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STRATEGIC TRADE AND INDUSTRIAL POLICY

W. Max Corden

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STRATEGIC TRADE AND INDUSTRIAL POLICY*

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In 1988 Australia embarked on a gradual process of quota elimination and tariff reduction with the end result that in the year 2000 all quota protection will have been ended and most tariffs will be only 5 per cent, the exceptions being passenger motor vehicles and components, and textiles and footwear, which will benefit from 15 per cent tariffs, and clothing, with a 25 per cent tariff. When one recalls the high tariff levels and quotas that ruled in the late seventies, and even higher levels in the sixties, this is a remarkable development. There is probably a more widespread understanding among Australian economists and economics students of the costs of protection and the weaknesses of various protectionist arguments than in most other countries. This understanding certainly provided a foundation for acceptance of Australia’s unilateral liberalization process. Another important factor was the real depreciation of 1985 and 1986 which made Australian industries much more competitive in world markets and must have contributed to the boom in exports of manufactures that has taken place.

Nevertheless, quite apart from protection abroad, the old protection issue cannot be completely ignored in Australia. Protectionism is a kind of disease and even when one thinks it has been eliminated, one needs to understand the various guises (that is, ‘arguments for protection’) in which it can come. A revival is always possible. Hence it is of some interest to look closely at arguments for strategic trade policy and for industrial policy that have been quite fashionable in some circles in the United States, even though their heyday has probably passed.

In the 1980s, new international trade theories were developed which allowed for oligopoly and strategic interactions among firms. These theories received much attention in the United States and especially among trade theorists attracted by the novelty and subtlety of the analysis. The idea was that government policies, such as export subsidies or tariffs, may shift profits from a foreign firm to its domestic competitor, and that this may yield a national gain, at least provided the foreign government does not retaliate. This has been called “strategic trade policy”, though it is a rather narrow definition of the term, and a wider concept will also be discussed below. This particular argument for intervention, whether in its narrow or its wider form, has been quite widely used, or at least cited, in many countries - but not always with full understanding of the technicalities - to justify export subsidization or protection against imports.

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* A longer version of this paper, but with a different introduction, will be a new chapter in the second edition of Trade Policy and Economic Welfare, to be published by Oxford University Press in 1996. The first edition was published in 1974. References in the text to this book - Corden (1974) - are to the first edition. Section I of the paper is a revision and condensation of “Strategic Trade Policy,” in David Greenaway et al. (eds.), Companion to Contemporary Economic Thought (London: Routledge, 1991.)

1 For overviews of changes in nominal and effective rates of assistance 1968-2000, see Industry Commission (1955).
It is worth stressing right at the beginning something that is not always appreciated. When carefully examined, the new theories of strategic trade policy have little or no potential relevance for Australia or other relatively small economies in world trade. The theories are made for large trading economies with very large firms, notably the United States, Japan and the European Union, though even for these economies the case for intervention on such grounds is in fact very doubtful - as will be shown below. Nevertheless, this particular case for intervention will be discussed in detail in section I of this paper, if only to anticipate potential advocacy of it here.

In addition, there is the more familiar "picking winners" argument, to be discussed in section II. The popular understanding of the meaning of strategic trade policy or "industrial policy" is far broader than a policy based on the particular body of theory just referred to. Many justifications are given for governments trying to "pick winners" and in various ways trying to foster the expansion - especially into export markets - of particular firms or industries. These issues are closely related to the infant industry argument. A particular question is whether an industry should be, or needs to be, protected in its home market in order to export, and this will be discussed here. Finally, section III deals with the experience of industrial policy in Japan, since Japan is often cited as having practiced strategic or industrial policy successfully.2

I. OLIGOPOLY AND STRATEGIC TRADE POLICY

Taking into account domestic monopoly or economies of scale has not been new (as shown in Corden, 1974). The new contribution has been to allow for oligopoly and strategic interactions among private firms. A few papers - notably Johnson (1953) - dealt with oligopolistic interactions among tariff-imposing governments in the theory of tariffs and retaliation. But there is not a hint of private sector oligopoly and strategic interactions in the formal "pre-Brander and Spencer" trade literature. The Brander-Spencer papers have generated a massive and highly sophisticated literature. This literature has led to an awareness of numerous qualifications to the theory and also to skepticism about its practical applicability. Apart from various articles to be referred to later, two comprehensive books on this subject are Krugman, ed. (1986) and Helpman and Krugman (1989).

2 The paper is only concerned with limited aspects of protection (or subsidisation) theory. It deals with certain arguments for imposing protection, and then choosing the appropriate industries to protect if there is some basis for a protection argument. It does not deal with the issues that arise in framing a trade liberalization process.

