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**RURAL PRODUCT PROMOTION:
ECONOMIC ASPECTS OF PROMOTABILITY,
ORGANIZATION AND PUBLIC ASSISTANCE**

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The economic theory of product promotion has been developed within the framework of the theory of imperfect competition and under rather restrictive conditions. Application of these theories to rural product promotion is, in most cases, of limited value. This paper first examines some characteristics of agricultural product markets which necessitate modification of standard promotion theory. Some further complex issues in promotion theory as it relates to agricultural products are then examined. These include the stabilization of funds for financing promotion expenditures, promotion strategy under price discrimination schemes characteristic of several Australian primary product markets, the welfare consequences of promotion by primary producer promotion cartels, possible terms of trade effects of overseas promotion expenditures, and subsidies for rural product promotion as a form of tariff compensating income transfers. The paper concludes with a discussion of the cases for public intervention in rural product promotion.

1 INTRODUCTION

Rural product promotion is often seen as a means of reversing the long-term relative decline in domestic food expenditures, gaining a larger share in export markets, and slowing down or even reversing substitution trends in raw fibre markets [13, 33]. Promotion is also of current interest since levies for this purpose are being closely scrutinized by primary industry groups facing cost-price pressures.¹ As well, the Commonwealth Government annually contributes over \$10 million in direct financial assistance for rural product promotion and the case for this assistance was recently reviewed by the Industries Assistance Commission [13].²

* Department of Agriculture, University of Queensland. I wish to acknowledge the assistance of Ken Menz and Don Vernon with an earlier version of this paper and the helpful comments by referees and the editors of this *Review*. Remaining errors are mine.

¹ Rural product promotion of an industry-wide nature is usually financed by levies on all producers to avoid "free rider" problems associated with promotion or research carried out in competitive industries. For some Australian examples, see Tisdell [30].

² Recent data collected by the IAC put total expenditure on rural product promotion (excluding brand promotion) at \$44 million of which wool absorbs about 85 per cent. Most Commonwealth assistance is directed towards export markets and, apart from wool, is channelled through the Overseas Trade Publicity Committee. In July, 1977, the Commonwealth agreed to provide \$19.9 million in 1977-78 for promotion and research undertaken by the International Wool Secretariat and to maintain the existing arrangements with the Overseas Trade Publicity Committee as well as to guarantee loans taken out for promotion purposes by collective marketing organizations.

Several complex yet relevant topics in this field remain unexplored, however; thus guidelines for theoretical and empirical research into rural product promotion remain incomplete. This paper explores a number of these issues by first reviewing promotion theory in general and the special problems of agricultural products in particular. These special problems are related to market structures and organizational considerations. Next, the financing of rural product promotion is considered by concentrating on the stabilizing of levy receipts available for the promoting agency, and the influence of rural product promotion on the stability of total industry revenues. Promotion under price discrimination schemes is then examined since this form of marketing arrangement is used in some areas of Australian agriculture. The optimal social level of promotion by promotion cartels is the next topic explored and a welfare analysis is developed, and the issue of public support for rural product promotion as a form of tariff compensation is discussed. Finally, the issues relating to other cases for public support for rural product promotion are summarized.

2 PRINCIPLES OF PRODUCT PROMOTION AND APPLICATIONS TO RURAL PRODUCT MARKETS

2.1 BASIC DEFINITIONS AND CONCEPTS

Promotion encompasses those activities intended to enhance the output of a firm or industry without altering either the physical characteristics or location of the output over space or time. This definition is restrictive as it excludes product differentiating activities (since these are image enhancing rather than output enhancing activities) and product differentiation is discussed later under aspects of promotability. The vehicles for promotion are grouped into advertising, personal selling, sales promotion and publicity. Since any one of these is seldom used in isolation, determination of the optimal mix of promotion methods has received considerable attention [15, pp. 315–320]. Advertising is usually the most important element at the retail level but at intermediate levels (e.g., the market for industrial goods) promotion may be the exclusive function of personal sellers concentrating on the technical specifications of the product. Some key elements in the choice of promotion techniques mentioned by Telser [27] are market size, cost of contacting potential buyers, and the absence or presence of substantial production diseconomies.

An alternative approach to the analysis of product promoting activities focuses on the information component. In this framework promotion consists of “. . . any identifiable effort on the part of a seller to persuade buyers to accept the seller’s information and to store it in retrievable form . . .” [15, p. 9]. Nelson’s [19] classification of advertising information into search qualities and experience qualities is useful in explaining many observed relationships between advertising and market power, product characteristics, and consumer memory. Search qualities of a product are those qualities which can be determined by inspection prior to purchase such as the style of a dress. Experience qualities, on the other hand, cannot be adequately determined prior to purchase;

experience with the product is the only option (e.g., canned fish). Many intermediate cases exist, particularly for rural products such as fresh fruit where inspection provides search qualities related to blemishes, size and colour while only actual use of the product via tasting will provide experience characteristics such as sweetness.

The analysis of product promotion has a long history in the literature under "selling costs". This is an integral aspect of Chamberlin's [2] analysis of imperfectly competitive market structures where the price-output solutions revolved around varying selling costs with fixed prices and quantities, or varying prices with quantity and selling costs fixed. The more general solutions of Dorfman and Steiner [5] and Ozga [21] allowed simultaneous variation of price, quantity, quality, and selling costs and it is upon these models that most rules for promotion expenditures are based. These rules are concerned primarily with determining the optimum ratio of advertising expenditures to sales for individual firms possessing some control over market price and industry output. The Dorfman-Steiner theorem is widely used in assessing the promotion of consumer products although the applicability of this theorem to agricultural products is questionable.³ Modifications made by Nerlove and Waugh [20] analysed the problem associated with a lack of supply control for agricultural products although the usefulness of their approach has recently been questioned by Tisdell [32].⁴

³ Hoos [10] and Parish [22], among others, are highly critical of the restrictive assumptions (and the resulting weakness of the theorem) needed for the derivation of the Dorfman-Steiner results. Hoos traces this to the lack of a behaviouristic anchor on which to tie advertising theory as opposed to the maximization assumptions which give the theories of demand and production their power. Thus the theory of advertising rests upon an empirical rather than behavioural assumption; i.e., sales respond positively to advertising expenditures. Furthermore, a number of possibilities exist regarding the response of prices, quantities and sales revenues to promotion expenditures [3, 10, 20, 26]. The fact remains, however, that the presence of substantial expenditures on promotion (particularly advertising) in imperfectly competitive markets by firms which are assumedly maximizing profits would indicate that promotion would fall under one of the variables which firms manipulate to maximize profits and can thus be regarded as part of the profit maximizing framework upon which neo-classical firm theory is based. A number of recent studies have tended to confirm the very close correspondence between the optimal ratio of advertising expenditures to total sales (as forecast by the Dorfman-Steiner theorem) and the ratio actually observed by firms in imperfectly competitive industries [17, 18, 34].

⁴ The question of what should be taken as an "equivalent" shift in the demand curve arises in Tisdell's analysis. Surely, the "equivalent" displacement of a demand curve must be measured along the supply curve so the rightward shift in demand is that required to increase product price by x per cent. Looked at in this way, the shift outwards in demand required to secure a given price increase will always be larger for an elastic demand curve which conforms to the Nerlove-Waugh result. Analysis of an "equivalent" vertical shift in the demand curve would only seem relevant where supply is fixed in the short-run so the supply curve is perfectly inelastic and even in this case a much larger shift in the elastic demand curve is required to secure a given increase in industry quasi-rents. Finally, Tisdell's application of the Nerlove-Waugh theorem appears inconsistent. First, he states [32, p. 103] that since the own-price elasticity of wool may have increased, *ceteris paribus*, the Nerlove-Waugh theorem suggests that the optimal advertising intensity (ratio of advertising expenditures to total sales) should decrease. Later (pp. 104-105) he states that, since some writers have suggested that the own-price elasticity of wool has declined, the optimal advertising intensity should also decline. This last statement seems inconsistent with Nerlove and Waugh's result and contradictory to his earlier statement.

