the 1994 fiscal year, MPP assistance has been provided only to organizations and firms to counter or offset the adverse effects of subsidies, import quotas or other foreign countries' unfair trade practices. The only exempt organizations are small-size firms operating through regional trade associations.

Although less important, other criteria contribute to decisions regarding allocations of MPP funds. Potential MPP allocations to nonprofit organizations are based on the amount of funds which the organization will contribute to the market development activities. Currently, nonbrand MPP participants are required to provide a minimum of 10 percent of USDA resources expended and brand participants are reimbursed for no more than 50 percent of eligible promotion expenses. Other criteria include at least 50

Table 1. Federal Expenditures for Non-Price Export Promotion of U.S. Agricultural Commodities, 1980-1995[a]

Year	FMD	TEA/MPP	Total Market Development
		million dollars	
1980	19.3	0.0	19.3
1981	18.8	0.0	18.8
1982	20.1	0.0	20.1
1983	25.2	0.0	25.2
1984	26.8	0.0	26.8
1985	33.9	0.0	33.9
1986	35.0	110.0	145.0
1987	23.3	110.0	133.3
1988	29.4	110.0	139.4
1989	29.7	200.0	229.7
1990	28.6	200.0	228.6
1991	30.1	200.0	230.1
1992	33.6	200.0	233.6
1993	38.7	147.7	186.4
1994	34.4	100.0	134.4
1995	20.0	85.5	105.5

[a] All figures are in current (undeflated) dollars. FMD program levels are actual expenditures. TEA and MPP levels are program appropriations. The figures for 1995 are congressional appropriations or budget baseline numbers.

percent U.S. origin content of the commodity or product to be promoted; the percent of domestic production of the commodity or product represented by a prospective participant; and the prospects for increasing U.S. exports of the commodity or product.

Rationale for Public Funding

The large increases in government subsidies for non-price export promotion of agricultural commodities beginning with the 1985 farm bill have generated renewed interest in the economic effects of these programs (Nichols, Kinnucan and Ackerman). Of particular interest is whether the subsidies can be justified in an era of large federal deficits and growing public pressure to downsize government. Here we offer three economic-based reasons for continued public assistance.

Treasury Savings

Contemporary farm programs rely chiefly on deficiency payments and target prices as a means to support farm incomes. An advantage of deficiency payments over production controls or government storage operations is that deficiency payments lower market prices and thus enhance the competitiveness of U.S. agricultural commodities in export markets. A disadvantage of deficiency payments is increased treasury exposure. That is, the federal government is liable for the difference between the target price and the market price, which can be significant especially in bumper-crop years.

One way to reduce treasury exposure is to increase the demand for program commodities via export promotion. Increased foreign demand reduces the domestic quantity, which raises the domestic market price. For a given target price, this results in a reduction in deficiency payments. If the reduction in deficiency payments is sufficiently large, net treasury outlays will decrease.

That federal subsidies for foreign market development can be cost saving has been demonstrated in a recent study by Kinnucan, Duffy and Ackerman. In that study, an export price subsidy for cotton was compared to an equivalent dollar expenditure on non-price export promotion. Results indicated that both policy instruments—price reduction and promotion—were cost saving in the sense that net treasury outlays for the cotton program were reduced. However, promotion was found to be more effective than price reduction, yielding a net treasury saving of $94 million (lower-bound estimate), which was twice the comparable treasury saving estimated for subsidized price reduction.

Bearing in mind that deficiency payments represent an implicit export price subsidy, non-price promotion effectiveness is enhanced in that the promotion occurs at a time when U.S. prices in world markets are especially competitive. A further advantage of non-price promotion is that industry is accustomed to sharing in the cost of the promotions, which is not the case for export price subsidies. This cost sharing feature may reduce waste since the private sector has an incentive to monitor the programs for effectiveness. Finally, unlike price subsidies, which are in opposition to GATT guidelines and may invite retaliation, non-price promotion is a "green-box" program and thus permissible under the new trade rules (Frass, pp. 9-10).

Sector Adjustment Costs

The amelioration of sector adjustment costs provides a second rationale for public funding of agricultural export promotion

programs. The deregulation of American agriculture, impelled in part by federal budget deficits, means rural communities will come under increased pressure to diversify their economies.[1] In the process, people employed in businesses implicitly supported by agricultural price subsidies will need to be retrained or relocated. This imposes direct costs on individuals in terms of increased outlays for schooling, job searching, and foregone earnings. It also imposes costs on society in terms of increased expenditures for unemployment benefits, food stamps, medical care, and so forth.

