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Industrial Policy Defined

The interrelationships which exist between private industry and the State are many and quite complex. There are several ways in which the government intervenes in industrial affairs, the objectives of which are varied and not always consistent with one another. This government action which attempts to change the industrial pattern of resource allocation for the achievement of economic and noneconomic objectives is commonly termed "industrial policy".

Among the various aspects of industrial policy we can distinguish the following:

- a) Antitrust or Competition Policy - whose goals usually are the promotion of competition and the control of restrictive business practices;
- b) Technological Policy - whose purpose is to promote the research and development activity in the nation;
- c) Regional Policy - whose aim is to reduce regional imbalance in the allocation of economic activity;
- d) Adjustment Policy - whose goals is to facilitate the adjustment of industrial structure to changes dictated by demand and technological forces or foreign competition; and
- e) Commercial Policy - whose objectives include the protection of domestic industries from foreign competition or the promotion of exports.

Most of the above aspects of industrial policy have been in existence since the formation of the modern nation state, but in the last fifteen years the extent of government involvement in industrial affairs in O.E.C.D. countries has been on the increase and the importance attributed to the various aspects of industrial policy has been substantially altered. This increasing government interventionism in the manufacturing sector of industrial countries has become one of the most debated issues in recent years.¹ Indeed, industrial policy is fast becoming a major source of controversy in the relations among advanced economies.

The reasons for this are many. First of all, some of many ways in which the State intervenes in the domestic industry cause, by design or accident, distortions in international trade by assisting domestic firms in competing against foreign suppliers or by aiding them to increase their exports. Some industrial policy measures involve the encouragement of mergers among domestic enterprises, the financing of research and development, tax relief and payroll, capital investment and general export subsidies designed to prevent the decline of particular firms, industries or regions. While these measures may be designed for such domestic goals as the facilitation of adjustment to structural changes or the mobility of resources, they are also likely to affect comparative advantage and international trade flows. Other measures of government intervention such as discriminatory procurement practices, the promotion of national and international export cartels, state trading, countervailing duties, and the provision of favorable export credits or guarantees are all examples of nontariff barriers to trade. Because of their general lack of transparency, it is widely feared that the increased use of these measures of industrial policy represent, disguised forms of a "new protectionism" that threatens to wipe out the gains of trade

(tariff) liberalization achieved since the end of World War II.²

Industrial policy constitutes at times a sequence of ad hoc measures introduced as a response to problems faced by individual firms, branches of industry or depressed regions without much design or evidence as to their need or even effectiveness in achieving the desired objectives. This lack of design may be symptomatic of the symbolic nature of many of the measures of industrial policy when their adoption serves the purpose of showing that the government is in control of actual or perceived situations. But more seriously, the lack of coherence in industrial policies may lead to potential conflicts between the various goals of government intervention. An example of such a conflict can be found in cases where the promotion of domestic competition has been pursued along with the inducement of mergers and industry concentration in order to increase the competitiveness of domestic firms in international markets.

In addition, industrial policies in advanced countries are bound to alter the operation of firms and markets by delaying the contraction of industries or promoting the emergence of others. Subsidies and other forms of intervention have as an effect the reduction in the uncertainties of the competitive process. Since uncertainty is the spur of innovation, the ultimate effect of many industrial policies could very well be a slowdown in the rate of creation of new ideas, products and processes. This result will cancel to a large extent the effects of industrial policies aiming to promote technological progress and innovation.

The dynamics of international trade and the shifting of comparative advantages among advanced countries has had painfully adverse effects upon certain industries such as textiles, but the evidence on the adjustment problems faced by manufacturing industry as a result of trade liberalization does not justify the massive intervention through industrial policy. In fact, trade liberalization among

industrial countries has resulted in greater intra-industry trade and fewer adjustment problems than what should be expected when trade expansion results in inter-industry specialization, since factors tend to move into new product lines within the same industry rather than a new industry.³

In general, industrial policies will have an impact on the structure of domestic and international markets and the behavior of firms as it relates to changes in trade and investment flows. In what follows we look at three issues: the role of international trade and investment in influencing the conditions of competition in domestic markets, the importance of competitive conditions in product markets in affecting the extent of an industry' participation in international trade, and the available quantitative evidence on the trade effects of some measures of industrial policy.

International Trade and Investment and Domestic Competition

The case for free international trade has been built upon increases in economic efficiency that arise from specialization according to comparative advantage. In this section, however, we shall argue that in a world of imperfect markets, the removal of monopolistic distortions and gains in technical efficiency are potentially extra dividends that might be associated with both international trade and capital movements.

A continuum exists in the real world between the theoretical constructs of monopoly and perfect competition in which firms may display differing degrees of market power depending upon the number of rival sellers and other elements of industry structure. But whether or not market power constitutes a long run problem, in the sense of persistent monopoly type pricing, depends upon the extent to which entry barriers deter the elimination of monopoly prices and profits through entry. It is in situations where barriers to entry exist that foreign rather than domestic firms may constitute the most likely entrants. This entry may occur either through trade or foreign direct investment and could serve as a constraining influence upon domestic pricing outcomes.

