PLANT CHARACTERISTICS AND EXPORT ORIENTATION IN PHILIPPINE MANUFACTURING

By

Romeo M. Bautista and Gwendolyn R. Tecson*

Introduction

It is now conventional wisdom that the expansion of manufactured exports is capable of accelerating industrial development in small open economies. After the successful policy efforts in the 1960s by South Korea and Taiwan, among others, in promoting exports of labor-intensive manufactures with apparently beneficial effects on their national economies, the strategy of outward-looking industrialization has been increasingly favored by development economists and in recent years by policy makers in other less developed countries (LDC). The mere act of exporting manufactured goods of course does not necessarily make an LDC better off, but the presumption normally is that export promotion serves the more fundamental objectives of development policy (relating, for example, to output, labor force utilization and income distribution).

In this paper we examine the pattern of export orientation of a representative sample of manufacturing firms in the Philippines, making an attempt to systematically relate certain plant characteristics to the extent to which firms export their products. As the effects on the economy of export growth would in part be determined by the type of firms encouraged by export promotion policies, it is of some interest to investigate at the level of the firm those characteristics that in the past seem to correlate with the degree of export orientation. Are the plant characteristics of export-oriented firms conducive to the achievement of the country's development objectives? How can existing export promotion policies be modified to improve the contribution of manufactured exports to the development effort?

Our source of data is the NEDA-World Bank survey on industrial capital utilization in the Philippines for 1972, involving a stratified

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*Professor and Assistant Professor of Economics, respectively, University of the Philippines. Felice Llamas provided valuable computer programming assistance.

random sample of 400 firms drawn from the NCSO population of manufacturing establishments employing 20 or more workers. Data on a wide range of capital utilization-related variables, including the value of products exported and total sales, were gathered in that interview survey.[1]

The still basically inward-looking character of Philippine manufacturing is reflected in the low degree of export orientation of firms in the sample, the mean export-sales ratio being 12.2 per cent.[2] Some 290 plants or about three-fourths of the total number of sampled establishments sold their products exclusively in the domestic market in 1972, while the rest had varying degrees of export orientation. The following gives a breakdown of plants ranked according to their degree of export orientation:

Export Orientation (in per cent)	No. of plants
0	290
1-20	44
21-40	12
41-60	16
61-80	12
81-100	26
Total	400

An examination of Table 1, which gives a more detailed picture of the export performance of establishments according to the 4-digit PSIC classification, reveals considerable inter-firm and inter-industry variation in export orientation values. Topping the list in terms of average export orientation value is the cordage, rope and twine industry (3215), a traditional, domestic resource-intensive export industry. Other industries producing intermediate goods such as wooden containers (3312), sawmill products (3311) and vegetable oils (3114) are also seen to exhibit relatively high export orientation

[1] See Bautista (1975b) for a discussion of the sampling procedure and survey questionnaire.

[2] This is higher than the percentage of total exports to net manufacturing output (9.1 per cent) based on 1969 input-output data.

values, but as a group intermediate goods industries averaged only 9.2 per cent. The capital goods sector, on the other hand, had 11.8 per cent which is slightly lower than the overall mean. Some highly export-oriented firms can also be found in the light and durable consumer goods category, notable among them: made-up of textile goods (3212), knitting mills (3213), furniture and fixtures (3220) and canning and processing of fish and similar products (3114). From the list one can identify a number of import-substituting industries which have received rather heavy protection from the tariff structure of the past (c.f. Power 1971) and have recorded zero export sales in 1978: tanneries and leather finishing (3231), pulp and paperboard (4311), fertilizers and pesticides (3512), tires and tubes (3551), and bicycles (3844).

Determinants of Export Orientation

In this section we identify the variables which, on theoretical grounds, considerations of past policies and suggestions from earlier studies, might be expected to have a direct influence on the export orientation of manufacturing firms in the Philippines. Simple averages and correlation coefficients are used to provide a preliminary indication of the quantitative significance of the relationships. In the next section these explanatory variables are put together in a multiple regression analysis in order to isolate the net effect of each variable (i.e., independently of the other influences) on export orientation.