(1) Brander and Spencer Profit-Shifting through an Export Subsidy
A key model which originated with Brander and Spencer (1985) will now be expounded.3 This is the central model in almost every survey of the subject. Here it will be shown that this model can be reinterpreted in terms of the orthodox theory of trade policy, being thus one of the many special cases which orthodox theory illuminates.

Two firms, Home-based and Foreign-based, compete in a third market with a product not sold in either of their own markets. Domestic consumption can be, and has been, introduced into the model, and it complicates the analysis but does not alter the main messages. The number of firms is fixed; i.e., there is no entry in response to high profits. The model is so set up that all that matters for national welfare of the two countries are the profits of the two firms. Wages are constant, as are (at the first stage of analysis) pretax profits elsewhere in the two economies. The aim of national policy is to shift profits towards the national firm away from the foreign firm, even though this may, incidentally, also shift income from the country's own taxpayers to the firms' owners. The market (i.e., the demand curve) for the combined output, is fixed, the consumers behaving competitively. The government of the third country does not intervene. The greater the output of one firm, the less the profits of the other.

A key assumption of the simplest version of the model is that the two firms "play Cournot." This crucial assumption has been varied, but we start with that case. It means that each firm determines its own output (equating perceived marginal revenue with marginal costs) on the assumption that the output of the other firm is fixed. Each firm faces a demand curve which is the total demand curve for the product in the third country market, minus the fixed output of the other firm. If the output of the other firm falls, its own output will rise (the marginal revenue curve shifts to the right), and its profits will increase. In Figure 1 marginal cost is assumed constant at OC (the simplest case), the initial demand curve is DD and the marginal revenue curve MR, so that output of the home firm is initially XH0. A decline in foreign output would shift the demand and marginal revenue curves to the right, bringing the output equilibrium, say, from A to B (where the new marginal revenue curve crosses CC). Thus the home firm reacts to a change in the output of the foreign firm.

In this way the Cournot reaction curves of the two firms are derived in Figure 2, where FP is the foreign reaction curve (showing how XF varies as XH changes), and HH is the home reaction curve (showing how XH varies as XF changes). The Nash equilibrium is thus at N. The curve

3 The model and many qualifications to it are expounded in Helpman and Krugman (1989, Chapter 5). The principal qualifications were uncovered in Eaton and Grossman (1986). See also Brander (1986) and Deardorff and Stern (1987). An outstanding critique listing numerous objections, both theoretical and empirical, and above all on grounds of political economy, has come from Grossman (1986). A review of relevant dynamic game theory and other issues is in Dixit (1987). Vossen (1990) and Pomfret (1992) give very clear and concise surveys of many aspects of the theory of protection with monopoly and oligopoly, also reviewing empirical studies and referring to an extensive literature.
p₀ represents the profit level attained by the Home firm at that point. Given foreign output XF₀, it maximizes profits at output XH₀.

Now suppose that the foreign reaction curve FF could indeed be taken as given but that the aim is to maximize the profits of the home firm. In that case the home firm should (in Figure 2) choose output XH₁, which would bring the system to S—the Stackelberg equilibrium—where it reaches the highest profit level compatible with FF being given, this profit level being represented by curve p₁. Immediately one asks: why then does the firm not attain S? Why does the system reach N instead? The answer is that the home firm insists on "playing Cournot." In other words, the home firm conjectures that foreign output will not change when home output changes—i.e., the "conjectural variation" is zero—when actually it will change.

Figure 1

The next, and crucial, step in the argument, is the suggestion that an export subsidy to the home firm will bring about the nationally optimal output S. In Figure 1 the subsidy lowers the cost curve to C'C. This would increase home output even if foreign output stayed constant, but foreign output will actually decline (the demand curve shifts to the right), so that finally the output equilibrium in Figure 1 will be at J, yielding output XH₁. In Figure 2 the subsidy causes all of the home country's equal profit curves to shift to the right, so that—given that the home firm continues to play Cournot—the home reaction curve moves to HH' and equilibrium is attained at the home country's optimum of S.

One can immediately see the key assumption in this whole approach, and it is one which is familiar from the literature of game theory. Why is the home firm so stupid as to "play Cournot," i.e., to assume that the foreign firm's output will not change when home output changes? In other words, why should there be a zero conjectural variation? The home firm must know that its own output will change whenever foreign output changes, so why should it ignore the same kind of reaction on the part of the foreign firm? If the government understands the model sufficiently to provide an appropriate export subsidy, why does the firm not understand it? There is a kind of answer to this—or at least a variation of the model can rescue the basic idea that it may conceivably be in the home country's interest for its government to provide an export subsidy. But, for the moment, let us stick with this story and consider its significance in terms of standard trade theory.