One way to stretch the time available for retraining and job search and to reduce the private and public costs of adjusting to a more competitive market environment is to strengthen export demand. In essence, this amounts to diverting treasury savings from reduced price supports to subsidies for foreign market development as an interim measure. Once agriculture is weaned from price supports and the institutions have been developed to support a market-oriented agriculture, the subsidies for export promotion can be reduced or eliminated. If funds are allocated to commodities that have a comparative advantage in production and international marketing, this may attract resources from less efficient industries and provide further benefits in terms of improved resource allocation.

Collective-Good Underfunding

A third rationale for public support of agricultural export promotion relates to the collective good aspects of cooperative advertising. Recall that export promotion is not wholly government funded, but relies on industry cost sharing. Industry funds, in turn, are obtained through industry checkoffs that must be approved by a majority of producers. Thus, foreign market development programs in essence are collective goods, i.e., they would not exist—at least not in their present form—if agricultural groups refused to provide the required matching funds.

An essential characteristic of collective goods, as pointed out, *inter alia*, by Hardin (p. 19) is the *de facto* infeasibility of exclusion. That is, if a cooperative export promotion program increases the domestic market price (a necessary condition for export promotion to be profitable from an industry standpoint), it is not possible to withhold benefits from non-contributing producers. The inability or costliness of withholding collective-good benefits means that there is little incentive for the individual producer to contribute to the program. Thus, collective goods such as cooperative advertising tend to be underfunded.

Government subsidies provide one means for addressing the underfunding problem. Leveraging industry dollars with government funds may lead to a Pareto improvement in the sense that taxpayers and domestic producers could be made better off without making domestic consumers worse off. Promotion subsidies may help solve the underfunding problem by encouraging industries to tax themselves at a rate that more nearly approximates the social optimum.

Critical Issues in Program Evaluation

The critical issues of program evaluation differ depending upon which stakeholders are considered most relevant. From the perspective of *public* policy, the key questions center on the optimal budget size and how this budget is best allocated among different commodities and interest groups to

maximize social welfare. From the perspective of *private* policy, issues such as how best to allocate foreign market development funds among consumer advertising, technical assistance, and trade servicing activities may be important. And, of course, producers want to know whether the program has increased demand sufficiently to justify their investment in the promotion endeavor. Because the bulk of the empirical literature deals with private policy matters (e.g., see Hurst and Forker's annotated bibliography), we will our restrict attention to the public policy issues.

Optimal Global Budget

Although economic considerations have not played a prominent role in determining the level of government subsidies for foreign market development, the question still remains whether current levels of spending can be justified on economic grounds. One way to address this question is to determine the level of total spending that would maximize producer surplus.[2] The optimal level of spending could then be compared with the actual level of spending (inclusive of the government subsidy) to see whether total spending is too high or too low.

In their theory of cooperative advertising without supply control, Nerlove and Waugh (p. 822) develop the following expression to indicate optimal advertising policy:

$$(1) \qquad \alpha / (\epsilon - \eta) = 1 + \rho$$

where ϵ is the elasticity of industry supply, η is the elasticity of demand with respect to price, ρ is the rate of return on alternative forms of investment, and α is the marginal gross revenue from increased advertising expenditures, holding prices constant. Specifically, $\alpha = P\,(\partial Q / \partial A)$ where P is price, Q is quantity, and A is advertising expenditures.

In the absence of external economies or diseconomies, equation (1) indicates the optimal cooperative advertising policy in the sense that producer surplus is maximized. The equation can be made more intelligible for our purposes by expressing α in elasticity form, i.e.,

$$(2) \qquad \alpha = (V / A)\,\beta$$

where $V = P\,Q$ is industry revenue and β is the advertising elasticity. Substituting (2) into (1) and rearranging gives

$$(3) \qquad A / V = \beta / [(\epsilon - \eta)\,(1 + \rho)].$$

Equation (3) is the optimal advertising-sales ratio for an industry that has no control over supply. For normal sloping supply and demand curves and a positive advertising elasticity, this ratio is always positive.