Plant size

There are reasons to suppose that plant size is positively correlated with the export performance of firms. Plants with greater built-in capacity have greater potential ability to service bigger markets, that is, to consider selling beyond domestic frontiers. Besides, larger-sized firms can take advantage of scale economies, in both production and sales, which may determine competitive position in world markets and which may not be available to smaller-sized firms. On the other hand, in the Philippine context, industrialization and trade policies in the 1950s and 1960s have discriminated effectively against both exporting and small-scale manufacturing (cf. ILO, 1974) so that a negative association between export orientation and size of plants is also possible.

We make use here of two alternative measures of plant size available from the Survey data, namely, the replacement value of capital assets and the gross value of annual sales of plant output. The 400 non-exporting firms had an average replacement value of capital assets amounting to ₱28,195 plants which exported up to 50 per cent of output had a mean replacement value of ₱41,420, while the corresponding figure for plants exporting from 50 to 100 per cent of output is ₱50,797. The same positive trend is discernible in the annual sales figure as export orientation increases: ₱19,197 for non-exporting firms, ₱26,785 for those in the 1-50 per cent export orientation category, and ₱33,375 for the most heavily export-oriented establishments. The simple correlation coefficient between export orientation and plant size represented by either measure is surprisingly quite low (less than 0.10).

Capital-labor ratio

The degree of factor intensity in production is also expected to be related to the export orientation of firms. From an Hecksher-Ohlin type of argument one can hypothesize export-oriented firms in the Philippines to be more labor-intensive than those that sell primarily in the domestic market. This is because of the country's assumed comparative advantage in product lines that use intensively the relatively abundant labor resource. While the earlier results of empirical verification of the hypothesis in other countries have been inconclusive (Naya, 1967), more recent studies on export performance and industrialization in developing countries lend support to the theory. Labor-capital ratios in South Korea's manufacturing sector were found to be higher for exports than for import substitutes and similar results were obtained from Colombian manufactured exports (cf. Balassa, 1977); in the case of Brazil labor requirements were found to be 40 per cent higher for exports than for imports. It bears emphasis, however, that meaningful results in the verification of the Hecksher-Ohlin theorem require, among other considerations, the assessment of the factor endowment of a country *relative* to that of its trading partners, a distinction among all major inputs in production (not just capital and labor) and a recognition of the non-homogeneity of a country's factor inputs, especially of labor.

Mean capital-labor ratios, computed here as the ratio of the replacement value of capital assets to the number of day-shift workers of plants, do not show a clear trend in relation to export orientation values. These ratios are observed to vary significantly across establishments and to move in a non-systematic way as the degree of export orientation increases: K/L for non-exporting firms stood at ₱423.2 for firms with mean export-sales ratio below 50 per cent and ₱350.1 for firms exporting 50 to 100 per cent of output. The calculated correlation coefficient between the capital-labor ratio and export orientation of the sampled establishments is only .015.

Skill intensity

Related to labor intensity is the skill intensity of manufacturing industries. Labor not being homogeneous, different industries may have different skill requirements. Considering the relative abundance of unskilled labor in the Philippines, theory points to a comparative advantage in those products with relatively low skill content. Hence, export industries might be expected to have a relatively more intensive utilization of unskilled and semi-skilled labor.

The Survey data do not provide direct information on the level of skills of production workers. However, assuming that wage differentials reflect relative differences in skills among workers, a possible proxy variable is the wage rate, which presumably will take on a lower value on the average for establishments that employ more unskilled workers in production. Greater export orientation may thus be generally associated with lower average wage rates. The correlation coefficient between the hourly wage rate and export-sales ratio turned out to be positive, albeit insignificantly. Based on simple averages, the hypothesized relationship cannot also be rejected or confirmed outright: firms with zero export orientation showed a mean hourly wage rate of ₱1.37 as compared with ₱1.31 and ₱1.48 for those with 1-50 per cent and 50-100 per cent export-sales ratio, respectively.

Relative factor prices

Differences in the relative abundance of primary factors across countries, barring substantial market distortions, would be reflected in relative factor price differences. The labor surplus character of the Philippine economy (relative to its principal trading partners, the United States and Japan), suggests a relatively higher factor price ratio (Pk/W), defined here as the annual cost of owning capital[3] over the hourly wage rate of production workers, for the more heavily export-oriented establishments, according to comparative advantage theory. However, the coming of multinational firms to the scene tends to break the traditional line of argument in that these corporations have access to the relatively cheap capital of the developed countries. Also, the nature of economic policies adopted in the postwar period has introduced distortions in factor markets, affecting differently the cost of labor and capital across industries (cf. Special Paper No. 15 in ILO, 1974).