Let us consider the orthodox terms-of-trade argument for protection, which can be interpreted as an argument for an export tax. This argument assumes a given foreign demand (or offer) curve—i.e., a foreign reaction curve taking general equilibrium effects into account—but also assumes that this demand curve does not shift strategically to deter an export tax at home. Thus it assumes absence of foreign retaliation. Let DD be this demand curve in Figure 1. The argument goes then very simply: competitive producers will choose equilibrium E because each of them perceives its marginal revenue to be equal to price. But the socially optimum equilibrium, which exploits the home country's monopoly power, is at A. Of course if exporting were monopolized by a single firm it would naturally choose this point. But given competition, a tax equal to AG has to be imposed, and the price rises (the terms of trade improve) from E to G.

In the language of normative trade theory (Corden, 1974, Ch.2), there is a trade distortion or divergence because the private and social marginal revenue curves diverge. This is a trade
divergence, to distinguish it from a domestic divergence, which in this case would involve a divergence between the private and social marginal cost curves. Now what happens in the present model?

There is indeed also a trade divergence. But this time it causes exports to be too low rather than too high. This time there is a single producer at home so that the issue on which the orthodox terms-of-trade argument focuses disappears. This time the Cournot-playing home producer sees ("conjectures") an incorrect foreign demand curve, one which fails to take into account the foreign output changes that its own changes in output provoke.

The correct demand curve is D'D' (which is more elastic than DD), and the marginal revenue curve derived from it would determine equilibrium at H, the true optimal output thus being XH. If the firm perceived this demand curve, its conjectures would be "consistent." As Duedorf and Stern (1987, p. 50) have pointed out: "There is in a sense a distortion here."

It is worth stressing that the concept of a trade divergence means only that the privately perceived marginal revenue curve diverges from the correct social one, and not that intervention must be trade restricting and so improve the terms of trade. In this particular case, the home country is made better off by a policy that increases exports and so worsens its terms of trade (from G to K in Figure 1). It is also worth noting that the idea that an argument for intervention can be based on a distortion that results from "imperfection of private information" is not new. It has provided one basis for the infant industry argument for protection. But the case is not really very strong. First-best policy is for the state to spread more information. In Corden (1974, Ch 9), where the infant industry argument is discussed, it is asked why the private firm (or state enterprise) concerned should be assumed to have less information for the prospects for its own cost curves than a central state authority. In the present case one would want to refer to "prospects for demand" or "behavior of its foreign competitor" rather than cost curves.

In the orthodox terms-of-trade argument for a tariff or export tax, optimal intervention has an adverse effect on the foreign country; hence it is "exploitative." This is also true in the present case with regard to the foreign competitor, though not with regard to the third—the consuming—country. The latter actually benefits when producing countries subsidize exports.

The next step in the analysis, worked out by Brandt and Spencer, is to allow for the foreign government also to subsidize exports, taking as given not only the expected Cournot behavior of the two firms but also the export subsidy of the home government. In other words, first the two governments "play Cournot," and then the two firms do so. The two governments know all about the two firms' behavior, but still, surprisingly, play this Cournot game with each other. Here I have to stress that Brandt and Spencer and the other principal contributors in this field are aware of the difficulties and qualifications.

The general problems are much the same as in the theory of optimum tariffs and retaliation as pioneered by Scitovsky (1941) and developed by Johnson (1953) and indeed, more generally, as developed in the theory of oligopoly. Ideas from dynamic game theory need to be used. It is likely—though not certain—that both exporting countries would be better off if their governments did not engage in this competitive export subsidization. In any case, they could benefit from cooperation. On the other hand, the consuming country would benefit from such exporting competition.

Coming back to the simple case where the foreign government does not intervene or retaliate, one point that was made by Eaton and Grossman (1986) and is given prominence in Krugman and Helpman (1989) is particularly important. If there is more than one domestic firm, a case for an export tax may be restored. The domestic firms compete with each other and generate external diseconomies for each other by lowering the price they obtain on the third-country market.

This is just the orthodox terms-of-trade argument for protection. The more domestic firms there are, the closer the model gets to the perfectly competitive one and to the standard optimal tariff or export tax formula. The greater the degree of private monopoly, the less the rate of optimum export tax. When there is a complete private monopoly (meaning a single producer in the home country), the optimal export tax is zero. Now we have the further complication of the Brandt-Spencer assumptions, which lead to the conclusion that when there is only a single domestic exporter, the optimal policy (assuming no retaliation) is an export subsidy, not a tax.