The implications of equation (3) for export promotion spending is indicated in Table 2. Here we present estimates of the optimal global budget for alternative elasticity values assuming that the value of U.S. agricultural exports is $43.5 billion, the fiscal year 1993 level (U.S. Department of Agriculture, 1994). The estimates are for *total* promotional spending—government and industry combined—for all U.S. agricultural commodities in all export markets. The demand and supply elasticities refer to excess supply and demand elasticities facing U.S. exporters. The excess demand elasticities reflect a range of estimates that appear to be consistent with the empirical literature (e.g., Carter and Gardiner, pp. 264-267), bearing in mind that the elasticities refer to total export demand, i.e., the export demand for all U.S. agricultural commodities combined.

Table 2. Optimal Expenditures for Non-Price Export Promotion of U.S. Agricultural Commodities for Alternative Values of the Excess Supply Elasticity (ϵ), the Export Demand Elasticity (η), and the Export Promotion Elasticity (β)[a]

η	$\beta = 0.02$		$\beta = 0.04$		$\beta = 0.08$	
	$\epsilon = 1$	$\epsilon = 2$	$\epsilon = 1$	$\epsilon = 2$	$\epsilon = 1$	$\epsilon = 2$
	million dollars					
-1	362	242	725	483	1,450	967
-2	242	181	483	362	967	725
-3	181	145	362	290	725	580
-4	145	121	290	242	580	483
-5	121	104	242	207	483	414

[a] Based on equation (3) in the text and $43.5 billion in U.S. agricultural exports in 1993. The estimates assume that $\rho = 0.20$, i.e., foreign market development dollars have an opportunity cost of 20%.

The excess supply elasticity is set alternatively at 1 and 2, which appears to be a reasonable range given that the excess supply schedule in general is more elastic than either the domestic supply or the domestic demand schedule (Houck, pp. 33-34). For example, if the domestic demand and supply elasticities are -0.3 and 0.2, respectively, and one-third of U.S. agricultural production is exported, Houck's formula (p. 34) yields an excess supply elasticity of 1.2.

Advertising elasticities pertaining to agricultural exports are more difficult to peg given the paucity of empirical work on export promotion responses. For the purposes of this analysis, we use values ranging from 0.02 to 0.08, which are consistent with the value of 0.05 used by Goddard and Conboy for beef exports; the estimates of 0.06 and 0.12 estimated by Solomon and Kinnucan for U.S. cotton exports; and the values of 0.02 to 0.08 found by Williams for soybeans.

Results indicate a wide range for the optimal global budget depending on which set of elasticity values more nearly represents the "truth" (Table 2). That the budgets are bigger for larger export promotion elasticities and for smaller excess supply elasticities is intuitive. (A larger shift in demand against a steeper supply schedule implies a larger price increase for any given level of promotional expenditure.) Less intuitive, perhaps, is the fact that the budgets are larger for less elastic demands. But this simply expresses the fact that if export demand (in the limit) were perfectly elastic (small-country case), non-price export promotion would be pointless because it would be impossible to raise the domestic price.

The box in Table 2 contains our "best guess" estimate of the correct combination of elasticity values, which yields an optimal global budget in the range of $362 million to $725 million for 1993. This range contains the actual level of spending in 1993 if we assume that the government matches private sector spending dollar-for-dollar (Henneberry, Ackerman and Eshleman) and if we take $186 million as the government share in 1993 (see Table 1). If the midpoint of this range is taken as a point estimate of the optimum, the global budget that maximizes producer surplus is $544 million. If we further assume that the government must provide a 50 percent subsidy for producers to achieve this budget, the optimum government spending in 1993 would have been $272 million.

A caveat in interpreting the foregoing optimal spending figures is that the advertising elasticities used in the formula are based on individual commodity estimates, which may overstate the export promotion elasticity for all agricultural exports combined. For example, Theil posits that advertising elasticities are proportional to price elasticities, which suggests that group advertising elasticities are smaller than individual-commodity advertising elasticities (because group demand is less elastic than individual-commodity demand).

A further caveat is that the Nerlove-Waugh theorem is derived under the assumption that advertising is financed by a lump sum tax rather than a check-off and therefore has no effect on producers' marginal cost. If advertising affects marginal cost, which it will if the funds are generated by a per-unit levy on output, the optimal spending level indicated by the Nerlove-Waugh theorem is understated (Alston, Carman and Chalfant, p. 11-12).

Optimal Budget Allocation Among Commodities

The second critical issue in program evaluation is how to determine whether

public monies for export promotion are being spent in the most effective manner possible. Because the allocation of funds among commodities is germane and brings into play the key forces that govern program effectiveness in general, we focus on this issue. Our approach is comparative static analysis, which serves to identify the key elements that influence the effectiveness of export promotion from an economic perspective. These elements include: 1) the "promotability" of the U.S. commodity or product in export markets; 2) the share of local production that is exported; 3) the U.S. market share in world trade; and 4) the domestic supply response. An additional element, the presence of farm programs, is not addressed by the comparative static model. However, some qualitative results relating to farm programs are discussed later.