Sampled plants which did not export at all in 1972 registered the highest mean Pk/W (1.93), followed by those in the 1-50 per cent export-to-sales category (1.58), and then finally by those establishments majority of whose sales are represented by exports (1.44). The correlation coefficient between the two variables is -.132.

Plant age

One can argue, à la Linder, that exports grow out of a broad and developed domestic market. Older establishments which have developed the necessary cost-reducing and/or quality-improving techniques in response to home demand may then have an edge in penetrating world markets over younger firms. Besides, the acquisition of the proper marketing know-how, which poses one of the major barriers to international selling, requires undergoing a learning process, the fundamental elements of which can be acquired through operation, to begin with, in a more familiar domestic market setting. However, it must be recognized that exporting constitutes an "innovation" in production, marketing, and other related activities, a virtual leap from the time-tested activity of operating in a home market (Staelin, 1976). But innovations do occur in the process of "doing" so that firms which have been longer in the business can generally be expected, other things the same, to be more innovative and hence export-oriented than other establishments.

As a counter-argument, one can cite cases of firms that have been set up in response to a strong external demand for certain com-

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[3] See Appendix D in Bautista (1974) for the estimation of the annual cost of owning capital, which is based on one U.S. dollar's worth of imported capital equipment.

modities, like garments, without passing through a period of developing a home market base. But even in such cases, the demonstration effect of other firms in the industry which have grown out of domestic into world markets, is sometimes of crucial importance.

More unsettling to the Linder hypothesis is the phenomenon of foreign subcontracting and other collaboration agreements where virtually insurmountable barriers in international selling topple down with the coming of parent companies equipped with the necessary technical, managerial and marketing know-how. It becomes necessary to consider therefore the effect of foreign ownership and management on the degree of export orientation. The time dimension becomes less important in this context as firms regardless of age may have access to such foreign tie-ups. *A priori* conclusions on the relationship between plant age and export orientation are thus not clear, and the evidence presented in the Staelin study does not support any simple relationship between these two variables. This is corroborated by the simple correlation coefficient obtained from our Survey data, which is -.072.

Considering postwar Philippine economic history, one cannot leave the subject without examining the possible influence of economic policy on the export performance of manufacturing firms. From the Survey data one can detect the impact of different foreign trade regimes in the past on the export orientation of the sampled establishments. Plants established before the Import and Exchange Control Period of the 1950s had slightly higher mean value of export orientation (17.8 per cent) in 1972, relative to those set up during the Decontrol Period of the 1960s (14.2 per cent) and the post-devaluation period of the 1970s (14.4 per cent). Least outward-looking were the plants established during the Control Period of the 1950s (7.0 per cent) with the built-in penalty to exports in terms of the overvaluation of the peso and highly restrictive trade policies at the time.

Market structure

The greater the domestic competition a firm faces, the greater might be the incentive to turn to the export market as an alternative. Thus, where competition with other domestic firms is weak, e.g., in monopolies, exports may not be as attractive as for firms in industries where competition is strong. On the other hand, monopolistic positions may be positively correlated with size which as noted above may vary directly with export orientation.

Staelin (1976) has found a strongly negative correlation between exports and "too much domestic competition"; with this finding as well as that of the positive and significant relationship between capacity utilization and export performance of firms, he concludes that "weak domestic markets, *not* highly competitive ones" induce firms to turn to exports.

By inquiring into the number of competing firms the plant faces in the market, the Survey looked into the subjective perception by respondents of the degree of competition faced by their plants. Twenty-nine monopolies were thus identified, which perceived an absence of competition, 130 "tight" oligopolies having 1-7 competitors, 99 "loose" oligopolies with 8-20 competitors, and 147 firms competing with at least 20 other establishments. Monopolies ranked highest in degree of export orientation (33.6 per cent) followed not so closely by the more competitive firms with an average export to total sales ratio of 13.3 per cent. No significant difference in export orientation values was found between tight and loose oligopolies with values of 9.0 per cent and 8.6 per cent, respectively.

Capacity utilization

There are *a priori* reasons supported by empirical evidence that capacity utilization would be positively correlated with export performance. Due to inherent market limitations, the domestic market may not offer sufficient avenue for sales and production expansion. Faced with this situation, firms may then find themselves with excess capacity which they can attempt to reduce by selling in the export markets.