Industries in which entry is difficult are usually characterized by the existence of substantial economies of scale, high capital cost of entry, and/or significant product differentiation. Both potential foreign and domestic entrants must overcome these barriers, but the foreign entrant also faces additional barriers in the form of transportation cost, tariffs, and other artificial impediments to trade. These additional barriers to foreign firms need not imply that the overall height of barriers is greater for foreign than domestic firms; foreign firms with established markets elsewhere in the world can potentially avoid the disadvantages to newcomers associated with scale economies and high capital costs.⁴ It is likely, then, that in markets where scale economies or

capital costs are barriers to entry, foreign rather than domestic firms pose the most immediate threat of entry and represent an important constraint upon domestic pricing and output decisions.

This same result may not hold for industries in which product differentiation is the important barrier to entry. It depends upon the form in which differentiation occurs. When differentiation is based upon significant physical differences in style and design, or where customizing the product to the buyers' specifications is important, foreign firms may not find themselves at substantial disadvantage relative to potential domestic entrants. When differentiation is based upon direct efforts to persuade consumers through advertising or brand image creation, foreign entrants may face severe disadvantages. In the first place, this type of differentiated product could be specific to a national market, so that foreign products may not be close substitutes for goods produced by domestic firms. Moreover, the necessity of undertaking national sales promotion may make it difficult for foreign firms to penetrate the domestic market because of the substantial economies of scale in marketing that usually characterizes promotion efforts. Thus for these type of goods it is not competition via imports but rather entry through foreign direct investment, as shall be argued in more detail later, that could become an important force in eliminating domestic market distortions.

In recent years a number of empirical studies have begun to investigate the degree to which import competition might act as a restraining force upon pricing decisions of domestic firms. These studies have included both cross-section multivariate analysis as well as detailed industry studies. The cross-section studies have generally examined industry rates of return on equity or industry price-cost margins (as proxies for the exercise of monopoly pricing) in relation to elements of domestic structure and measures of the industry's exposure to international forces, such as the share of the market accounted for by imports, or the height of tariff and non-tariff protection afforded domestic producers.

The results of these studies are interesting and merit some detailed description. Before reviewing some of the results of these studies, however, mention should be made of the difficulty of modeling the degree of import competition facing a domestic industry. Theoretically, one would wish to have information on the elasticity of foreign supply with respect to the domestic market price. This type of information is not generally available. Most studies have, therefore, relied upon measures of either the share of the domestic market accounted for by imports, or proxies for the height of tariff and non-tariff protection afforded domestic producers.

Both of these measures are subject to qualification. For example, it might be reasonable to expect that a high import share would reflect substantial import competition and thus measures of profitability should be inversely related to the share of the market taken by imports. Nonetheless, it is conceivable that a small import share, ex post, could in fact be associated with a high elasticity of foreign supply which yielded pricing decisions in domestic markets that resulted in relatively low profits. In other words, potential import competition rather than actual may affect the pricing decisions of domestic firms. One might also surmise that the higher the degree of tariff and non-tariff protection given to firms, the greater would be the barriers to foreign firms, and hence, ceteris paribus, the higher could be the profits of domestic firms. In practice, however, tariffs and other forms of protection are often sought and obtained by industries which are troubled either by chronic excess capacity and/or high unit cost relative to the rest of the world, and hence protection may be associated with industries experiencing low rather than high profitability.

The problems above, notwithstanding, the available cross section evidence for a variety of countries as well as industry studies suggests that import competition does act as a restraining force upon domestic pricing. For example,

results by Pagoulatos and Sorensen and by Esposito and Esposito indicate that even for the large relatively closed economy of the United States, the profitability of domestic producers was inversely related to the share of the market accounted for by imports.⁵

With such results for the U.S. economy, one might expect perhaps even more definitive results for the economies of smaller and more internationally open nations. While the results for other countries tend to parallel those for the U.S., some significant differences do arise. In the United Kingdom, for example Hart and Morgan found no significant relationship between import shares and profitability. Khalilzadeh-Shirazi found import shares to be negatively related to profits in his analysis of U.K. data, but the variable was only marginally significant. Hitiris on the other hand, found that effective protection rates were strikingly significant in explaining industry profitability in his study of the U.K.. Results presented by Pagoulatos and Sorensen for five Common Market countries (France, Italy, Germany, Netherlands, and Belgium-Luxembourg) indicated that in all of the countries except Italy, price-cost margins were negatively influenced by the degree of import competition as measured by the share of output accounted for by imports.⁶

Studies for Canada present different conclusions. An analysis by Jones, Laudadio, and Percy found no systematic relationship between import competition (as measured by dummy variables) and profitability of Canadian industry. Likewise McFertridge could not detect any significant relationship between rates of effective protection and industry price-cost margins in Canada. Finally, Bloch found that differentials in profits between Canadian and U.S. firms were similar in both highly protected Canadian industries and in those with low tariffs.⁷ Since, he did find, however, that the prices in heavily protected industries were higher in Canada than in the U.S., his results suggest that the effect of tariff protection may have been on efficiency rather than profitability. Indeed

there is growing evidence that the tariff levels in Canada have resulted in inefficient industrial structures in which too many suboptimum sized firms have crowded into markets yielding fragmentation and an elevation of cost and prices.

Two reasons may explain some of these disparate results. The first is that import competition should only affect industry profits when market power in an industry is high enough that excess profits could in fact be achieved if foreign rivals were kept out of the market. The second is the problem that neither the import share nor the level of protection variables may accurately represent the unobserved elasticity of foreign supply.