To begin, consider the following system of log-differential equations denoting market equilibrium for an individual U.S. agricultural commodity that is consumed domestically and traded in international markets

(4) $d\ln Q_x = - N_x \, d\ln P + B_x \, d\ln A$
(export demand)
(5) $d\ln Q_d = - N_d \, d\ln P$
(domestic demand)
(6) $d\ln Q_s = E \, d\ln P$
(domestic supply)
(7) $d\ln Q_s = k_d \, d\ln Q_d + k_x \, d\ln Q_x$
(market-clearing equilibrium)

where Q_x is the quantity exported, Q_d is the quantity consumed domestically, Q_s is total U.S. production, and P is the price received by U.S. producers. In this model, N_x and N_d are demand elasticities for the U.S. product in the export and domestic markets, respectively; E is the supply elasticity in the domestic market; k_d is the proportion of U.S. production consumed domestically; k_x ($= 1 - k_d$) is the proportion of U.S. production exported; and B_x is the percent change in U.S. exports per one percent change in foreign market development expenditures, i.e., the export promotion or "advertising" elasticity. Promotional spending is assumed to be exogenous. The law of one price is assumed to hold, so no distinction is made between the domestic and the export price. For the purposes of this paper, we assume that no advertising occurs in the domestic market.[3] Given the negative signs in front of the demand elasticities in equations (4) and (5), all elasticities are assumed to be positive in sign.

The optimal allocation of foreign market development dollars among commodities depends fundamentally on the ability of the promotional expenditures to raise domestic price. In other words, other things being equal, funds should be directed toward commodities that have the highest likelihood of experiencing an increase in price as a result of the promotional spending. Thus, the key question is: what forces govern the ability of non-price promotion to increase price? To answer this question, we solve the above system of structural equations for the reduced-form equation for price by substituting equations (4) - (6) into (7) and rearranging, which yields

(8) $d\ln P = [k_x B_x / (E + k_d N_d + k_x N_x)] \, d\ln A.$

In equation (8) the coefficient in brackets, which is a reduced-form coefficient, indicates the effect of an isolated increase in promotional expenditures on price, taking into account adjustments in supply and demand in the domestic market. For example, if promotional expenditures in the export market raises domestic price, domes-

tic producers will respond by increasing output and domestic consumers will respond by reducing consumption, which will attenuate the price response generated by the increased promotional expenditures. Thus, equation (8) indicates the *net effect* of an increase in export promotion spending, net of the domestic supply and demand responses to the initial increase in price.

What does equation (8) tell us about the allocation of export promotion dollars among commodities? Simple inspection of the reduced-form coefficient yields three general results, which we will call commodity promotion "laws":

1. Export promotion dollars will be most effective if allocated to commodities that generate larger demand responses in the export market, *ceteris paribus*. That is, other things being equal, promotional dollars should be directed toward commodities that have the largest export promotion elasticities.

2. Export promotion will be more effective, *ceteris paribus*, if funds are allocated to commodities that are relatively fixed in supply. That is, other things being equal, export promotion funds should be allocated to commodities with the smallest domestic supply elasticities.

3. Export promotion will be most effective, *ceteris paribus*, if funds are allocated to commodities that have relatively inelastic demands, both in the domestic market and in the export market. That is, other things being equal, export promotion funds should be directed toward commodities in which domestic and foreign consumers are relatively insensitive to price.

The first two laws are intuitive and need little discussion. The third law, which is consistent with the Nerlove-Waugh theorem discussed earlier, is perhaps less intuitive in that products with elastic demands are presumed to be more "promotable" because they have more substitutes and thus provide greater scope for attracting consumers away from competing products (e.g., Parish, p. 28, ft.n. 3). However, as indicated by DeBoer (p. 123, ft.n. 4), the important point is the *demand shift* required to achieve a given percent increase in price, which is always less for commodities with an inelastic demand.