Indeed, among the more conclusive results of the Staelin study, the desire to employ capacity among the firms interviewed stands out as a strong and consistent motivation to consider, initiate, and expand exports — whether or not excess capacity is due to domestic market difficulties. Moreover, the study on industrial capital utilization in the Philippines (Bautista, 1974) provides indication that export firms operate at higher utilization rates on the average than non-exporting firms. This is further corroborated by the regression results showing a consistently significant influence of the export variable when regressed on capacity utilization rate (among other explanatory variables). Similar results are reported in a study on capital utilization in manufacturing industries in West Pakistan (Winston, 1971).

The simple averages from the Survey data also support this hypothesized association: mean capacity utilization rate was lowest for non-exporting firms (26.4 per cent), second lowest for firms exporting 1-50 per cent of output (29.7 per cent), and highest (40.7 per cent) for firms selling a major portion of their output in export markets.

Export market stability

Establishments facing a relatively stable export demand for their output can be expected to be more export-oriented, as indeed they were found to be in our Survey data. A mean export-sales ratio of 41.1 per cent was obtained for firms perceiving stable export sales, which is significantly higher than that firm encountering an unstable export market demand (13.0 per cent). Moreover, those which found no difference in the degree of stability of domestic and foreign demand also showed on the average a high level of export orientation (27.1 per cent).

Import dependence

Generally, in accord with comparative advantage theory, industrial products with a relatively lower degree of dependence on imports, i.e., those which have a high domestic resource content, would tend to perform better in the export markets than those which are relatively more import dependent. A simple correlation test relating import dependence of firms to their export-sales ratio gives a negative regression coefficient, although the relationship is not statistically significant. Comparison of simple averages also yields ambiguous results: plants which depended solely on domestic inputs show the highest average export orientation (15.0 per cent), but plants dependent on imported inputs for 50-100 per cent of their raw material requirements have a higher mean export sales ratio (12.3 per cent) than those importing 1-50 per cent of their total inputs (8.7 per cent).

The Regression Model

Based on the discussion of the preceding section, the following multiple regression model relating export orientation and a number of plant characteristics (entered variously in alternative specifications) is postulated:

XO = f(PS, K/L, PA, CP, CUR, Pk/W, HWR, MD, NO, NM, XMS, MS, LF)

where,

XO = degree of export orientation: ratio of export sales to total sales of the plant's first three principal products, in per cent.

PS = plant size: represented by either the value of total sales or the replacement value of fixed assets, in thousand pesos.

K/L = capital-labor ratio: the replacement cost of fixed assets divided by the number of day-shift workers, in thousand pesos.

PA = plant age: measured as 1972 less the year of plant establishment.

CP = Control Period dummy variable: 1 if firm was established in 1950-59, 0 otherwise.

CUR = capacity utilization rate: time intensity of capital use, in per cent.

Pk/W = relative factor prices: ratio of the annual cost of owning capital to the average hourly wage rate of production workers.

HWR = average hourly wage rate, in pesos.

MD = degree of import dependence: ratio of imported inputs to total input requirement, in per cent.

NO = nationality of ownership, a dummy variable: 1 if foreign-owned, 0 otherwise.

NM = nationality of management, a dummy variable: 1 if foreign-managed, 0 otherwise.

XMS = export market stability, a dummy variable: 1 if export demand is more stable than domestic demand; 0 otherwise.

MS = market structure, a dummy variable: 1 if monopoly, 0 otherwise.

LF = legal form, a dummy variable: 1 if firm is non-corporate, 0 for corporate.

Table 2 presents some better fitting specifications of the regression equation. Two sets of regression trials are presented, having either one of the two measures of size available in the Survey data, i.e. total sales or the replacement value of fixed assets as an explanatory variable. The table also contains regression specifications with and without the DMI variable.

Plant size is seen to be positively associated with the level of export orientation, the set of regression specifications using sales to represent size generally shows a slightly better fit than that using the replacement value of fixed assets. The introduction of XMS reduces the explanatory power of the scale variable but increases significantly the coefficient of determination. We tried entering the plant size variable nonlinearly (PS and PS^2) in the regression, exploring the possibility of a reversed direction of influence on export orientation beyond a critical plant scale; this specification did not yield statistically superior results, however.