2.2 CRITERIA FOR PRODUCT PROMOTION

Traditionally, the results of the Dorfman-Steiner theorem have served as a basis for promotability criteria. According to this formulation, the optimal ratio of advertising expenditures to total sales equals the ratio of the advertising elasticity of demand to the own price elasticity of demand. Therefore, the more inelastic is the demand curve facing the firm, the higher the advertising intensity. The advertising intensity of a firm producing in a competitive industry should be zero. Therefore, market structure is a major criteria for product promotion *at the level of the individual firm*. It may be quite profitable for an *industry* operating under competitive conditions to promote, however, and additional criteria are necessary in considering the feasibility of promotion on an industry level.

The supply response generated from promotion induced changes in demand also has an important bearing on the results of promotion expenditure. This is crucial for rural products since capital and other resources, once attracted into agriculture, may not easily move out of agriculture in the face of a declining derived demand for their services. As Nerlove and Waugh [20] illustrate, in an industry characterized by strong external economies in production, price declines in response to increased demand, and industry receipts may rise or fall. Supply conditions also have a bearing on why processors or distributors often find advertising profitable as they commonly operate under constant or decreasing cost conditions and are thus able to realize constant or increasing per unit profits as demand responds to promotion. Farmers, on the other hand, may tend to lose most of the potential benefits of increased raw product demand in the form of rising marginal costs. Even if existing producers are operating under constant cost conditions, these producers may gain few promotion induced benefits if new entrants into the industry can enter at constant costs. The increments in industry revenue accrue to the new entrants rather than to existing farmers. Additional factors stressed in the literature as being conducive to product promotion are (1) a high turnover of goods and/or buyers, (2) coordination of promotion activities with selling activities to ensure product availability, (3) a large number of potential customers, (4) low consumption levels or unfamiliarity with the product, (5) the products should be subject to technical change so product differentiating activities will be part of the promotion mix,⁵ (6) the product should have some emotive content, and (7) a minimum or "plateau" level of expenditure may be necessary before the effects are felt in the market.

2.3 PROMOTION THEORY AND SPECIAL CHARACTERISTICS OF AGRICULTURAL MARKETS

The supply characteristics of most agricultural industries are such that the quasi-rents arising from successful promotion activities will accrue to existing members of the promotion cartel only for a short period of time

⁵ Promotion was earlier defined so as to exclude product differentiation but in practice promotion activities tend to follow a successful differentiating innovation and thus the two facets often appear together as a "package".

since additional resources will be attracted to the industry concerned. This result can also be advanced as a rationale for subsidies for rural product promotion to attract resources from less efficient industries. This argument is discussed in sections 3.4 and 4.

Another characteristic is product differentiation and the seeming lack of product differentiation for most agricultural raw products. A major justification for advertising in imperfectly competitive markets is the provision of information leading to a more effective differentiation of the product in the eyes of the purchaser which should lead to a more inelastic demand curve for the product through a reduction in cross-demand effects. Again, however, the distinction between the firm and the industry, as well as between the various forms of the product, must be made. While the output of individual farm firms is, in general, indistinguishable from that of other producers, the product of the industry as a whole may be promoted relative to (1) the agricultural products of competing industries, and (2) the competing products of non-agricultural origin. This is another reason why promotion on an industry-wide cartel basis may be called for. Even when no differentiation is possible, advertising is no longer rational but non-advertising forms of promotion are often used to increase sales. These include personal contact selling, publicity, and the provision of extra services connected with the merchandising of the product. Another difference in agricultural markets is that promotion may be carried out at all levels in the marketing chain in certain circumstances, i.e., at the raw product, semi-finished and finished stages but the type of promotion will change at each stage. Examples are generic promotion of the raw product, personal selling or technical assistance at the semifinished stage and brand name advertising at the finished product level. Generic promotion may also take place by focusing on a *class* of semifinished or finished products or on the region of production of the raw product. This is commonly carried out in export markets where brand names are not mentioned but the products as a class are promoted, e.g., wool, meats, dairy products and canned or dried fruits.

Finally, the elasticities characteristic of many agricultural markets also tend to differentiate these markets from those of industrial products. Own-price elasticities for a group of related products tend to be low as do the elasticities for food as a whole. Individual products sometimes exhibit low elasticities as well.⁶ Income elasticities of primary products tend to be low and one rationale for promotion is to reverse that situation and lead to market growth. Cross-price elasticities are generally high for individual commodities within market groups and therefore reaction effects by consumers can have an important influence on (1) the sales of the promoted product and (2) the sales of substitute products if the promotion is successful and the market price rises. This is one reason why generic promotion on the domestic market is often counterproductive [13, pp. 38-41]. Finally, cross-price elasticities of supply for groups of agricultural products which are related through similar resource require-

⁶ For a recent review of estimated elasticities for some major Australian agricultural products, see Richardson [24].

ments may cause shifts in the supply schedules of these related commodities as the price and/or quantity produced of a promoted commodity (or commodity group) increases. However, given the efficacy of most rural product promotion (at least in the short run) and the lack of rapid resource adjustment by farmers, these supply effects would almost certainly be minor compared with other market effects.

2.4 ORGANIZATIONAL CONSIDERATIONS

Promotion of agricultural products is carried out by commodity producing groups organized co-operatively, regional or national trade associations acting on behalf of producers, processors or manufacturers, co-operatives engaged in manufacturing and processing rural products, and private firms selling under brand names. The organized commodity groups take the form of co-operatives, commissions, boards or councils.

Primary producer commodity promotion groups operate within a somewhat different economic framework than the hypothetical firm often discussed in economic theory, as they tend to be restricted in their control over most production and marketing functions during the marketing process. Most promotion decisions such as pricing, packaging and quality control are made by shippers, processors, wholesalers or retailers while output decisions are made independently by each producer in the organization. For this reason, promotion efforts by primary producer groups are generic in nature and not oriented towards increasing demand for specific brands. Exceptions are co-operatives which may advertise on a regional basis or market under a brand name. At the wholesale level promotional activities are directed primarily towards intermediate product users such as industrial consumers of rural products. As such, these activities provide more direct information than most retail promotion. Marketing boards often would be acting as wholesalers providing raw agricultural products to processors or retailers domestically or overseas. Many processors or wholesalers also market at the retail level through brand names. The incidence of promotion between various levels in the marketing chain is discussed by Telser [27] who found the major determinants were product characteristics and relative cost of providing knowledge to consumers. The knowledge component of frequently purchased items is normally provided through advertising by the producer rather than through retailers as a trial purchase is inexpensive and usage will reveal product characteristics. Less frequently bought items are more difficult to evaluate in advance and are thus promoted at the retail level since it is at this level that the retailer can focus consumer attention on the product and provide direct information on the product prior to usage. Table 1 summarizes a number of aspects considered in sections 2.1–2.4 above. In many instances, no clear guidelines are available for indicating (1) the appropriate theory or methodology for assessing the promotion prospects for an industry, (2) the form of financing which should be used, and (3) the desirability of public assistance for rural product promotion. The next section develops several extensions needed to more adequately assess the results of rural product promotion in the light of complex marketing arrangements, funding schemes, and government assistance policies.