The fourth law derivable from equation (8) relates to the export share (k_x). To derive this law, write the reduced-form coefficient in equation (8) as $\zeta = k_x B_x / [E + (1 - k_x) N_d + k_x N_x]$ and take the derivative

$$(9)\quad \partial\zeta / \partial k_x = B_x (E + k_d N_d) / (E + k_d N_d + k_x N_x)^2.$$

Equation (9) indicates the effect of an isolated increase in the export share on the reduced-form coefficient for price. Because all parameters in the numerator of equation (9) are defined to be positive, the derivative must be positive, which yields the fourth law:

4. Export promotion is most effective, *ceteris paribus*, if directed toward commodities that have relatively large export shares. That is, other things being equal, export promotion dollars should be allocated to commodities in which a large proportion of domestic production is exported.

This law is intuitive as well. For example, it does not make sense to devote resources

to foreign market development when the domestic market absorbs most of domestic production. Rather funds should be devoted, *ceteris paribus*, to commodities in which the United States enjoys a comparative advantage in international trade as manifested by large export shares.

The fifth and final law derivable from equation (8) relates to the U.S. market share in foreign markets, labelled *m* in this paper. This law is derived by noting that the export demand elasticity can be re-expressed as

$$(10) \quad N_x = (1/m)\, N + [(1 - m)/m]\, E_{row}$$

where N is the *market* demand elasticity (in absolute value) for the exported commodity from all sources (United States, its competitors, and local production) and E_{row} is the supply elasticity for the exported commodity in countries other than the United States that compete with the United States for market share.[4] Substituting equation (10) into (8) and rearranging, the reduced-form coefficient is $\lambda = k_x B_x/[E - k_x E_{row} + k_d N_d + (k_x/m)(N + E_{row})]$. The fifth law is derived by taking the derivative:

$$(11) \quad \lambda / \partial m = B_x (k_x / m)^2 (N + E_{row}) / [E - k_x E_{row} + k_d N_d + (k_x/m)(N + E_{row})]^2.$$

Equation (11) indicates the effect of an isolated increase in the U.S. market share on the reduced-form coefficient for price. By virtue of the squared term in the denominator and the assumed positive values for the parameters, equation (11) is positive. Thus, the fifth law:

5. Export promotion is more effective, *ceteris paribus*, if it is directed toward commodities that enjoy a relatively large share in export markets. That is, other things being equal, export promotion dollars should be allocated to U.S. commodities that represent a significant portion of world trade.

This last law, which is similar to Marshall's third law of derived demand ("the importance of being unimportant"—see Bronfenbrenner), is hardly controversial. It reflects the common-sense notion that the ability to capture the benefits of export promotion is facilitated by market presence. For example, if the U.S. market share is small and the commodity in question has no unique characteristics, the benefits from U.S. export promotion would flow primarily to foreign producers. (A small U.S. market share, which implies (in the limit) a horizontal excess demand curve, is tantamount to the "small country" case analyzed by Alston, Carman and Chalfant).

Although the five laws yield insights into the forces that govern export promotion effectiveness and suggest strategies for fund allocation (e.g., commodities could be classified according to export shares, U.S. market shares, and the elasticities of export demand and domestic supply) several qualifications are apparent in their application. First, the *ceteris paribus* assumption embedded in each law means that to apply the laws one needs to know whether other things are, indeed, equal. For example, a commodity might have a large latent demand (e.g., beef in Japan) and hence a potentially large export promotion elasticity, but the portion of U.S. production exported to Japan is too small for the export promotion to have much of an effect on the U.S. price. Or trade restrictions may make it difficult to increase beef exports to Japan in response to the demand increase.

In other cases, the U.S. industry may face a horizontal excess demand curve (e.g.,

U.S. peanuts), but it may still pay to promote in the export market because of domestic policy considerations. For example, the diversion of peanuts from the domestic to the export market may reduce peanut program costs sufficiently to benefit taxpayers. In other cases, everything may be "right," i.e., supply and demand is price inelastic, export and U.S. market shares are large, trade barriers and domestic policy considerations are not an issue, yet the commodity is not a promising candidate for export promotion because it lacks sufficient uniqueness to make it promotable. Product promotability is enhanced by the existence of unique product attributes, a large latent demand, frequent product or price changes, and the availability of substitutes (Forker and Ward, pp. 42-48; Parish, pp. 28-9).[5]

Although the foregoing analysis summarizes the forces that govern the optimal allocation of funds among commodities, it does not address price support policies that have a bearing on allocation decisions. For example, commodities affected by deficiency payments in general will not benefit from export promotion unless the market price is pushed above the support price, which is unlikely if target prices are substantially above world prices (e.g., cotton prior to 1994 and peanuts). Thus, producers in these industries may be reluctant to fund foreign market development activities. DeBoer (p. 138) argues that, *ceteris paribus*, national welfare is enhanced if export promotion funds are allocated to commodities that receive little government support and are able to attract resources from more highly protected industries. This would suggest, for example, other things being equal, that monies be directed toward catfish promotion and away from cotton promotion.