The nonlinear form appears to explain better the relationship between the capital-labor ratio and export orientation, judging from the sign and t-values of the coefficient estimates, relative to the linear specification (cf. Appendix). The coefficients are negative for K/L and positive for $(K/L)^2$. This signifies a decrease in export sales ratio as capital intensity increases *ceteris paribus*, but only up to certain level of capital per unit of labor, beyond which both variables change in the same direction. This would presumably be related to the subcontracting aspect of production in certain labor-intensive industries (e.g., garments, shoes and other leather products, wool products) in which more capital-intensive firms are less likely to engage in.

Since $XO = -\hat{a}_1\ (K/L) + \hat{a}_2\ (K/L)^2 + \ldots$ the partial derivative of XO with respect to K/L is

$$\frac{\partial\, XO}{\partial (K/L)} = -\hat{a}_1 + 2\hat{a}_2$$

The critical value of K/L (corresponding to a minimum XO) is thus

$$(K/L)^* = \frac{\hat{a}_1}{2\hat{a}_2}$$

From Table 2 the range of the estimated coefficients implies a critical value of K/L from ₱29.7 to ₱37.7 thousand.

The possible influence of the age of plant on export orientation was introduced into the model in two ways through the numerical age of the plant and policy-related date of establishment. The former refers to the number of years since the plant's establishment, while the latter is represented by a dummy variable which allows for a shift of the regression plane in cases where plants date back to the Control Period of 1950-59, during which time the trade and industrialization policies adopted served as disincentives to exports. The regression results indicate that older establishments tended to be more export-oriented than younger ones, although the regression coefficients were not highly significant (the t-values being less than 1.64 in all regression trials). The age dummy variable yielded more conclusive results, with coefficient estimates significantly different from zero at the 5 per cent level or better, suggesting higher export orientation for plants established before or after the Control Period of the 1950s. This finding supports the evidence presented by simple averages of plant export-sales ratio for the different foreign exchange and trade regimes of the past.

The other independent variable that consistently came out in all the regression specifications as highly significant in explaining inter-plant variation in export orientation is the rate of capacity utilization (CUR). A 10 per cent increase in CUR would appear to generate a 1.2 per cent rise in the export orientation of firms. Normally, plants with excess capacity would be in an excellent position to consider selling in export markets because production expansion can be carried out without substantial increases in cost. Indeed it also offers firms the possibility of increasing productivity through a reduction in capital wastage. Staelin (1976) has also pointed out that the desire of firms to employ excess capacity strongly motivates firms to continue exporting, as interviewed firms on every stage of the export growth path cited capacity under utilization as a principal reason for exporting.

Four other independent variables exhibited strong explanatory power on the degree of export orientation of firms. These are market structure, legal form of business organization, nationality of management and export market stability. A somewhat surprising finding is that *ceteris paribus* plants which considered themselves monopolies generally exported more than those which perceived greater competition from other firms. It has to be borne in mind however that the market structure classification of sampled establishments is based on a subjective perception of competition rather than on a more objective set of criteria considering actual market conditions. The causality probably runs the other way, i.e., being export-oriented, a firm would not normally feel in competition with other domestic firms producing the same product. An interesting case in point is the sugar and refinery industry (ISIC 3118) to which belong 7 of the 18 plants which classified themselves as monopolies.

A dummy variable for non-corporations had been introduced to explore further the previous finding based on the simple averages showing higher export-sales ratios for corporations. Strong evidence provided by the highly significant values of the regression coefficient leads one to expect an increase in export orientation as firms move toward the corporate form of business organization, attributable perhaps to the greater "professionalism" inherent with corporations that enable them to overcome more readily barriers to entry in foreign markets.

Relatively more stable export market conditions vis-a-vis those of the domestic market seem to account also for the higher export orientation of establishments to a significant extent. This is seen from the markedly high t-values of the estimated coefficient of the market instability dummy variable.

In contrast with the observed insignificant influence of the nationality of ownership dummy variable, the nationality of management is consistently one of the most significant explanatory variables of export orientation. This would seem to indicate that the ability of firms to develop a strong link with export markets is favored not by foreign ownership but by the employment of foreign managers.

Identical sets of regression specifications had also been tried on the 110 firms which showed positive export orientation values. However, we obtained substantially reduced values of the coefficient of multiple determination and relatively less significant estimates coefficients of several independent variables. The explanatory variables that remained significant determinants of the export-sales ratio were the plant age dummy variable, capacity utilization rate, and nationality of management dummy variable.