DE BOER: RURAL PRODUCT PROMOTION

TABLE 1: Market Characteristics and Promotability—A Summary

Product or product group	Supply control	Product differentiation	Types of promotion	Domestic/overseas promotion	Sources of promotion funds	Methodologies used or most appropriate	Promotability
(1) Wool	None	Some at retail and processing	Brands, generic at retail, technical assistance	Primarily overseas	Industry levies plus government	Marginal response to advertising (13); game theory (32)	High to moderate
(2) Red meats	None	Very little possible	Brands, generic at retail, assistance with promotion	Primarily overseas	Marketing board levies	N-W (20) and price discrimination model (Sect. 3.2) seem appropriate	Moderate domestically, good overseas
(3) Fluid milk	Controlled	None	Generic at retail	Domestic only	Milk boards	D-S (5) and lagged marginal responses (29)	Low to moderate
(4) Eggs, sugar	Controlled	None	Generic at retail, some brand names	Mainly domestic promotion	Marketing boards	D-S (5) applied to price discrimination model (Sect. 3.2)	Low
(5) Wheat, oilseeds	Wheat quotas only	None	No generic, brand names for processed products	Domestic only, trade assistance for wheat overseas	Marketing boards	Not applicable	Very low
(6) Cotton, honey	None	Very limited	Brand names domestically, generic overseas	Primarily overseas	Industry levies	N-W (20): perhaps game theory for cotton blends (32)	Low
(7) Processed dairy products, processed fruit and vegetables	Variable degrees of supply control	Some possible through processing	Brand names, regional promotion, generic overseas	Primarily overseas	Private plus industry levies	D-S (34): control theory (9); price discrimination models (Sect. 3.2)	High to moderate overseas, limited domestically
(8) Fresh fruit and vegetables	None	None	Generic and some brands for specific products, seasonal promotions	Domestic only	Marketing organizations	N-W (20); lags for seasonal factors	Moderate to high
(9) Pig meat	None	None	Generic for pig meat, some brands for processed products	Domestic only	Private, producer organizations	N-W (20): price discrimination for fresh-processed markets	Moderate
(10) Poultry	Company controlled	None	Brand name mainly	Domestic only	Private processors	D-S (5)	Moderate

N.B.—Many of the above commodities receive promotion assistance overseas through the Overseas Trade Publicity Committee but these funds are not tied to industry contributions.

3 SOME EXTENSIONS TO THE THEORY OF PROMOTION

3.1 FINANCING PRINCIPLES

A number of methods are used to finance expenditures on rural product promotion, including (1) selection of arbitrary amounts of residual funds, using all residual funds, or a predetermined proportion of residual funds; (2) a predetermined proportion of sales revenue; (3) a fixed levy per unit of product sold; (4) periodic appropriations to meet the competition; and (5) sufficient allocations to meet a specific objective or specific task. For reasons advanced previously, the promotion of most primary products tends to be by industry-wide levies, and hence the financing methods (2) and (3) above would be the most appropriate for most cases since the other methods all involve a degree of flexibility in the generation and allocation of promotion funds normally associated with individual business firms rather than with large and diverse rural industries. Therefore, the subsequent discussion will focus on methods (2) and (3) above; and in particular on the choice of the appropriate method to achieve some stability in funding promotion activities.

This problem of funding stability for promotion agencies has been a major problem for rural industry in general and for the International Wool Secretariat (IWS) in particular, as Tisdell and McDonald note: "The intensity of promotional effort has oscillated since 1964-65 because price fluctuations in the main, have caused the value of the Australian wool clip to vary greatly and growers' contributions for promotion have been based on a relatively fixed percentage of this value. These fluctuations affect the total amount of funds available to bodies such as the International Wool Secretariat for promotional purposes and hamper their long-term planning" [33, p. 190].

The question of stability of receipts for financing rural product promotion must be considered from two viewpoints—the promoting authority's viewpoint which requires a fairly stable, predictable source of funds for staffing and long-term planning, especially since lags and follow-up campaigns are often involved; and the individual primary producer's viewpoint which requires that levies should not increase during periods of depressed prices or should even decrease so a direct price-levy rate relationship should prevail.

This problem arises if prices rather than aggregate output are the major source of industry revenue variation. The greatest pressure for levy reductions will occur when total industry receipts are depressed as occurred during the early 1970's wool slump when the government, in an attempt to maintain fairly stable funds for the IWS, had to increase its contribution (as a percentage of the value of the clip) from 1-2 per cent over the 1964-65-1968-69 period to almost 4 per cent in 1970-71. To sort out these stability relationships, the primary source of industry changes in total revenue must be distinguished, some assumptions must be made regarding promotion effects, and the form of levy must be specified.

Case 1—Inelastic demand, fairly stable supply, large shifts in demand. The total revenue TR varies more than quantity Q supplied but in the

same direction and a fixed percentage levy on industry TR will give larger fluctuations in promotion funds than a fixed levy on the Q sold. A flexible percentage levy on TR will provide a stable promotion fund but accentuate industry income swings since the lower is industry TR the higher the levy rate on TR will have to be. The more inelastic is the supply curve, the less is the variation in industry promotion funds from a fixed levy per unit sold.

Case 2—Inelastic demand, fairly stable demand, large shifts in supply. TR varies more than Q supplied but in the opposite direction. A short supply year results in an increase in promotion funds from a fixed levy on TR but a decrease in funds from a fixed levy per unit sold. The latter funding method provides less variance in industry promotion funds than the former. If the industry requires less promotion funds during a period of high TR then the fixed tax per unit sold is the appropriate funding method although there may be producer pressure to reduce the levy rate during large supply periods when industry TR falls.⁷

Case 3—Elastic demand, fairly stable supply, large shifts in demand. Similar to case 1 when the “equivalent” shift in the more elastic demand curve is measured horizontally. The variations in both Q and TR are less for an equivalent shift of the more elastic curve so the more elastic is the demand curve facing the industry the less variable will be the promotion funds financed by fixed levies on Q or TR .

Case 4—Elastic demand, fairly stable demand, large shifts in supply. Q and TR move together but variations in Q are greater than variations in TR so industry promotion funds are more stable under a fixed levy on TR than under a fixed levy on Q . In either case, levy receipts would rise in a large supply year and fall in a short supply year.

Given the fluctuations in levy receipts which will occur under either levy scheme and assuming no government contributions to stabilize promotion expenditures, what are the implications of promotion for the stability of industry revenue?⁸ This requires assumptions regarding shifts in demand and supply as well as the influence of promotion on demand. In practice these are essentially empirical questions so all that is attempted here is a simple analytical framework.

Assume for cases 1 and 3 that demand shifts out cyclically (say a 3–4 year period of expanding demand followed by a 3–4 year period of contracting demand) and that promotion funds collected in year t cause their major impact on demand in the year $t + 1$ through a rightward shift in the demand schedule, the shift being proportional to levy receipts. In this situation, regardless of the elasticity of the demand curves being considered, promotion tends to be destabilizing during the upward and downward swings in demand whichever financing method is used. As

⁷ The question of using variations in funds available for promotion to help achieve industry stability is considered below.

⁸ This discussion assumes that some merit is attached to industry revenue stabilization which can be questioned on a number of grounds. See Houck [11] for a recent discussion on the stabilization of Australian primary product receipts.

demand increases, promotion levies grow and expand demand even more thus accentuating the boom while during the downward phase promotion expenditures should be continually increasing to counteract the downswing but will decrease under either form of levy. The obvious solution in cyclical demand cases is the establishment of reserve funds during boom periods to be used during periods of declining demand. The use of reserve funds also allows the levy rate to vary to overcome producer resistance to a fixed levy rate during periods of low total revenue. The levy rate could thus vary proportionately to industry receipts so the large collections in boom years caused by a higher levy base plus a higher levy rate could be set aside for the lower total revenue years when the levy rate could also be reduced.