An additional caveat is that the analysis fails to take into account the method of financing export promotion. DeBoer (p. 138) notes that, "Export promotion assistance leads to a change in welfare which is the sum of private exporter surplus and the national gain in efficiency of resource allocation less the cost of promotion." His analysis suggests that terms of trade are enhanced if a levy on exporters is used to finance the export promotion rather than a direct government subsidy.

Despite the foregoing limitations and complexities, the five laws provide a basis for improved allocation of public monies to commodity promotion endeavors. As North American Free Trade Agreement and General Agreement on Tariffs and Trade provisions are implemented and U.S. agriculture is deregulated, the interference of commodity price-support and other government policies with the laws' operation should diminish. At the same time, however, to implement the laws, more and better empirical information is needed on key parameters, especially export promotion elasticities.

Conclusion

Despite large increases in public assistance for foreign market development over the last decade in the United States, total expenditures remain modest relative to the value of U.S. agricultural exports and are below the level that would be considered optimum based on the Nerlove-Waugh theorem. Societal benefits from increased public expenditures on foreign market development stem from reduced treasury outlays for agricultural price supports, potential reduction in adjustment costs as U.S. agriculture is deregulated, and pareto improvements associated with addressing the underfunding of export promotion by the private

sector. However, to maximize these benefits, increased attention needs to be paid to the economic factors that govern export promotion effectiveness. These factors include demand, supply and export promotion elasticities, export and U.S. market shares, and government policies affecting agricultural markets. In general, societal benefits from foreign market development activities are probably substantial only in cases in which the value of the product traded is large, the exportable surplus is large, the export demand elasticity is small, and the U.S. product has at least one unique characteristic that lends itself to non-price promotion.

NOTES

Henry W. Kinnucan is Professor, Department of Agricultural Economics and Rural Sociology, Auburn University. Karen Z. Ackerman is an Economist with the Economic Research Service, U.S. Department of Agriculture. *Appreciation is expressed to Xiao Hui for checking the mathematical derivations.*

1. Budget concerns rather than public sentiment appear to be behind efforts to reduce agricultural subsidies. In particular, a 1986 opinion survey revealed that a majority (67%) of Americans *do not* agree with the statement "Farmers should compete in a free market without government support" (Duffy and Molnar, p. 124).

2. Although producer surplus maximization is a narrow criterion, it can be justified on the ground that export promotion relies on industry funding. The criterion is consistent with the collective-good perspective in which the role of government is to address externalities associated with free-riding and cross-commodity substitution.

3. In cases where commodities have significant domestic promotion programs (e.g., beef or citrus), the tradeoff between domestic and export promotion would need to be considered. This would be especially important when check-off dollars are to be diverted from domestic promotion to export promotion. These complications, however, detract from the focus of our analysis, which is to determine the factors that govern the optimal allocation of federal export promotion dollars among commodity groups.

4. Equation (10) can be derived from McCloskey's (p. 144) excess demand formula (notion changed to reflect our symbols) $E_x = (Q_D / q_{us}) N + (Q_S / q_{us}) E_{row}$ where q_{us} is the U.S. quantity exported, Q_D is the total quantity demanded in the export market, and Q_S is the quantity supplied to the export market by countries other than the United States. First note that by definition, $m = q_{us}/ Q_D$; therefore $Q_D / q_{us} = 1/m$ as in equation (10). Next note that in equilibrium $q_{us} = Q_D - Q_S$. Thus, the coefficient of E_{row} can be rewritten as $(1/m) - 1$, which is equivalent to $(1 - m)/m$. Q.E.D.

5. That the availability of substitutes may influence promotability is suggested by Parish's comment (p. 28, ft.n. 3): "Promotability and price elasticity are presumed to be related because both are related to the readiness with which consumers substitute the good concerned for other goods, and *vice versa*." This is consistent with Theil's hypothesis discussed earlier that advertising elasticities are proportional to price elasticities. Note, however, that promotability should not be confused with advertising effectiveness. The latter refers to the ability of a *given advertising expenditure* to increase price. Thus, for example, if two commodities have the same export promotion elasticity, *ceteris paribus*, the payoff to increased promotional spending is larger for the commodity with the *less elastic* demand.

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