Some explanatory variables tried in alternative regression equations either did not carry the correct signs or did not yield statistically acceptable results. These are the wage rate, relative factor price, degree of import dependence, plant location, and, as mentioned earlier, nationality of ownership.

The hourly wage rate was found positively related to the firm's export-sales ratio in the various regression specifications, but the estimated coefficient failed to meet the t-test. As this variable was meant to proxy for skill content of output, its hypothesized negative relationship with export orientation is not proven. Similarly, relative factor prices (Pk/W) did not show up to be an important determinant of export orientation of Philippine manufacturing firms. Institutional considerations cited earlier appear to blur any existing influence of relative factor endowments suggested by comparative advantage theory.

The degree of import dependence of firms also did not turn out to be significantly related to the degree of export orientation. The comparative advantage effects might have been counterbalanced by the relatively liberal import policy for export producers registered with the Board of Investments and the importance of international subcontracting in certain industries (e.g., garments and electronics).

The invariance of plant export orientation with the location variable indicates no significant difference between export-oriented and domestic market-oriented industries in terms of choice of plant sites, differentiated here according to population density. Unless strongly pulled towards raw material sources, both export-oriented manufacturing plants and import-substituting industries would tend to locate in cities and provincial centers. For the export-oriented industries, the pull towards the metropolitan and provincial cities is partly due to the need to be located near ports — which is in effect a pull to the market, and also to raw material supplies where imports may contribute a major input to production. In much the same way, inward-looking industries will also tend to locate near the market, i.e., the more densely populated areas of cities and towns, as well as near ports because of supply orientation, i.e., towards imported raw material supplies.

Manufacturing firms in the Philippines differing in nationality of ownership do not seem to differ significantly from one another in the degree of export orientation, other things the same. Capital flows in the form of direct investment may be expected to depend on relative differences in yields among countries, but this would not have any necessary implication on the geographic direction of output sales. For instance, the free trade relationship between the United States and the Philippines from 1909 to 1934 attracted American capital funds into the country[4] and in particular into the traditionally export-oriented industries; by contrast, the preferential tariff reciprocity between these two countries in an environment of import and exchange controls during the 1950s induced U.S. capital inflow but primarily into import-substituting and domestic trade activities, taking advantage of the gains from high effective rates of protection accorded such activities (Power, 1971).

Other Determinants of Export Orientation

About eighty per cent of the observed variation across plants in export orientation has been left unexplained by the regression model. That observed export orientation values diverged considerably from the predicted values implies that other significant factors have not been considered. In particular, very large residuals characterize several firms belonging to such industries as sugar manufacture, textile and knitting mills, wearing apparel, pharmaceuticals, soaps and cleaning preparations. This is due in part to the failure to incorporate aspects of government policy towards these industries as well as some institutional arrangements which are either export-inducing or export-deterring.

Until 1974 Philippine sugar always received preferential treatment in the U.S. market. By virtue of the U.S. Sugar Act which assigned quotas to different suppliers of sugar, the Philippines was given the largest quota assignment, especially after American diplomatic relations with Cuba were severed in 1963. Until January 1, 1956, Philippine sugar had received tariff exemptions in the U.S. market, after which date progressive increases in rates were effected every three years at 20, 40, 60, 80, and 100 per cent of the full rate until the

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[4] Over 50 per cent of the estimated $372 million foreign exchange capital investment in the Philippines in 1940 was represented by American investment amounting to $218 million (Zafra, 1973).

termination of the Laurel-Langley Agreement in July 1974. Another provision of the U.S. Sugar Act (which expired in December 1974) encouraged export expansion in the Philippine sugar industry: in the event of failure of domestic or foreign country to supply its quota requirements, the Philippine quota was to be increased first by a proportionate amount, the remainder to be allocated thereafter to Western Hemisphere countries. These considerations would seem to underlie the generally large positive deviations of actual from predicted level of export orientation among sugar mills and refineries found in the regression results.

Under Republic Act 3137 (the Embroidery Law) a registered person, partnership or corporation (otherwise referred to as an operator) can enter into a contract with a foreign principal to process the raw materials sent by the latter on consignment basis, tax and duty-free, and to re-export them all back to the principal in their processed or semi-processed form. Garment firms registered under the Embroidery Law have contributed greatly to total garment exports. In 1972 regular exports of garments represented only 6.9 per cent of total. Thus it is not infrequent that local garment manufacturers venture directly into the export market. This is possible under international subcontracting agreements usually covered by the Embroidery Law, or else through arrangements made directly with foreign importers. Regarding the textile industry, an existing multi-fiber agreement (covering cotton, wool and man-made textiles and textile products) between the Philippines and the United States provided domestic manufacturers with a relatively large export quota of 189 million square yards, increasing annually by 7 per cent.