In a model with several home and foreign firms, all playing Cournot, there could then, on balance, be a case either for an export tax or an export subsidy. But this consideration does not, in itself, destroy the Brandt-Spencer profit-shifting argument. Rather, it shows that there are several considerations affecting a net trade divergence, and hence possibly justifying intervention, of which their profit-shifting argument is a new one.

Everything clearly hinges on the conjectures of the firms about each others' reactions. Cournot implies zero conjectures. "Consistent conjectures"—I.e., conjectures that turn out to be correct—by the home firm about the given foreign reaction curve would remove the case for intervention, other than the orthodox case for an export tax, with all its limitations. But there are many possibilities about the conjectures, apart from zero and consistent conjectures. Thus the demand curve that the home firm perceives may take into account expected reactions of the foreign competitor, but not enough, or perhaps too much. And if the government knows better, there is then, conceivably, a case for intervention, or at least for the education by the government of the domestic producer. But since the producer might just as well overestimate the foreign reaction as underestimate it, there can be a case for an export tax even on these grounds.

Eaton and Grossman (1986) uncovered the following point which at first appeared rather devastating. Suppose the firms "played Bertrand" rather than Cournot. This means that each assumes the other's price rather than quantity given. They then show that optimal intervention will be an export tax and not a subsidy, the intervention of each government thus benefiting the firm of the other country (intervention no longer being "exploitative") though it will, of course, hurt consumers. In terms of our exposition, it means that the "true" demand curve in Figure 1, D'D', is steeper rather than flatter than the perceived demand curve DD. Since Bertrand competition seems
as plausible (or implausible) as Cournot competition, this insight introduces a major uncertainty not just about the magnitude but about the sign of the intervention that may be called for.

(2) A Subsidy for Credibility: An Infant Industry Argument

Let me now come to a slightly different approach, also originating with Brander and Spencer. It is actually a more convincing approach, though it still has serious limitations. This time we assume that the two firms have as much knowledge as governments and while they may be uncertain about each other’s reaction, they "know the model."

As before, each firm would gain from a decline in the other firm’s output. In the extreme case, owing to economies of scale, there may be room only for one firm. The extreme case—usually given as a Boeing-Airbus story—is a very special case and it is better here to stay within the existing model. The position then is that each firm would like to credibly fix its own output firmly and thus force the other firm to adapt its output to this. For example, in Figure 2, if the home firm fixed output $X_{H1}$ credibly, the foreign firm would choose point $S$ on $PP$, and the home firm would then have maximized its profits, given the predictable foreign reaction. Alternatively, the foreign firm might fix its output credibly, forcing the home firm to adapt and so getting to the foreign firm’s Stackelberg point on $HH$, namely, $S^*$. This is a true dynamic game theory situation—a true problem of strategy—analyzed in the industrial organization literature.

The question then is: how can a firm achieve credibility in its output determination (making it clear that it will not change its output, whatever the other does) and so force the other to adapt to it? One answer is that it achieve a "first mover" situation, for example, through installing capacity in advance of the other. But there are always uncertainties in this game, and hence potential costs of competing in the effort to achieve this credibility. Finally, both may lose, so that there is an incentive to collaborate in some form.

Where does trade policy come in? The basic idea is now that an export subsidy, or the promise of one, would give the home firm credibility in its output determination. Whatever the foreign output, the firm would have to be subsidized to cover its potential losses. The subsidy should be provided only on the condition that $X_{H1}$ is produced and might be scaled to the output of the foreign firm (disregarding practical aspects of this!), so that if the foreign firm actually chooses $S^*$—i.e., if credibility is successfully established and the foreign reaction has been correctly estimated—no subsidy would actually be paid. The enforcement by the government and the provision of the subsidy would have to be credible even if foreign output rose, so that a large subsidy would have to be paid.

We have here a kind of infant industry argument that should be analyzed in those terms. One might ask why a firm has to be underwritten by the government. Why cannot it go on the capital market and borrow the necessary funds or obtain credit lines to underwrite possible losses? Presumably the more financial resources it has available, the more credible its threat or output decision will be. This is an obvious and familiar point. And the US capital market, for which this theory was designed, is hardly imperfect—even though imperfection of the capital market is a familiar basis for an infant industry argument applying to developing countries.