In regard to the first argument it is interesting to note the work of Caves et al. for the Canadian economy. These authors find that an interaction variable between seller concentration and the import share does have a significant effect upon industry profits, but that neither has an effect independently. Thus they conclude that concentration appears only to significantly affect profits when in fact import competition is low.⁸ In regard to the second problem, some interesting results have recently been reported by Turner in his study of the U.K.⁹ He looked at the effects of the change in imports on industry profits in the U.K. after the 1967 devaluation. Since the devaluation should have raised world prices relative to those in the U.K., the change in imports in the years following the devaluation should provide a fair indication of the elasticity of foreign supply. Turner, finds that changes in imports are significantly related to industry price cost margins.

The results obtained from individual industry studies tend to confirm those obtained from the cross-section results. Frederiksen has studied several highly concentrated U.S. industries and found that import competition had resulted in stimulating price competition in three (flat glass, portable typewriters, and aluminum), but had less salutary effects in two more differentiated industries

(electric typewriters and wheel tractors).¹⁰ In the later two industries, however, it is interesting to note that a good deal of foreign production was in fact controlled by U.S. companies. Sichel's survey of large manufacturing firms also indicated the importance of import competition.¹¹ When the firms were asked about rivals in their principle industry, the respondents indicated that in 42 of the 69 industries a foreign company was among their chief competitors. Finally, in a study of the U.S. automobile industry, Toder finds that the prices of "quality equivalent" domestically produced automobiles were significantly affected by the share of foreign automobile imports.¹²

Taken as a whole the existing evidence suggests that import competition can improve the pricing and allocative performance in domestic markets. In contrast, impediments to trade, such as tariffs, quotas, voluntary export restrictions, and other barriers to trade associated with industrial policy appear to amplify the possibilities for monopolistic distortions. Moreover, barriers to international trade, particularly in countries with small markets, may lead to inefficient industry organization and fragmentation.

A second international force which may influence domestic market structure and behavior is the multinational enterprise. Since firms which establish production facilities abroad are, at least initially, at a disadvantage in terms of knowledge of laws, language, customs, etc, relative to national firms in the markets they enter, it is difficult to explain exactly why such investment occurs. Early analyses of the causes of foreign investment concentrated upon macroeconomic explanations of the phenomenon. The observation, however, that differences arise among industries and firms in regard to the volume of foreign direct investment undertaken has led to more sectoral specific explanations of the process, with greater emphasis placed upon aspects of industrial organization and market imperfections.¹³

If, for example, a firm is to overcome inherent disadvantages relative to national firms in entering markets, it appears that two conditions must be present. First, the firm must possess some unique asset which enables it to enter the foreign market and earn rents in spite of its disadvantages relative to national firms. Second, the asset must possess some characteristics of a public good such that it can be easily transferred and utilized in other markets without impairing its value in the home market. The set of assets which satisfy the above criterion, however, is limited. In particular, it would seem to consist of intangible assets in the form of firm specific advantages embodied in the firm's possession of patents, trademarks, specialized products in technology or design, and/or managerial knowledge and expertise in the adaptation, modification, and marketing of products to specific markets. In the parlance of industrial organization, this suggests that the types of industries in which substantial foreign investment is likely to emerge are those characterized by product differentiation.

A second characteristic of foreign investment activity is that it appears to be dominated by firms that are relatively large and possess substantial market shares in the parent country.¹⁴ It is not difficult to see why this should be the case. Besides having to undertake the potentially substantial cost of search and information that are required before entry, the firm must in addition be able and prepared to make the necessary investment in plant and equipment as well as the expenditures associated with the establishment of marketing and distribution channels. Therefore, it is the firms that have already established a substantial position in the parent market and, hence, can more easily generate funds through either external or internal financing which constitute the more likely foreign investors. For these reasons multinational activity is bound to be most pronounced in industries characterized by both oligopoly and product differentiation in the parent country.

Even recognizing that foreign investment tends to be associated with large firms selling differentiated products, the question still remains as to why firms invest rather than export or license local production.¹⁵ In many cases the nature of the firm's unique intangible assets may be such that investment is the only alternative. For example, if the firm's advantage lies in managerial expertise in adapting its products to local market conditions and/or providing specialized services to buyers, this may predispose the firm toward foreign investment. In other cases, however, foreign direct investment may have simply been induced by restrictions to international trade imposed by the host country. The evidence from historical accounts and surveys of multinational firms is replete with examples of this so called "defensive" investment.¹⁶ That is, subsidiary production is established in order to protect markets which are threatened by tariffs, other import restrictions, or a depreciation of the host country's currency.

One conclusion to be drawn from the analysis thus far is that foreign direct investment tends to move into areas and industries where international trade cannot. First, the fact that foreign investment takes place (for whatever reasons) suggests that it is a preferred alternative to exporting. Moreover, foreign investment is most concentrated in industries characterized by product differentiation. But these are precisely the industries, particularly those in which national marketing and advertising is an important source of differentiation, that we argued earlier are less susceptible to effective import competition.

The above reasoning implies that the multinational company may be supplying a source of rivalry and competition in domestic markets that could not come from international trade. Its ability to scale major barriers to entry (ample supply of funds, ability to market and differentiate its product) may render it the most favored entrant into industries in which barriers to entry are high. In

this regard, the multinational firm perhaps represents a new market participant and rival that could come from few other sources. Moreover, the multinational entrant is likely to represent a more disruptive influence than a domestic entrant. It may for example, utilize different technology and be importing more of its components from the parent firm and thus have a different cost structure than that of its national rivals. Its alien status may also render it less respectful of established modes of behavior and pricing. Finally, being geographically diversified, it is likely to be less dependent upon the host country market than its national rivals and thus may be more disposed to undertake risk associated with price cutting. Potentially then the multinational entrant can be given high marks in increasing the competitive pressures in the markets it enters.