Assume for cases 2 and 4 that a one period lag operates on the supply side (a Cobweb model), demand responds positively and proportionately to promotion expenditures, and entry is uncontrolled. Figure 1 illustrates the case of a fixed levy on TR with an inelastic demand curve. An initial solution of p_e and q_e leads to a promotion budget of k (the levy rate) times $0q_eap_e$ and the demand curve D_oD_o . An exogenous shift in supply leads to a quantity q_o in the market. With the inelastic demand curve, the reduced quantity leads to larger industry revenues ($0q_obp_o$) and a larger promotion budget which shifts the demand curve to D_1D_1 . Given our lagged output assumption, this rightward shift in the demand curve in the next period helps to cushion the impact of the price induced increase in output in period $t + 1$ (from q_o to q_1). This quantity intersects the new demand curve D_1D_1 at d rather than at e and price is increased from p'_1 to p_1 . Industry TR is larger or smaller depending on the extent of the promotion induced shift in demand. One would expect in most cases that promotion effects would not be sufficient to raise industry revenue in the face of larger supplies with an inelastic demand curve, however, so a fall in TR would be expected in $t + 1$, say to $0q_1dp_1$ and since the levies collected are less than at point a , the demand curve shifts to D_2D_2 . Again, a dampening effect is evident under the fixed levy on TR scheme as the low price in $t + 1$ leads to the reduced output q_2 in time $t + 2$ but the price increasing effect of this reduced supply is lessened by the leftward shift in demand. If the demand curve is elastic, an opposite result obtains in that prices higher than p_e lead to reduced promotion revenue and a leftward shift of demand. The higher price, however, leads to increased supplies in time $t + 1$ and the price depressing effect of these larger supplies is accentuated.

Turning now to the case where the promotion levy is on a per unit sold basis and the industry demand curve is inelastic as shown in Figure 2, we find that the reduced quantity q_o leads to a smaller outlay on promotion in $t + 1$ and the demand curve D_1D_1 lies to the left of D_oD_o . The larger output in $t + 1$ is coupled with reduced demand and the price depressing effect is accentuated (from p'_1 to p_1). The larger quantity in $t + 1$, q_1 , leads to a greater outlay on advertising in $t + 2$ and a rightward shift in demand which, when coupled with reduced supplies q_2 leads to even higher prices. Thus the effect is similar to the fixed levy on TR with an elastic demand. With an elastic demand curve, a similar situation results in that the levy per unit marketed leads to demand shifts in the

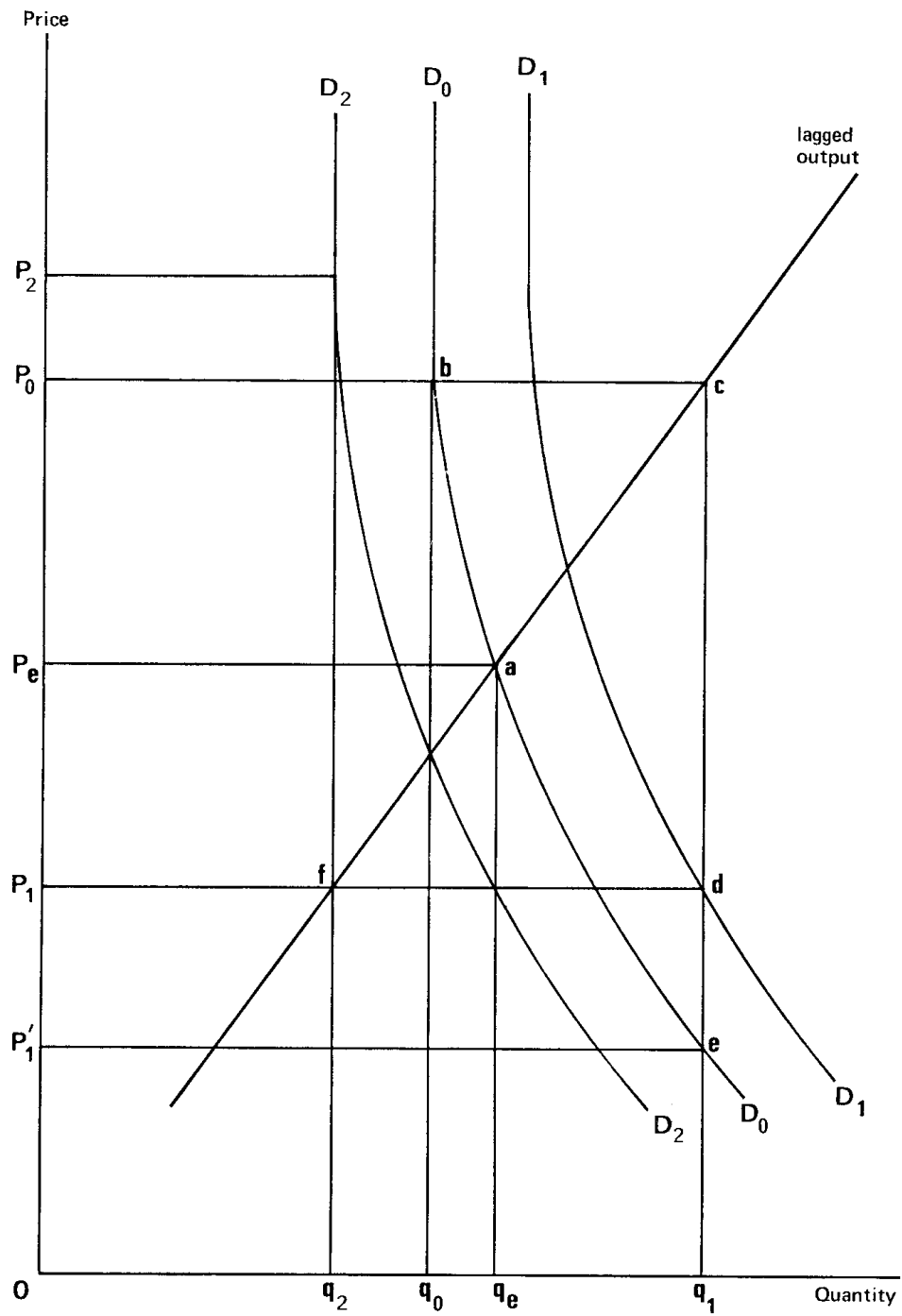


FIGURE 1: Price-output solutions under fixed levy on total revenue for product promotion