The answer might be that strengthening the firm’s financial resources would not give the firm complete credibility. It might be able to obtain the resources to sustain its output even when the foreign firm fails to respond by reducing its output, but it may not have the incentive to keep its output at the desired level (at $S^*$) at all costs. This is indeed correct. The argument is that, for some reason, the government has more credibility. It would hang on, even when a firm on its own would not. It would hang on even when it becomes probable that there would be a net loss for the country. The firm gets the incentive because the subsidy would be conditional on sufficient output being maintained. In the extreme model—where only one of the two firms can survive—the subsidy would be conditional on the firm staying in business.

This suggestion that a government has so much credibility seems implausible. The suggestion is that even when big subsidy payments are being made because the foreign firm has refused to give way, the government would continue to provide funds. In any case, the main conclusion is that this version of the argument—where the home and the foreign governments possibly compete in underwriting their firm’s losses in the process of international competition—is a special version of the infant industry argument. The argument is logically sound and is an "infant-exporting" argument.

One other qualification to the idea of subsidizing oligopolistic exporters should be noted here. Income will be redistributed from taxpayers to the owners and probably also the employees of the industries concerned. Interventions that can possibly be justified on national Pareto-efficiency grounds have inevitable redistributive effects. It is hard to believe that an income redistribution from taxpayers in general towards domestic oligopolies competing in international markets can be regarded as either neutral or favorable.

3) Conclusion: Practical Implications

The argument for subsidizing oligopolistic firms to compete on world markets and hence cause foreign competitors to reduce output and shift profits towards the domestic industries falls apart once the numerous qualifications are reviewed. A rich and sophisticated literature in which the originators participated has indeed made this clear.

The approach is basically partial equilibrium. The more resources are made available for one industry, the less will be available for others. Which industries should then be selected for support? This, of course, is a familiar issue to which we return below. Even if the oligopolistic industry or firm is identified, how big should the subsidy be, and, indeed, should it be a subsidy at all? It was shown above that this depends on the nature of the conjectures. Consistent conjectures would not call for any subsidization on the basis of the first of the models presented. When there are several domestic firms that compete, the case for an export subsidy is also weakened and possibly turns into a case for a tax on the grounds of the orthodox terms-of-trade argument.
Domestic income distribution effects are important. Finally, the possibility of retaliation cannot be ignored.

Some of these problems arise in the case of any argument for intervention—for example, one based on the infant industry argument. The special feature here is that there is doubt even about the sign of the intervention required. The basic reason for that uncertainty is the difficulty of generalizing about oligopolistic behavior. "Playing Cournot" is only one possibility, and perhaps not the most plausible one.

The motivation for the new developments has not, on the whole, been to advocate tariff protection or export subsidization. Like so much earlier work in the field, the aim has been, rather, to understand either what was actually happening or what some people were advocating. Here one should quote the pioneers. "Finally, it should be emphasized that our arguments should not be taken as support for using tariffs. The highly tariff-ridden world economy that would result from each country maximizing domestic welfare, taking the policies of other countries as given, would be a poor outcome. Our analysis is meant to contribute to an understanding of the motives that might underlie tariff policy, and provides support for the multilateral approach to trade liberalization." (Brander and Spencer, 1984, p 204).

Nevertheless, the new ideas, in unsophisticated or misinterpreted form, have been used quite widely in the United States to justify policy proposals of a protectionist nature that can be explained in much more orthodox terms—interest group advocacy, infant industry protection, external economies, and exchange rate overvaluation. But the principal scholarly contributors in this new field have been quite clear about the limitations. 4

II. INDUSTRIAL POLICY

Industrial policy might be defined as government policies designed to foster strategic industries. This is a popular, though not necessarily most economists', definition. The popular idea does not refer to industries that themselves practice oligopolistic strategies, and obtain government support in doing so. That is the case discussed above. It seems to have a broader connotation. Given this broader definition, the question then is: what is "strategic"? In general equilibrium, assuming a constant overall level of employment, to favor one industry is to disfavor others. How, then, should the strategic industries be selected? This has actually been the theme of the theory of trade policy and economic welfare, and especially of analyses of the infant industry argument for protection (Corden, 1974, Ch 9).

Industrial policy could also be defined even more broadly, as referring to all government policies that affect industries, or possibly only manufacturing industries. It would include policies affecting the transport and communications infrastructure, labor training, labor market regulations, and regulations on the environment. But here the popular definition which is concerned more narrowly with the selection and fostering of particular "strategic" industries will be accepted.

1) The Logic: If Any, of Industrial Policy

Two bases for the strategic industries approach are worth considering. First, strategic industries (or activities) are those with high growth prospects, and hence with prospects of future profitability. This is the "picking winners" approach. Second, they are industries which are believed to generate significant positive externalities for other industries or for society as a whole.