The analysis thus far has cast a favorable light upon the multinational enterprise as a potential competitive force. Before accepting this conclusion a number of caveats must be considered. In the first place, since multinational entry is likely to occur in industries in which product differentiation is an important element, the conduct of the multinational firm may result in the industry being directed away from price competition towards forms of non-price competition such as model and style changes, proliferation of brands and product lines, and excessive advertising. These activities may not only be considered socially wasteful by some, but also may tend to ultimately heighten barriers to entry and result in increased prices.

Second, the entry of a multinational firm may provoke defensive mergers among national firms in the host market. In cases where genuine economies of scale exist the result may be an improved rationalization of the domestic industry. In other cases, however, the result may simply be an increased level of concentration and a tightening of oligopoly interdependence. Which way the

sword will cut is difficult to generalize.

Finally, the entry of a single multinational firm may bring about "follow the leader" tactics by other firms in the investing country, if they feel they can only protect their market shares by following the leader in investing abroad.¹⁷ The results of this, particularly in smaller countries and in industries where economies of scale are important, maybe a fragmentation of industry with too many firms crowding into the market for any to achieve optimum output levels. This problem is likely to be most acute in circumstances in which investment was induced for defensive purposes in order to overcome a tariff or other protective devices.

Competition Policy and International Trade

It is a common observation that much of international trade is carried on by large firms, and that large firms, at least up to some point, tend to export a larger percentage of their output than do their smaller rivals.¹⁸ These observations taken along with the notion of substantial economies of scale in most manufacturing industries, have led some to conclude that changing the competitive conditions in a domestic industry may be a method to improve the industry's international trade performance. Indeed, in recent years policies aimed at relaxing anti-trust enforcement and encouraging or promoting mergers have been advocated both in Europe and in the U.S. in order to improve export performance or to enable industries to better confront import competition.¹⁹ Most economists would probably argue that flexible exchange rates are a more appropriate response to trade imbalances than changes in anti-trust. Nonetheless, since countries do differ in regard to anti-trust and competition policies it is important to analyze to what extent international trade performance might be altered by changes in the degree of domestic competition.²⁰

Unfortunately, there exists only a limited amount of theoretical and empirical analysis to work with in addressing this issue. Perhaps the most thorough theoretical analysis of the issue is a recent paper by Lawrence White in which he compares, under a variety of alternative assumptions, the theoretical performance of a domestic monopoly versus a competitive industry in export and import competing situations.²¹

White's analysis shows that, under a variety of differing assumptions (homogeneous products, differentiated products, differing cost conditions), a domestic monopolist in virtually all cases is likely to yield a higher level of imports than would a competitive industry. Of particular interest is that this result can occur even in cases where a monopoly structure could achieve lower cost than a competitive one. This conclusion follows from the fact that in the monopoly case, imports will be reduced only to the extent that the more cost efficient monopolist is willing to produce a larger output (i.e. charge a lower price) than would have the competitive industry. The important implication is that the potential efficiency gains from a monopoly structure are not sufficient in and of themselves to guarantee a reduction in the level of imports. Rather, the efficiency gains must be large enough to offset the increase in market power that results from the transformation of the competitive industry into a monopoly.

The scant empirical evidence for the U.S. seems at least indirectly to support White's conclusions concerning the role of industry structure in import competing situations. Pagoulatos and Sorensen, for example, found that for import competing manufacturing industries (after allowing for differentials in plant scale economies, research and development effort, product differentiation, and transportation cost) a positive and statistically significant relationship existed between imports as a percentage of domestic value of shipments and the

level of industry concentration.²² This evidence is also supported by results presented by Caves and Khalilzadeh-Shirazi.²³ Utilizing rather detailed individual firm data, they found that the level of industry concentration was significantly higher in U.S. industries in which imports as a percentage of domestic disappearance (shipments minus exports plus imports) was large compared to industries in which the import share was small.

White's analysis for export competing situations leads to ambiguous conclusions. Assuming costs are identical under the monopoly and competitive industry structures (and assuming homogeneous products and the absence of dumping), then the monopoly structure yields lower levels of exports than the competitive one. If, however, international price discrimination (dumping) is allowed then a monopoly industry is likely to export more than a competitive one. Under conditions in which the foreign and domestic products are imperfect substitutes (product differentiation) or the monopoly structure results in cost savings, almost anything can happen depending upon the conditions of demand in the two markets and the size of the efficiency gain resulting from monopolization.

While White's analysis leads to inconclusive results in predicting the impact of domestic monopoly on export activity, empirical evidence as well as less formal analysis suggest that firm size and a limited degree of market power may be conducive to the enhancement of exporting even beyond the achievement of economies of scale or the use of price discrimination. Conceptually, this conclusion is based upon the existence of market imperfections which render the securing of sales in foreign markets more difficult than in domestic market.