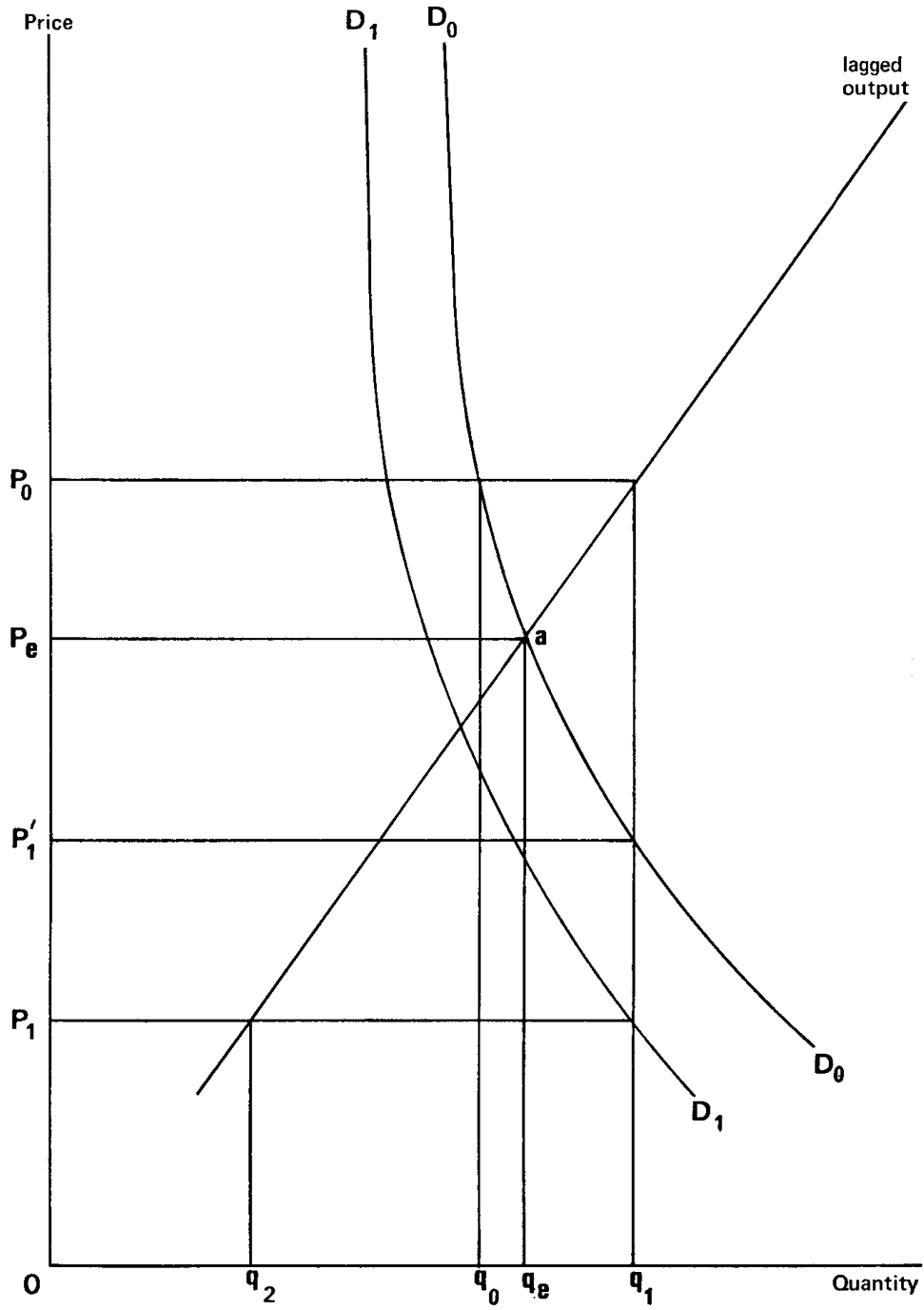


FIGURE 2: Price-output solutions under a fixed levy per unit marketed for production promotion

opposite direction to that desired for the stabilizing influence although the effect is not as pronounced for the inelastic case. A review of Australian wool demand elasticities [13, p. 188–189] indicates a probable range of from -0.3 to -0.6 . This may help explain why the method of collecting the wool research and promotion levy was changed from a per bale basis to a fixed levy on *TR* basis in 1964.

Budgetary stability in the face of price, quantity and total revenue fluctuations (upon which levies are based) can be provided by (a) the use of a reserve fund, (b) use of powers to borrow, or (c) counter-cyclical subsidies from public funds [13, p. 61]. In the Australian wool industry case, a \$1 subsidy is currently paid for each \$3 collected by the levy on woolgrowers. The IAC recommended a counter-cyclical wool promotion subsidy consisting of a yearly budgeted promotion expenditure where the levy is applied to a 4-year moving average of wool receipts, and an actual subsidy amount which is the target budget less the actual levy collections at the above rate applied to the current year's receipts. For example, the 1971–72 budgeted promotion expenditure was \$23.8 million, of which the grower contribution target was \$14.21 million.⁹ The 4-year moving average of industry receipts was \$661 million per year and a 2.15 per cent levy on this would have raised the \$14.21 million. Actual receipts were only \$627 million and the 2.15 per cent levy on this amount would have raised \$13.48 million so the government contribution to maintain the budgeted expenditure would have been \$10.32 million [13, pp. 204–205]. The IAC Report recommended that the government subsidy be phased out after 6 years and the first two methods of countering variable industry promotion funds be used after this period.

3.2 PROMOTION IN MULTIPLE MARKETS

For a number of rural products, a significant proportion of production is sold on export markets where demand elasticities tend to be higher than on domestic markets. For other products, markets are effectively differentiated through the form of the product, e.g., fresh and canned fruit. If the industries have a sufficient degree of supply control and the ability (through natural market effects or legislative assistance through import embargoes, etc.) to effectively separate the markets, then the industries concerned may be able to maximize producer quasi-rents by acting as a price discriminating monopolist. Given the different elasticities which must prevail in the separated markets for the scheme to be effective, the intensity of promotion should also differ between the markets.

The Dorfman-Steiner theorem is relevant to this case. Briefly the theorem states that the optimal advertising intensity (the ratio of advertising expenditure to total sales, θ) equals the ratio of the advertising elasticity of demand ε to the own-price elasticity of demand η or

$$\theta = \varepsilon / -\eta. \quad (1)$$

⁹ The rate of grower contribution is the budgeted promotion expenditure less 50 per cent of levy collections in the preceding year times 50 per cent. For 1971–1972 the target grower contribution was 60 per cent of the budgeted promotion expenditure.

The optimal conditions in a price discrimination situation occurs where

$$\frac{p_1}{p_2} = \frac{1 - \frac{1}{\eta_2}}{1 - \frac{1}{\eta_1}} \quad (2)$$

where (p_1, p_2) refers to the prices charged in the two markets and (η_1, η_2) are the own-price elasticities (in absolute value terms).

Substituting (1) and (2) yields

$$\frac{p_1}{p_2} = \frac{1 - [\theta_2/\varepsilon_2]}{1 - [\theta_1/\varepsilon_1]} \quad (3)$$

Simplifying gives

$$\frac{p_1}{p_2} = \frac{[\varepsilon_2 - \theta_2]/\varepsilon_2}{[\varepsilon_1 - \theta_1]/\varepsilon_1}, \text{ and} \quad (4)$$

$$\frac{\theta_2 - \varepsilon_2}{\theta_1 - \varepsilon_1} = \frac{p_1 \varepsilon_2}{p_2 \varepsilon_1}. \quad (5)$$

Thus the ratio of advertising intensities (the θ 's) is a function of the advertising elasticities of demand and the profit maximizing price levels charged in each market (p_1, p_2) . If we assume that market 1 is the more inelastic market then $p_1 > p_2$ and if we assume (for the moment) that $\varepsilon_1 = \varepsilon_2$ then $\theta_2 > \theta_1$, i.e., the advertising elasticity of demand is higher for market 2, the relatively more elastic market. In reality, a higher advertising elasticity of demand would normally be associated with a higher own-price elasticity of demand through cross-elasticity effects [17, 18] and this would further increase the advertising intensity in market 1 relative to market 2. Within the Australian context, these results indicate that where effective two-price schemes are operating and where the product possesses some characteristics allowing for promotability, more advertising effort should be directed towards more elastic markets such as export markets or processed food markets relative to the more inelastic markets.

3.3 WELFARE ASPECTS OF RURAL PRODUCT PROMOTION BY PRODUCER CARTELS

This section develops the welfare analysis behind a key argument for possible public intervention in promotion activities: underinvestment or overinvestment in those activities.¹⁰

Two quite distinct aspects of the social effects of product promotion and of advertising in particular are often mentioned. The first concerns the criticism of advertising's often socially offensive nature and has been a feature of the popular literature on advertising. The second aspect is what concerns us here: the socially optimal level of various types of advertising messages. The arguments have centered on the fact that

¹⁰ Parts of this discussion draw heavily on a paper by Clem Tisdell [31].

advertising, particularly of consumer type products, is supplied jointly or in common with goods and services [14], and, since no separate market for advertising messages exists (as consumers cannot indicate their willingness to pay for advertising), the sales of advertised commodities are used to subsidize the advertising services. Subsidies lead to welfare losses; therefore the nature of advertising is such that it leads to welfare losses. While Kaldor did not conclude that this characteristic of advertising messages led to socially excessive levels of advertising, his results are usually interpreted to lead to this conclusion [6, 7]. However, others have argued that the economies of joint production would be lost in a separate market for advertising messages and there could be no over-advertising in a free entry world [15, 28]. However, another argument has recently been developed by Tisdell [31] which is of particular relevance to primary producer groups using producer promotion cartels and which shows that advertising may be socially under-supplied in certain cases. Tisdell's analysis rests on the presumption of lack of knowledge of a product by at least some potential consumers of that product. Thus the case for promotional cartels under-promoting their products rests on some products being unfamiliar to some individuals. The aim of this cartel is to maximize quasi-rents of all firms in the industry through convincing an optimal number of individuals to try the industry's product. The conflict which may arise between industry quasi-rents and consumers' surplus can be illustrated by assuming consumers have the same demand for product x . An expansion in the number of consumers causes industry demand to shift from D_1 to D_2 in Figure 3.¹¹ If the industry supply curve is upward sloping, quasi-rents rise but a conflict between informed and previously uninformed consumers arises as more consumers enter the market forcing the price up. Consumers' surplus *as a whole*, however, falls if the industry supply curve is sufficiently inelastic and rises if the supply is sufficiently elastic, given the assumed movement in the demand curve. Tisdell thus concludes that:

“Assuming that other prices do not change or do not alter significantly and that changes in consumers' surplus are a reasonable measure of gains to consumers as a whole and that variations in quasi-rents measure gains to producers as a whole, then in order to achieve a social optimum in the Kaldor-Hicks sense, promotional effort should be such as to maximize consumers' surplus plus quasi-rents from product x less promotional costs. Otherwise, gainers from an alteration in promotional effort can compensate losers for their losses” [31, p. 12].