Industries may have high growth prospects because of current and expected productivity trends or because of demand trends. A government department or agency might then select such industries. One question is whether this is necessary, given that private firms in a market economy certainly have an incentive to "pick winners." The incentive to get it right on the part of government employees, let alone politicians, is likely to be less. A further point is that the winners are not necessarily "industries" broadly defined, but rather particular activities or products within broad industry groups, and here "picking winners" requires a detailed knowledge which only comes from relatively decentralized decision making. The best one can say for the "picking winners" approach is that governments can be useful sources of information and guidance for private decision makers when government agencies happen to have high quality staff, and because they can benefit from economies of scale in research and overall industrial assessment. When the winners are picked, information can be disseminated, and persuasion and guidance can be exercised. There need be no subsidization or protection of particular industries.

When it comes to subsidizing industries or activities on the grounds that they are expected to generate positive externalities, all the issues discussed in standard theory come into play and need not be rehearsed here. Would the externalities be high relative to other potential industries that would also generate externalities? What is the first-best policy? Rarely, if ever, would subsidization of output or of profits, let alone trade policy, be first-best.

If an industry on the technology frontier is believed to generate externalities through knowledge diffusion the benefits of which cannot be fully appropriated by the originating firm, what is the first-best way of fostering such diffusion? Perhaps general financial support for scientific research (which already happens through Universities and scientific research institutes), or for research and development (R&D) in firms, would be first-best. Yet R&D cannot always be separated from other activities of a firm. This is a large subject which cannot be pursued here.

There is a popular view that an industry which has substantial "linkages" with other domestic industries should be preferred. Backward linkage refers to industries that use—and the growth of which would stimulate—the output of other domestic industries, and forward linkage...
refers to firms that produce inputs into a wide range of other domestic industries. The steel industry was the favored industry of the Soviet Union, and is the forward linkage industry per excellence.

The truth is that the claim that linkages per se generate non-pecuniary externalities is fundamentally unsound. The usual market criteria must be applied to such industries. A country can develop a wide range of activities on the basis of imported steel. Market forces will create demand for domestic input-producing industries if the inputs cannot be imported. With regard to both backward and forward linkages there can be an investment coordination issue involving pecuniary external economies, but this does not call for subsidization.

(2) Import Protection to Foster Exporting

In various ways a tariff or an import quota may provide the basis for an industry’s expansion into export markets. One possible story is this. In the absence of the import restriction the whole domestic market would be met by imports; there would be no domestic industry. A tariff is then imposed which brings the industry into existence. If there are economies of scale, one firm might even take over the whole domestic market and acquire a domestic monopoly position. The process of production leads to learning—i.e., “invisible capital accumulation” (Corden, 1974, Ch 9). Hence, the cost curve—marginal and average—falls. Eventually the decline in marginal costs makes it profitable to export. This is a story based on dynamic internal economies. It does not require static internal economies of scale.

A second story hinges on static economies of scale. A tariff expands the size of the domestic market for the industry. Hence its marginal costs fall, and they may fall far enough to make exporting profitable. Here a caveat must be added. Assume that the import and the domestic product are perfect substitutes. Once the industry has been brought into existence by the tariff a further increase in the tariff will just strengthen the industry’s (firms’) domestic monopoly position and bring about a decrease in its output (up to the monopolist’s profit maximizing point). To obtain the plausible story that a tariff leads to a rise in domestic output one has to assume that the import and the domestic product are sufficiently imperfect substitutes.

Finally, there is the price discrimination or dumping case. This time there is no need for either dynamic or static economies of scale. The tariff makes it possible to separate the domestic and the foreign market and allows a monopoly firm to discriminate between the two markets. The firm may not have been profitable in the absence of price discrimination. Hence the ability to raise the price to domestic consumers sufficiently brings the firm into existence and allows it to sell not only at home but also at the given and lower export price.

All this only shows that import protection may turn the protected product into an exportable. But it is not an inevitable outcome, as is shown by numerous examples all over the world of protected industries that, even after many years, have failed to become significant exporters. The more important issue is this. Even if tariffs or import restrictions do lead eventually to greater exports of the protected products, does that justify the restrictions?

What are the normative implications? It is well-known that, in the absence of economies of scale, dynamic or static, a tariff to make dumping possible by price discrimination is not in the interests of the dumping country. It is not in the interests of a country to strengthen the ability of domestic monopolies to exploit domestic consumers, even if this does lead to increased exports. Here the first case—where there are dynamic learning economies—will be considered, though the basic argument also applies to the second case, where the economies of scale are static.