For example, fluctuations in foreign exchange rates as well as the possibility of political developments affecting markets abroad make export sales relatively risky, especially if new capacity may be needed to serve foreign demand.²⁴ In

addition, the fixed cost of information is likely to be higher in foreign than domestic markets owing to differences in language, customs, habits, and increased distance of the foreign markets from the firm's home base. Finally, the ability of a firm to simply compete on the basis of price may not be sufficient for it to secure foreign sales. It is reported, for example, that non-price factors such as the ability of firms to supply credit to foreign buyers and the speed and certainty with which a firm can deliver its product often take precedence over price in determining foreign sales.²⁵

Given the existence of these imperfections it is arguable that the firms which are best equipped to handle the problems and difficulties of exporting are those which are relatively large and possess some degree of market power in their domestic markets. It is these firms which are likely to have the sources of internal profits, the access to capital, and the volume of domestic sales necessary to overcome the inherent difficulties of penetrating foreign markets.

The available empirical evidence seems to support the conclusion that a limited degree of market power may aid export performance. Pagoulatos and Sorensen, for example, found that in U.S. export competing manufacturing industries a statistically significant and positive relationship between the level of industry concentration and the proportion of industry output exported even after accounting for other industry characteristics such as the degree of plant scale economies, the amount of product differentiation, and the intensity of industry research and development activity.²⁶ Similar results have been reported by Caves and Khalilzadeh-Shirazi for their sample of U.S. firms.²⁷ In a study of trade between France, West Germany, and Italy, Owen found that industry concentration contributed a positive effect upon bilateral trade flows, but only up to a threshold level of concentration (between 45-60% for the top eight firms.)²⁸ For levels of concentration beyond the threshold, bilateral

trade flows declined. The implication of Owen's result is that increases in firm size and market shares may aid export performance up to a point, but once the threshold is reached, oligopolistic interdependence may impede trade. Finally, Goodman and Ceyhun found in their study of U.S. international trade in manufactures that industries which they classified as "new" (those with research and development expenditures as a percentage of sales greater than the overall manufacturing average), industry concentration exerted a positive influence upon export performance, but for industries classified as "old" (those with research and development expenditures below the average), the concentration-export relationship turned negative.²⁹

Additional evidence on this matter can be drawn from the recent analyses of the effects of the Webb-Pomerene Act on U.S. export trade. Under the provisions of this act, firms are effectively exempted from U.S. antitrust laws and permitted to collude for purposes of export sales. Indeed, the original intent of the Act was to increase the participation of small firms in export trade by providing them opportunities to overcome the difficulties of entering foreign markets mentioned earlier, by the pooling of risk, information and marketing cost, through export associations authorized by the Act.

Perhaps the most interesting result obtained from the empirical studies of Webb associations is how little they have actually contributed to export promotion. Not only has the number of successful associations formed been small, but also the amount of exports which have been assisted through these associations has been limited. The U.S. Federal Trade Commission, for example, has estimated that only about 2.4% of annual aggregate U.S. exports receive Webb association assistance, and that even within individual industries Webb assistance seldom applied to as much as 10% of industry exports.³⁰ Some of the more successful Webb associations have been studied by Larson.³¹ He finds that the successful

associations were usually those formed by firms in industries already highly concentrated in the domestic market and producing relatively homogeneous products. This result is not surprising, since these conditions are favorable to cartel formation. The activities of these associations, however, were such that they frequently chose to cooperate and seek "peaceful coexistence" with their overseas rivals rather than compete with them.

Taken as a whole, the existing evidence suggests that relaxation of anti-trust enforcement and the promotion of mergers and cartels is a highly uncertain method of improving an industry's export or import competing performance. In many instances such policies may be counterproductive in that imports may actually increase and exports decline. Competition policies should rather be based upon their domestic merit. Mergers essential to the achievement of genuine economies of scale or to the rationalization of fragmented industries should rightfully be encouraged. At the same time authorities should not fear to promote and preserve competitively structured industries where possible.

Measuring the Protective Effect of Industrial Policies

Many industrial policies have been adopted in recent years without the benefit of economic studies or data supporting their effectiveness in achieving the desired objectives. Indeed, very few quantitative measurements have been made of the ex ante or ex post impact of these policies on domestic industry structures and international trade flows. One reason for this can be found in the lack of design in the adoption of industrial policy as a response to actual or presumed needs to facilitate industrial adjustment and structural change. Furthermore, only part of this increased government intervention has been motivated by the domestic and international effects of trade liberalization, and only some of the adopted measures have an intentional protective effect. It is thus very difficult to assess what the pattern of domestic production and

international trade would be in the absence of such measures. Finally, few governments compile the necessary information for empirical evaluation, nor is it always very clear what the meaning and exact content of industrial policy is. For these reasons, the domestic structure and protective effects of such forms of government intervention are difficult to quantify.

A modest amount of research has now begun to fill the need for a quantitative measurement of the domestic and trade effects of industrial policies. This research has focused mainly on such industrial policies as public procurement and government assistance to domestic and export industries. In what follows, some of the empirical evidence available up to now on the protective effect of a few industrial policy instruments will be summarized.

Government Procurement

One of the most widespread forms of discrimination against imports in industrialized countries is the public procurement of merchandise under various "buy domestic" regulations and procedures. This discrimination against foreign firms may manifest itself in the terms for soliciting bids, the various bidding requirements, and the criteria for selecting bids and awarding government contracts. There is little doubt that this form of government intervention, with the possible exception of cases involving public health or national security, represents a deliberate import restriction.