In other words, promotional effort must be such that marginal consumers' surplus plus marginal quasi-rent (less promotional costs) equals the marginal cost of promotion. Given this condition, a promotional cartel seeking to maximize members welfare will not spend a socially optimal amount on promotion unless consumers' surplus does not vary with promotional effort. Reverting to our earlier discussion, if industry supply is inelastic, consumers' surplus declines as promotion occurs and the cartel thus over-promotes relative to the social optimum. If, on the other

¹¹ The assumption that consumers have the same demand for product x means that the demand curve rotates out from its upper fixed point as the number of consumers increases.

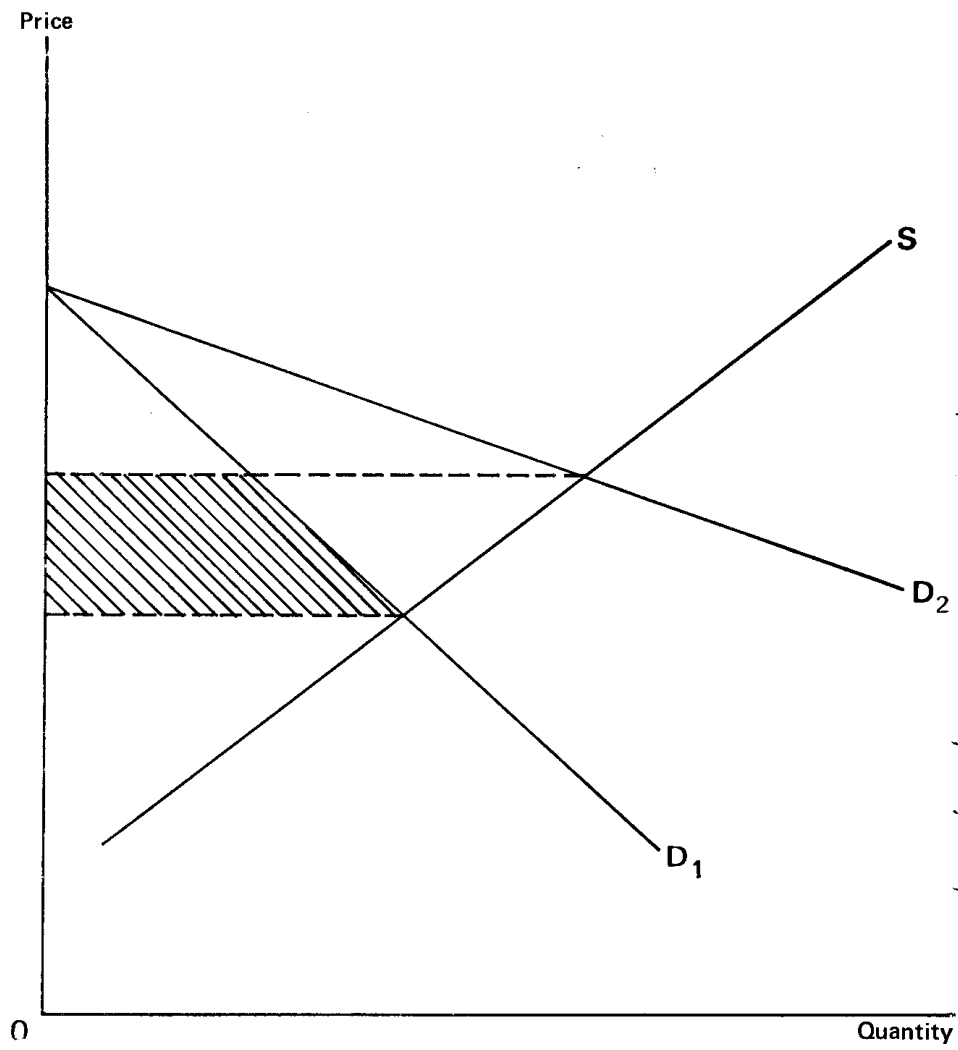


FIGURE 3: *Effect of promotion on consumers' surplus*

hand, supply is elastic then consumers' surplus increases with promotion, the cartel is unable to appropriate all marginal gains from promotion, and less than socially optimal levels of promotion occur.

Turning to promotion by monopolists, the case of increasing production costs results in the same conclusions as in the preceding discussion of cartels; i.e., if marginal production costs are inelastic, over-promotion could be expected but if marginal cost is sufficiently elastic, promotion is less than the socially optimal level. If the monopolist's marginal costs are constant or decreasing then a less than socially optimal level of promotion expenditure is likely to result. With the assumption of all individuals having the same demand for the product and with decreasing costs, then as the number of consumers of product x increases, the marginal gross profit increases as does consumers' surplus since a lower price results from the demand expansion. The monopolist fails to appropriate all marginal gains from promotion and his expenditures will thus be socially insufficient [31, p. 22]. Therefore, one of the roles for government intervention in the promotion process may be to correct these sub-optimal levels of promotion by producer promotion cartels.

3.4 FOREIGN TRADE EFFECTS OF PROMOTION

The discussion of trade effects hinges on the distribution of benefits arising from promotion and terms of trade effects. While the breakdown of benefits between domestic producers and consumers is fairly straightforward, a much more complex situation arises where the commodities are exported because foreign consumer and producer reactions must be accounted for and the benefits or gains at each level in the marketing chain must be assessed.¹² The costs arise from increased industry expenditures in promotion while the benefits stem from increased efficiency in the operation of the market system by an improvement in consumer knowledge. Producers will bear most of the costs and obtain most of the benefits from promotion when demand is elastic and/or supply is inelastic while reverse situations imply consumers will bear most of the costs and obtain most of the benefits [13, p. 28].¹³ When promotion on export markets

¹² The benefits which flow back to Australian producers from increased sales on foreign markets through promotion expenditures have to be carefully assessed since intermediaries such as wholesalers and shipping conference lines operate in imperfectly competitive markets and may be able to appropriate much of the benefits. The analysis of Cassidy and Kilminster (1) appears relevant although their work considered the distribution of benefits from technical change.

¹³ The IAC Report has a breakdown of major Australian rural products showing these approximate shares [13, p. 28]:

	<i>Inelastic Demand</i>	<i>Elastic Demand</i>	<i>Inelastic Supply</i>	<i>Elastic Supply</i>
Share of costs paid by producers tends to be	Small	Large	Large	Small
Share of benefits going to producers tends to be	Uncertain	Uncertain	Large	Small
Probable examples	Milk, sugar, wheat, potatoes	(Possible lamb, beef, butter)	Wheat, milk, sugar	No major rural products, possibly poultry

is contemplated, the ability of the scheme to enhance demand is but one aspect; the other being the ability of Australian producers to appropriate enough of the benefits to cover added costs. If Australia's world market share is small and the product has no unique characteristics, the benefits of promotion flow largely to foreign producers. What is required is a low price-elasticity of export demand which may arise when the product is not easily substituted for and when the exports are a large proportion of the world export market for the commodity.