The domestic consumers are being taxed so that the industry can make an investment in learning. The familiar consumption cost of protection results from the use of a tariff or import quota rather than a direct production subsidy. In addition, the subsidy equivalent of the tariff represents a tax on consumers to finance “learning” investment in the industry. Such a consumer tax raises all the issues concerning the infant industry argument for protection. Why cannot the industry finance its own investment—i.e., why cannot it cover losses during the learning period? Are there externalities of some kind?

The question remains whether the case for protection is at all strengthened just because the investment in learning eventually leads to greater exports. The fact that the industry has become an exporter is at least some evidence that costs have indeed fallen—that learning has actually taken place—so that the investment has borne some fruit. But it does not necessarily mean that the rate of return to investment in learning has been adequate, nor that there is any reason why the industry should not have financed its own investment. It is just conceivable that an externality attaches to exporting as such. Possibly this can be derived from some macroeconomic considerations. If no externality attaches to exporting, there is no case for protection or subsidization of production for the home market just because this may eventually lead to greater exports.

Let us consider macroeconomic implications for a moment. Assume that the real exchange rate adjusts, or is adjusted, appropriately to maintain the current account constant. There is the protected product X and other products Y. When the tariff is imposed, imports of X fall, so that the (real) exchange rate needs to appreciate. This will reduce exports of Y. Later, as a result of learning, exports of X increase, there is thus further appreciation and hence further decline in exports of Y. In the first stage, total exports (of X and Y combined) fall and in the second stage they must rise because the appreciation must also have raised imports of Y. One cannot say in general whether the whole process has raised or lowered total trade and hence total exports.

III. JAPANESE INDUSTRIAL POLICY: WHAT DIFFERENCE DID IT MAKE?

Japan seems to have been a highly successful economy that has explicitly pursued a policy of fostering "strategic industries." It is often cited as a model for other countries that wish to develop

5 If there is some rigidity in the exchange rate, the matter is more complicated: there could be a second-best argument for subsidizing potential exports.
by means of industrial policy. In particular, Japan has protected industries in its home market before they became major export industries. In some cases, notably automobiles, these industries eventually came to dominate the world market. Thus the Japanese experience needs to be looked at closely here.6 Of course, the attempt at "picking winners" has been a widespread practice around the world, but this is, perhaps, the most interesting case.7

(1) What Was Japanese Industrial Policy?
Following on the immediate postwar reconstruction period, came Japan's era of high growth which lasted until 1973. Komiya (1990) has succinctly contrasted the proclaimed objectives with the actual policies during that period. A "vision" was drawn up that proposed actively fostering industries which were expected to experience a rapid increase in productivity and that had a high income elasticity of demand. Yet this objective was not actually followed. Demand for fast food restaurants was income elastic, but such restaurants were not promoted! Rather, "industrial policy in Japan generally aimed to develop industries that government officials—with the backing of public opinion—felt Japan should have."

Komiya gives a list of the kinds of favored industries, and concludes that they were ones that "involved an element of national prestige." They had already been developed by nations more advanced than Japan, and had to be big—and hence highly visible—industries. The list included iron and steel, petrochemicals, shipbuilding, heavy and electrical equipment and chemicals. Later automobiles were added. But, in practice, many industries not on the list grew up and achieved success in world markets. "The camera, bicycle, watch, tape recorder and magnetic tape industries ... did not receive much emphasis." Since the oil crisis the emphasis has been on raising the "knowledge intensity" of Japanese industries. Computers and semi-conductors were promoted.

In Japan each industry falls under a ministerial bureau or section, called a genkyoku, mostly part of the famous Ministry of Trade and Industry (MITI). The motivations of the officials in charge of the relevant genkyoku have been important. As Komiya (1990) put it, a guiding principle has been to prevent "excessive competition" and to ensure that an industry is "orderly," presumably with stable market shares and minimal disturbances. Coordinated expansion was meant to minimize risks of investment. Thus officials have often sought to consolidate firms, sometimes bringing about large scale mergers, to restrain price competition, and to discourage new entrants and import competition. Consumer interests were generally ignored. It is particularly important that "Japan's industrial policies tend to favor leading firms in the industries concerned." Some of these attitudes have changed now, so that this describes the motivation of government interventions in an important, if now past, period. In particular MITI, as a result of US pressure, has shifted to favor imports.

In practice the genkyoku often did not achieve their objectives. Competition in many cases has actually been extremely vigorous. Notably, MITI wanted to limit the number of firms in the automobile industry, but did not succeed. In 1990 there were seven independent passenger car manufacturers.