Two recent studies by Baldwin³² and by Lowinger³³ have provided a quantitative assessment of the extent and impact of government discrimination as a nontariff barrier in the U.S. and E.E.C. countries. Both studies utilize input-output information in the calculation of a hypothetical import figure under the assumption that the government has an import propensity similar to that of the private sector. The difference between this hypothetical figure and actual government imports provides an estimate of the degree of discrimination

against foreign suppliers. The estimates obtained by Baldwin and Lowinger for the mid-1960s suggest that discriminatory procurement practices had a significant impact in curtailing imports in the U.S. and to a lesser extent in France and England.³⁴ Under the assumption of no government discrimination, U.S. government imports would have been more than six times their actual value. In contrast, these authors found no significant evidence of government discrimination against imports in the case of Belgium, Germany, Italy and the Netherlands.

The above estimates refer mainly to the trade-diverting effects of public procurement. Government discrimination may also affect international trade flows indirectly, through the impact of this policy on domestic industry structure. This structural effect could result from reduced foreign competition, from the subsidy granted to the research and development activity of a company (as is often the case with aerospace), or through the strengthening and stabilization of leading-firm positions in particular industries. How significant is the domestic structural impact of discriminatory government procurement practices? More research is needed before any conclusive answer can be provided. Furthermore, while quantitative estimates are not available for Japan and other O.E.C.D. countries, the general conclusion from the Baldwin and Lowinger results is that reduction in government discrimination will result in greater trade liberalization for U.S. industries as compared to the E.E.C.

Public Assistance to Industry

A second type of industrial policy for which some tentative quantitative estimates exist in regard to its impact on trade is government assistance to industry. A wide variety of instruments have been utilized by O.E.C.D. governments as aids to manufacturing industry. These range from direct grants to companies, to low interest rate loans, wage and social security subsidies,

research and development support, preferential tax and credit treatment, retraining and technical assistance subsidies, and various export promotion subsidies. The scope and magnitude of these government aids varies from country to country as does the explicit objective for their adoption. This increased state involvement in the private sector has at times been part of a concerted effort to facilitate regional development or to promote certain technologically advanced industries. It has also been an attempt to facilitate structural changes imposed on domestic industry by technological factors and increased foreign competition. Whatever the announced goal of such policies, however, there is growing agreement that such industrial assistance policies have indirect, and sometimes direct, distorting effects on international trade flows.

One of the first attempts to capture the effect of domestic subsidies on changes in the pattern of trade was made by Denton, O'Cleireacain, and Ash with reference to the United Kingdom.³⁵ Their method consisted of relating the pattern of British trade to a number of determinants of international trade flows including the role of UK subsidies to private enterprise. They found no hard evidence that trade flows or other indicators of domestic performance were correlated with the industrial pattern of UK government subsidies. Denton has subsequently provided further quantitative estimates of the extent of subsidization of British industry through assistance directed to specific industries as well as various general incentives, such as investment grants and the selective employment tax.³⁶ His study concludes that wide variations exist in the degree of subsidization among industries and between firms of the same industry. Denton further concluded that some types of subsidy, especially those given to save a firm from liquidation, had a considerable effect on the pattern of trade in the short run. On the other hand, public assistance granted for the purpose of

industry modernization, may distort trade only in the long run if firms succeed in competing in world markets. Denton's general conclusion is that British industrial policy has been incoherent in terms of its objectives and the validity and effectiveness of its means in securing these objectives.

Melvyn Krauss has recently attempted to separate that portion of government subsidies that is more directed toward export promotion from domestic purposes.³⁷ His conclusion on the basis of UK input-output information is that the rate of subsidy to exported value-added in manufacturing ranged from .91% to 3.59%. These figures imply a relatively low impact of subsidy payments on UK trade. His reliance, though, on input-output sources limits the validity of his results, since subsidy practices such as interest rate concessions, loan guarantees, and procurement policies are not included in input-output tables.

The public assistance given to West German industry has been recently evaluated by Gerhard Fels.³⁸ This author has surveyed German assistance policies and supplemented effective protection rates with the effective rate of direct industrial assistance. His results indicate that agriculture, food processing, and consumer goods industries were the sectors more highly protected as a result of direct government assistance.

Finally, the preferential tax treatment of exporters in U.S. industries has received considerable attention in recent years. This means of government export promotion is the Domestic International Sales Corporation (DISC), authorized in the United States by the Revenue Act of 1971. The procedure of the DISC consists of the establishment of special tax shelters that provide tax advantages to U.S. exporters for the purpose of inducing them to expand exports. Recent quantitative estimates by Horst and Pugel³⁹ and the U.S. Congressional Research Service⁴⁰ indicate that in 1974 U.S. exports were increased by about \$2.1 to \$1.4 billion and that 100,000 additional jobs were created as a result of the stimulative

effect of DISC. This constitutes an approximate increase in the value of exports of only 2-3%. In general, the available evidence suggests that the adoption of the DISC as a means of improving U.S. export performance was more instrumental in increasing corporate profitability rather than in expanding exports.

Conclusions

Clearly industrial policies in advanced countries are becoming a topic of concern in the eyes of both private businesses and national governments. Their lack of transparency creates uncertainty and concern, not justified at times, about their protectionist effects. Moreover, the wide variety of measures applied and the specificity of industrial policies in terms of individual firms and industries makes a comprehensive study of their effects on domestic and international markets extremely difficult.