The terms of trade effects from promotion are developed in the IAC report [13, appendix 9] as part of its overall analysis of national welfare gains through export promotion subsidies for wool. The direct effect of export promotion subsidies for a lightly protected industry such as woolgrowing is to increase national welfare *if* these subsidies succeed in attracting resources into woolgrowing from other, more heavily protected industries. However, the increased supply of wool resulting from such a policy would eventually lead to an export price reduction. In the case of wool, this could be significant given the relevant elasticities and world market share contributed by Australia. The method of financing export promotion expenditures are crucial to the terms of trade argument. If the source of funds is an export levy, terms of trade for the product are improved but if the funds are from a Government subsidy the terms of trade will eventually worsen. This proposition is demonstrated as follows: Assume there is no domestic inefficiency in resource use so the welfare gain resulting from export promotion is the net increase in exporters surplus. If the industry shifts demand from D_1 to D_2 as is shown in Figure 4 through promotion at a cost of L (supply shifts from S to $S + L$), then the increase in national welfare would be the shaded area. The same level of promotion expenditure subsidized by the government rather than paid for by exporters results in the supply curve remaining at S . The gain in national welfare is shown by the shaded area in Figure 5. The subsidy worsens the terms of trade since $(P_2 - L) < (P_1 - L)$. If substantial distortions exist in the domestic market, the analysis is more complex. 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 allocation¹⁴ less the cost of promotion. If the export tax implied by given levels of price distortions in the economy is larger than the theoretical optimum export tax then national welfare can be further increased by a subsidy to export promotion. If the implicit export tax¹⁵ is not larger than the optimum export tax a greater gain in national welfare is gained through export levies, given the same level of promotion expenditures.

¹⁴ Assuming, of course, that the promotion is directed towards lightly assisted industries which are able to attract resources from more highly protected industries. Given the location of most lightly protected industries, the wage differentials required to achieve resource transfers between heavily and lightly protected industries, and the social costs involved in achieving this resource mobility along with the fairly small terms of trade effects that would ultimately filter back to Australian producers, processors, and handlers, the overall increase in national efficiency of resource use which could be expected from government subsidies in overseas rural product promotion would be very small indeed.

¹⁵ The concept and measurement of an implicit export tax is developed by Lloyd [16].

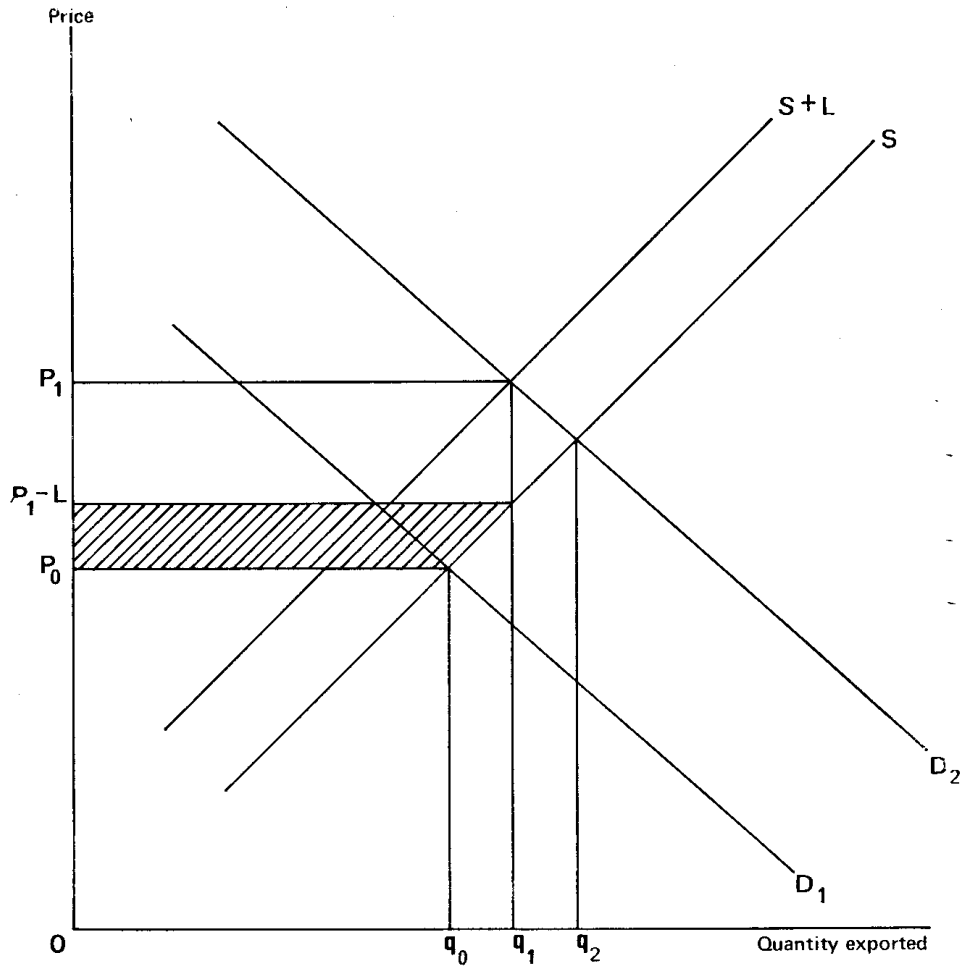


FIGURE 4: *Effect of product promotion levy on export price and quantity when exporter pays the levy*

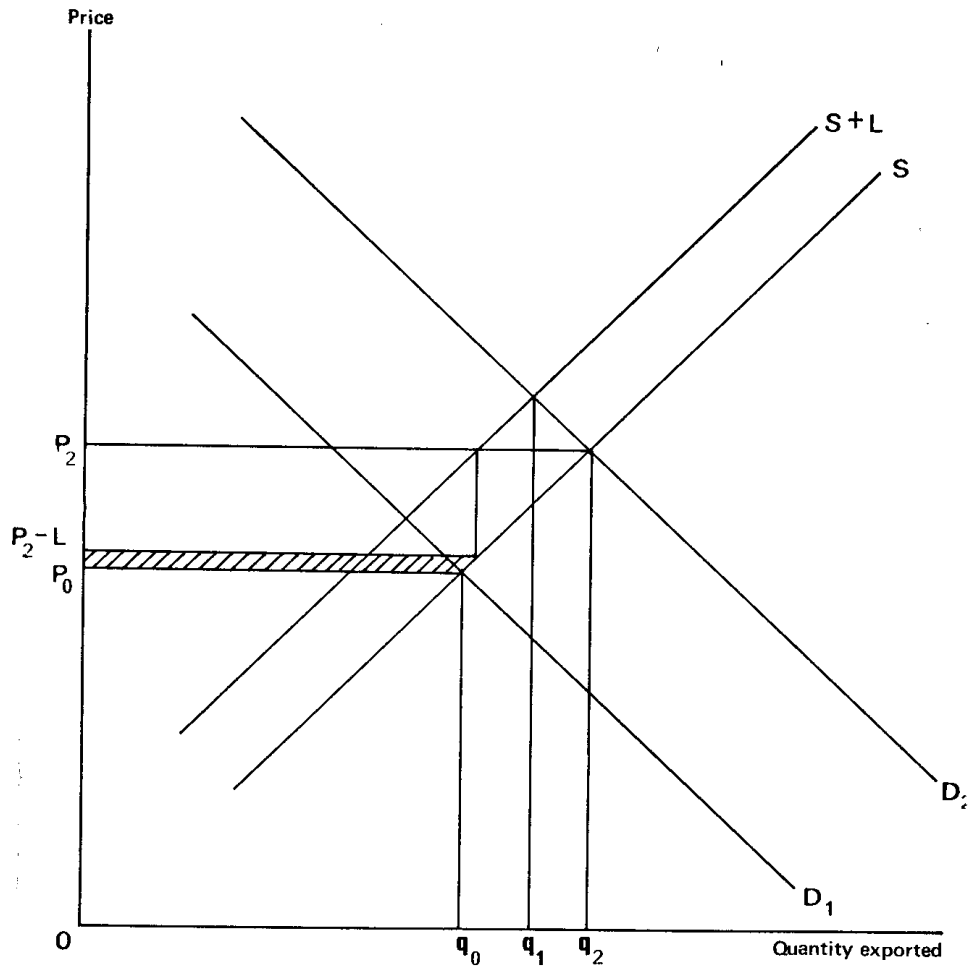


FIGURE 5: *Effect of promotion on export price and quantity when the government pays the promotion expenses*

4 PUBLIC ASSISTANCE ASPECTS RURAL PRODUCT PROMOTION

Several areas where government support of either a legislative or financial nature may be justified have been mentioned in earlier sections of this paper. Some other aspects where government assistance may be justified are now set out.