Industry policies have been made by genkyoku in collaboration with industry associations and policy councils. The objectives were brought about, above all, by consultation and "guidance," by protection of the domestic market with tariffs, quotas and other ways, and by allowing and even encouraging cartelization. In addition, credit controls have been used in the past (though not now) to guide the pattern of industrial development in line with genkyoku perceptions. Finally, MITI has initiated and organized cooperative research projects of large firms in high technology industries. The idea has been to pool R&D efforts.

It is particularly important that the element of direct subsidization (even for R&D) has been small. This also applies to tax credits. Saxenhouse (1983) notes the contrast between the high profile of proclaimed industrial policies (e.g., the emphasis on high technology) and the modesty of government financial support provided. Furthermore, since the eighties tariffs have been very low, and there have been hardly any import quotas on manufactured products.

(2) An Assessment
Three points can be made.

First, Japanese industrial policy was designed to push, or develop exports of manufactured goods. Since there was no, or very little, long-term subsidization, these had to meet eventually the test of the world market. As all the world's contented buyers of Japanese electronic products and automobiles know, in some cases the Japanese were spectacularly successful.8 Thus the market could not be ignored. But the interesting point is that the really successful industries and products were not always the ones that were promoted by the bureaucrats. Sometimes they were (automobiles) and sometimes they were not (electronic products). It is thus clear that market forces were relevant and in many cases essentially bypassed Japan's industrial policy.

Second, and most important, industrial policy in Japan

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6 See Saxenhouse (1983), Yamamura (1988), and Komiya (1990). The last has heavily influenced the account below. Japanese industrial policy is hard to describe briefly, so that the interested reader might go back to these references.

7 The Anglo-French supersonic aircraft venture (Concorde) initiated in the nineteen sixties predictably never recovered its development costs, and has been a notable loser (with no obvious externalities). The same applies to the French government's attempt to create an indigenous computer industry. Korea's Heavy and Chemical Industries (HCI) drive 1973-79 is a mixed story and probably was not economic. See World Bank (1993, p 309) and further references cited there. But Korea's government certainly "picked a winner" when, through concessional and directed credit, and other ways, it pushed hard for exporting in general.

8 The author of this paper has to declare an interest. The most satisfactory car he ever owned was a Toyota Corolla (after owning various Australian and British manufactured cars from US companies), and he loves his video recorder.
to a considerable extent played the same role that a capital market—especially a stock market—plays in other developed countries, notably the United States. Capital is much more concentrated in Japan than in the United States. Bank loans are the main source of external funds for firms, not the stock market. There are few venture capital institutions and the capital market has not been competitive. All this was broadly true right into the eighties, and especially so in the early growth period when there were strict credit controls. The financial system was heavily regulated and bank loans were "guided" by official industrial policy.

Thus industrial policy did not supplement or distort the capital market; rather, industrial policy guidance to banks (to some extent) replaced the market. "Japanese industrial policy has been a substitute for, and not an unfair complement to, the market allocation of capital" (Saxonhouse, 1983). But it has to be borne in mind that this process did not stop some industries from growing and flourishing in the Japanese and world markets without being especially favored by the genkyoku, since credit was not actually withheld from such industries.

Third, a consistent feature—particularly, but not only in the early stages—has been protection of the home market in order to eventually develop an export industry. Thus Japan is the principal example of "import protection to foster exporting." In earlier years the protection was quite explicit—by means of tariffs and quotas—and more recently it has (so far as one can tell) been less, and more informal. The consumer subsidized the infant industry through having to pay higher prices not only because of protection against imports but also because of cartelization and "cooperation" encouraged by the industrial policy makers. It was a straightforward case of infant industry protection.

The usual consumption distortion resulted from protection against imports and from domestic anti-competitive practices. Leaving that aside, could the implicit subsidization of particular industries by consumers be justified? (Direct subsidization of manufacturing industries has been very low, so that this was the main form of subsidization.) Here one must refer back to the analysis of infant industry protection, and also to the discussion above of import protection for export promotion.

Did the favored industries generate more externalities than other potential activities? It is hard to see that they did (except possibly certain high technology industries). Was the capital market imperfect? Here the answer is obviously positive. But one must go on to ask whether, even given the need for some policy guidance because of the imperfect capital market, it was the right sort of guidance. Did it yield similar resource allocation effects as an efficient capital market would have? By no means all the industries favored by the Japanese bureaucracy turned out to be particularly profitable, though this would also be the expected outcome of a resource allocation that was brought about by an efficient capital market.

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9 This point is elaborated by Saxonhouse (1983) and stressed by many writers.
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Saxonhouse, G. R. (1983) 'What is all this about "Industrial Targeting" in Japan?', The World Economy 6, 253-73.