The available evidence indicates that trade can lead not only to a more efficient utilization of the world's resources but also to greater competition in domestic markets. From the point of view of promoting effective competition, our analysis generally supports a policy of openness toward entry via international trade or multinational investment. In contrast, tariffs and other government imposed impediments to trade reduce the scope for the elimination of monopoly distortions through foreign entry. On the other hand, the promotion of merger activity or the relaxation of antitrust as a means of improving export performance is an uncertain policy instrument both in terms of achieving the desired results and in terms of its conflict with competition policy.

Finally, the limited quantitative evidence on procurement and various subsidy policies indicates that they do distort international trade flows and that their impact is more pronounced in restricting imports than in promoting exports. Whatever the apparent contradictions of industrial policies, any negotiation about them is bound to be difficult. Even if further research were to disentangle their effects on international trade and domestic structure, they may still be politically difficult to negotiate.

FOOTNOTES

1. Among the many writings on industrial policy, the following are worth noting: O.E.C.D., The Industrial Policies of 14 Member Countries, Paris: O.E.C.D., 1971; G. Ohlin, "Trade in a Non-Laissez-Faire World", in P.A. Samuelson, ed., International Economic Relations, London: MacMillan, 1969; G. Ohlin, "National Industrial Policies and International Trade", in C.F. Bergsten, ed., Toward a New World Trade Policy, Lexington, Mass.: Lexington Books, 1975; S. J. Warnecke and E. N. Suleiman, eds., Industrial Policies in Western Europe, N.Y.: Praeger, 1975; P. Uri, "Industrial Policy: Location, Technology, Multinational Firms, Competition, and Integration of Product Markets", in F. Machlup, ed., Economic Integration: Worldwide, Regional, Sectoral, London: MacMillan, 1976; S.J. Warnecke, ed., International Trade and Industrial Policies, N.Y.: Holmes & Meier, 1978.
2. For more discussion on the trends and implications of the "new protectionism" see: B. Balassa, "The 'New Protectionism' and the International Economy", Journal of World Trade Law, Vol. 12, September/October 1978, pp. 409-236.
3. See for example: Balassa, B., "Tariff Reductions and Trade in Manufactures among the Industrial Countries", American Economic Review, 56, June 1966, pp. 466-473; Gray, H.P., A Generalized Theory of International Trade, New York: Holmes and Meier Publishers, 1976; Grubel, H.G., and Lloyd, P.J., Intra-Industry Trade, London: MacMillan Press, 1975; Hufbauer, G.C., and Chilas, J.G., "Specialization by Industrial Countries: Extent and Consequences" in Herbert Giersch, ed., The International Division of Labour: Problems and Perspectives, Tubingen: J. C. B. Mohr (Paul Siebeck), 1974; Pagoulatos, E., and Sorensen, R., "Two-Way International Trade: An

Econometric Analysis", Weltwirtschaftliches Archiv, No. 3, 1975, pp. 454-465.

4. A more complete discussion of the advantages of foreign entrants as compared to domestic entrants is provided by: L. Esposito and F. Esposito "Foreign Competition and Domestic Industry Profitability", Review of Economics and Statistics, November 1971.
5. E. Pagoulatos and R. Sorensen, "International Trade and Investment and Industrial Profitability of U.S. Manufacturing", Southern Economic Journal, January 1976, and L. Esposito and F. Esposito, op. cit., 1971.
6. The relevant studies cited are: P. Hart and E. Morgan, "Market Structure and Economic Performance in the United Kingdom", Journal of Industrial Economics, March 1977; J. Khalilzadeh-Shirazi, "Market Structure and Price-Cost Margins in United Kingdom Manufacturing Industries", Review of Economics and Statistics, February 1974; T. Hitiris, "Effective Protection and Economic Performance in U.K. Manufacturing Industry, 1963 and 1968", The Economic Journal, March 1978; E. Toder, Trade Policy and the U.S. Automobile Industry, New York: Praeger Publishers, 1978; E. Pagoulatos and R. Sorensen, "Foreign Trade, Concentration and Profitability in Open Economies", European Economic Review, October 1976.
7. The relevant studies cited are: J. Jones, L. Laudadio, and M. Percy, "Market Structure and Profitability in Canadian Manufacturing Industry: Some Cross Section Results", Canadian Journal of Economics, August 1973; D. McFertridge, "Market Structure and Price-Cost Margins: An Analysis of the Canadian Manufacturing Sector", Canadian Journal of Economics, August 1973; H. Bloch, "Prices, Costs, and Profits in Canadian Manufacturing: the Influence of Tariffs and Concentration", Canadian Journal of Economics, November 1974.