The justifications for public assistance to the rural sector are set out in the "Green Paper on Rural Policy" [8]. These are (1) to improve the efficiency of resource allocation through improvements in the operation of the market system, (2) to assist resource re-adjustments necessary to improve the efficiency of resource use, (3) to counter variability and uncertainty, (4) to counter external intervention in the market system, (5) to improve the bargaining power of farmers, and (6) to provide certain categories of public goods. These criteria serve as the background to the discussion of public assistance for rural product promotion. External benefits which result from product promotion would include externalities in production (honey promotion increasing pollination services to crops) and consumption (promotion of one product indirectly increasing demand or consumer awareness of close substitutes). Externalities of this type influence Pareto optimality only if market-type solutions are not available and in these cases there may be a case for the Government to intervene through the provision of a legal framework for compensation or for subsidies if a non-optimal level of promotion is forthcoming through these externalities. Instances leading to Government assistance on external benefits grounds seem limited and cases where rural product promotion would induce substantial benefits seem unlikely.

The use of promotion as a tool to increase the dissemination of rural research results is often advanced as a possible reason for Government intervention. On efficiency grounds, however, it may be reasoned that extension programmes are a more effective tool to increase the returns to rural research.

In an effort to improve producer incomes through promotion, a number of rural industries have requested government grants, normally on a matching \$ for \$ basis, for rural product promotion on the domestic market. The resource waste involved in promoting selected food products in high consumption societies is well documented [13] but producer-financed promotion which provides a large information component or which aids product innovation must be distinguished from the more wasteful process of generic promotion between competing product groups in a domestic market where aggregate food consumption is unlikely to increase. In this last case, government intervention should often be towards *reducing* the amount of promotion (unless the argument advanced in section 3.3 seems valid).

The second category for possible support focuses on promoting agricultural products as a whole against food substitutes of non-agricultural origin or in trying to increase the proportion of agricultural raw materials in blended food or fibre products. The Government may wish to combat the advent of synthetic food products by promoting

agricultural products as being more desirable or by promoting natural and unprocessed products. This would be expected to influence only those sectors directly competing with synthetic products. By promoting food in its more unprocessed form real scope exists for increasing farm returns by reducing processing, handling, and packaging costs and reducing the farm-retail marketing margin. General support may also take the form of trying to increase (or at least slow down the decline of) the proportion of the consumer's budget allocated to food. In a high consumption society such as Australia, increases in the total quantity of food consumed is not only difficult to achieve but probably harmful for the affluent sector. Some increase in food expenditures may often be possible but this is often a result of processing, etc., and is not reflected at the farm level. In the less affluent sector some scope may exist for increasing consumption of rural products but this must come from transfer payments (such as food stamps) which act to increase food purchasing power rather than from promotion *per se*.

This leaves a third area for possible support: promotion of selected products or groups of products on international markets. A number of criteria mentioned earlier appear more favourable in international markets. Government assistance in overseas market promotion may take several forms. Food aid is often accompanied by promotional activities which may have the effect of building overseas consumer acceptance so commercial rather than concessional sales are possible at a later date. Government sales promotion subsidies for exporters also represent a limited means by which exporters can be assisted without resorting to direct export subsidies such as tax concessions, exchange premiums, multiple exchange rates, import entitlements, or subsidized credit. Theoretically, government subsidies on the promotion of rural products could also provide some degree of tariff compensation assistance to rural industries.

Market and product diversification is most relevant in domestic market situations and, as discussed earlier, a strong case can be made against assisting most forms of promotion on high consumption domestic markets. A major aim of product diversification, however, is to reduce income fluctuations and, as mentioned above, this is a possible area of government intervention. As section 3.1 above pointed out, there may be some limited possibilities for stabilizing producer returns given that the appropriate form of levy is used. Government intervention through enforcement of a levy system which acts in a stabilizing manner and/or stabilizes the annual promotion budget may be called for here. Subsidies or taxes to stabilize an annual promotion budget is not needed as long as the promotion authority is given borrowing power.

The major argument for Government financial assistance for rural product promotion hinged on the improvement in resource allocation which would be affected through assistance to low cost industries (the tariff compensation argument). This was mentioned briefly in section 3.4. However, the desirability of the tariff compensation approach has been seriously questioned by the IAC [12]. Even if the tariff compensation argument is accepted, direct export subsidies to bring about compensation

for the low cost industries is contrary to GATT regulations. This is where Government financial assistance for export promotion may be justified in lieu of export subsidies if the promotion is cost effective. These measures would be effective for lightly assisted industries (1) if they were not in close competition for inputs from other lightly assisted industries, (2) if the promotion did not lead to a fall in the terms of trade of that product (section 3.4), and (3) if the subsidy did not encourage excessive promotion [13, p. 44]. In most cases of significance, however, the terms of trade may be such as to cancel out the compensatory assistance.

The other case where theory suggests there may be a case for Government financial assistance is where under-promotion or over-promotion (in a socially optimal sense) may exist over a period of time. In particular, since many rural products are promoted through promotional cartels of promotional monopolies, consistent under-promotion may occur (section 3.3) in a social sense although the private level of expenditure by the promoting organization is in an optimal position. In this case, Government subsidies may lead to an improvement in resource allocation. It seems more likely however, that most promoting organizations promote well under the optimal *private* levels of promotion expenditures. Thus more evaluation of promotion effectiveness is the key to determining the strength of this argument.

The infant industry argument has also been advanced as a reason for public assistance but there seems little support for this view except when the effect is to create external benefits through product diversification. In this case, some public support may be justified. More interesting, perhaps, is the bargaining power argument [4, pp. 16-17] although the effectiveness of co-operative bargaining in agriculture in general has been seriously questioned [23]. Product promotion may be one element in the legal framework needed to provide primary producer bargaining. This is most relevant where bargaining with processors may include a substantial commitment for promotion by the processor or wholesalers.

5 SUMMARY AND CONCLUSIONS

The economics of rural product promotion is a relatively untapped area within the Australian agricultural economics profession. Given that more work seems certain to be generated on this topic, this paper has set out the broad details of product promotion in general and then moved on to specific topics of relevance to Australian rural products.

It was concluded that domestic promotion of most rural products led to resource allocation inefficiencies while export promotion was only successful under certain market conditions. A simple model of a market clearing type illustrated how product financing arrangements may, under certain conditions, help stabilize promotion funds for an industry, and also help stabilize total industry receipts. Several alternative arrangements for stabilizing promotion budgets were also examined. Next, a simple model was developed which is of some relevance for multiple market schemes. Welfare aspects arising from the unique methods

required for financing industry-wide generic promotion campaigns were then examined. In general the welfare effects of rural product promotion are probably substantial only if the value of the product traded is large and the exportable surplus is also high. Terms of trade effects could be substantial in some cases as could the possible welfare effects of under-promotion or over-promotion when promotional cartels or monopolies exist. Public assistance in rural product promotion may be justified (1) on legal grounds to avoid "free rider" problems, (2) to provide the public good aspects of information and (3) on financial grounds in a few cases. These last cases for intervention were under-promotion or over-promotion caused by the structure of the promoting organizations, assistance if external benefits are substantial and cannot be captured through a market mechanism, and possibly as a form of assistance to low cost exporting industries.

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