8. R. Caves, et al., Studies in Canadian Industrial Organization, Ottawa: Information Canada, 1977.
9. P. Turner, "Some Effects of Devaluation: A Study Based on the U.K.'s Trade in Manufactured Goods", unpublished Ph.D. dissertation, Harvard University, 1976.
10. P. Frederiksen, "Prospects of Competition from Abroad in Major Manufacturing Oligopolies", Antitrust Bulletin, Summer 1975.
11. W. Sichel, "The Foreign Competition Omission In Census Concentration Ratios: An Empirical Evaluation", Antitrust Bulletin, Spring, 1975.
12. E. Toder, op. cit.
13. The most systematic treatment of this approach can be found in R. Caves, "International Corporations: The Industrial Economics of Foreign Investment", Economica, February 1971, and R. Caves, "Industrial Organization" in J. Dunning, ed., Economic Analysis and the Multinational Enterprise, London: Allen & Unwin, 1974.
14. Indeed, Horst finds that within individual industries the only consistent difference between those firms that become multinational and those that don't is their relative size. See: T. Horst, "The Firm and Industry Determinants of the Decision to Invest Abroad: An Empirical Study", Review of Economics and Statistics, August 1972.
15. An excellent summary of these is provided in J. Baranson, "Technology Transfer Through the International Firm", American Economic Review, Papers and Proceedings, May 1970.
16. See for example the surveys in C. Bergsten, et al., American Multinationals and American Interests, Washington, D.C.: Brookings Institution, 1978, and G. Hufbauer, "The Multinational Corporation and Direct Investment" in P. Kenen, ed., International Trade and Finance, Cambridge University

Press, 1975.

17. Evidence of this type of behavior has been found by F. Knickerbocker, Oligopolistic Reaction and the Multinational Enterprise, Harvard University Graduate School of Business Administration, 1973.
18. See for example: S. Hirsch, The Export Performance of Six Manufacturing Industries: A Comparative Study of Denmark, Holland and Israel, New York: Praeger Publishers, 1971.
19. See for example U.S. Department of State, Bureau of Public Affairs, Office of Media Services, news release, 11 April 1973; and New York Times, 9 January 1972 and 12 November 1972; and Washington Post, 14 April 1973.
20. While many differences still exist, there appears to be a convergence of thinking between the U.S. and Western European nations regarding the importance of anti-trust and the maintenance of competitive market structures. See: Wilbur L. Fugate, "Antitrust Aspects of Transatlantic Investment", Law and Contemporary Problems, Winter 1969.
21. L. White, "Industrial Organization and International Trade: Some Theoretical Considerations," American Economic Review, December 1974.
22. E. Pagoulatos and R. Sorensen, "Domestic Market Structure and International Trade: An Empirical Analysis," Quarterly Review of Economics and Business, Spring 1976a.
23. R. Caves and J. Khalilzadeh-Shirazi, "International Trade and Industrial Organization: Some Statistical Evidence" in Welfare Aspects of Industrial Markets, ed., A.P. Jacquemin and H. W. de Jong, Leiden: Martinus Nijhoff, 1977.
24. This does not necessarily imply that an exporting firm is exposed to more overall risk than a non-exporting firm. A firm may in fact be able to reduce total risk by diversifying sales over several geographically distinct export markets.

25. A detailed account of the importance of non-price factors in affecting international trade is provided by I. Kravis and R. Lipsey, Price Competitiveness in World Trade, New York: National Bureau of Economic Research, 1971.
26. E. Pagoulatos and R. Sorensen, op. cit., 1976a.
27. R. Caves and J. Khalilzadeh-Shirazi, op. cit., 1977.
28. N. Owen, Intra EEC Trade and Industry Structure London: Department of Trade and Industry, mimeo, 1973.
29. B. Goodman and F. Ceyhun, "U.S. Export Performance in Manufacturing Industries: An Empirical Investigation", Weltwirtschaftliches Archiv, No. 3, 1976.
30. Federal Trade Commission, Webb-Pomerene Association: A 50 Year Review, Washington, D.C., 1967.
31. D. Larson, "An Economic Analysis of the Webb-Pomerene Act", Journal of Law and Economics, October 1970.
32. R. E. Baldwin, Nontariff Distortions of International Trade, Washington, D.C.,: The Brookings Institution, 1970, pp. 58-83.
33. T. C. Lowinger, "Discrimination in Government Procurement of Foreign Goods in the U.S. and Western Europe", Southern Economic Journal, Vol. 42, No. 3, January 1976, pp. 451-460.
34. The crudeness of the data utilized, and the possibility that some of the products purchased by the government are directly comparable to those utilized by the private sector, impose limitations on the interpretation of these results. For further discussion of these estimates see: W. R. Cline, et al., Trade Negotiations in the Tokyo Round: A Quantitative Assessment, Washington, D.C.: The Brookings Institution, 1978, pp. 189-194.

35. G. Denton, S. O'Cleireacain, and S. Ash, Trade Effects of Public Subsidies to Private Enterprise, London: MacMillan, 1975.
36. G. Denton, "Financial Assistance to British Industry" in W. M. Corden and G. Fels, eds., Public Assistance to Industry, London: MacMillan, 1976, pp. 120-164.
37. M. Krauss, "Export-Promoting Subsidies in the United Kingdom: Theoretical and Empirical Aspects", paper cited in S. O'Cleireacain, "Measuring the International Effect of Subsidies", in S.J. Warnecke, ed., International Trade and Industrial Policies, New York: Holmes & Meier, 1978, p. 209.
38. G. Fels, "Overall Assistance to German Industry", in W. M. Corden and G. Fels, eds., op. cit., pp. 91-119.
39. For a more detailed account of the DISC legislation, its subsequent modifications, and an estimate of its effect on US exports, see: T. Horst and T. Pugel, "The Impact of DISC on the Prices and Profitability of U.S. Exports", Journal of Public Economics, Vol. 7, No. 1, February 1977, pp. 73-87.
40. J. Gravelle, et al., "The Domestic International Sales Corporation (DISC) and its Effect on U.S. Foreign Trade and Unemployment", Congressional Research Service, Library of Congress, Washington, D.C., May 4, 1976.