The regression results of the previous section showed that foreign-owned firms do not differ significantly from domestically-owned firms in the degree of export orientation, although foreign management did turn out to be a consistently significant explanatory variable. This warrants a look into some relevant aspects of foreign collaboration agreements in the country.

Foreign collaboration in the Philippines has traditionally taken the form of wholly-owned subsidiaries and branches of foreign firms, although the trend has evolved in recent years into the formation of more joint ventures, loan arrangements, licensing and technical assistance agreements with local firms. A survey of the nature of such foreign collaboration agreements in the Philippines and in particular of the restrictive clauses included there, has been conducted under the auspices of the UNCTAD (1972). The sample consisted of foreign subsidiaries doing business in the country, with or without licensing agreements, Philippine-owned corporations and local corporations with minority foreign capital participation and foreign technical collaboration agreements. Of the 527 firms surveyed, approximately 25 per cent had technical collaboration agreements. Table 3 below is reproduced from the UNCTAD study to focus on the restrictive clauses included in such agreements, many of which pertain to export restrictions on products covered by the licensing agreements. Of the different types of export restriction clauses, the prohibition-to-export clauses had the biggest share, and the majority of them were found (55 per cent) in purely technical collaboration contracts. Approximately 64 per cent of these export restrictions could be found in a few industries, namely: pharmaceuticals — 33 per cent, electrical supplies, appliances, and accessories — 11 per cent, chemicals, paints and paint materials — 11 per cent, and metal, metal products, construction equipment and materials — approximately 9 per cent.

A check on Table 1 above will show that some of these industries were among the least export-oriented in our Survey sample: drugs and medicines (3522) — 0.7 per cent, soaps and cleaning preparations (3523) — 0.1 per cent, chemical products, n.e.c. (3529) — 0.0 per cent. They also happen to include firms whose actual export-sales ratios are very much lower than those predicted by the regression model. Admittedly, the impact of export restriction clauses in foreign collaboration agreements is difficult to assess because the licensee firms may not really be in a position to export. Nevertheless, they represent a deterrent to manufactured exports where possibilities to expand production and sell in international markets exist.

Concluding Remarks

This study aimed primarily at relating the degree of export orientation of manufacturing establishments covered in the NEDA-World Bank Survey to various plant characteristics. The findings indicate that differences among firms in export performance in 1974 are significantly explained by differences in plant size (measured either in terms of sales or replacement value of capital assets), rate of capacity utilization, capital-labor ratio, market structure, legal form of organization, nationality of plant management, date of establishment, and the degree of instability of domestic demand. Relatively more export-oriented firms were *ceteris paribus* bigger, operating at a higher level of capacity utilization, more labor-intensive (up to a point), less threatened by competition from other firms (or at least possessed a subjective perception of less competition), incorporated, employing foreign managers, not established in the 1950s, and facing an export demand more stable than that of domestic markets for their output.

Export promotion policy has become in recent years one of the major elements of Philippine economic development strategy. Direct incentives have been designed to stimulate growth in the export sector, and in particular in manufacturing industries considered relatively promising in terms of the ability to generate foreign exchange.[5] There is widespread presumption that the expansion of manufactured exports would contribute to the achievement of other policy objectives, such as a satisfactory rate of output growth, rapid absorption of the country's surplus labor, and narrowing of income inequalities. Whether this is borne out in practice needs to be examined systematically. It would depend, among other things, on the characteristics of the exporting industries and firms, which in turn is determined to a certain extent by the nature of the trade and industrial policies being adopted. At any rate it seems clear that the consequences of export expansion could entail a tradeoff among the more fundamental goals of national development. For instance, it has been observed that the more capital-intensive export products expanded more rapidly in the Philippines over the period 1954-1969 (Bautista, 1975a), suggesting that the country has been unable to exploit much the possibilities offered by foreign trade in reducing the severity of its employment problem.[6] Obviously there is a policy need to aim at an *efficient* pattern of export growth among industries that would best serve the country's development objectives.

What policy implications might be drawn from the specific findings of the present study? For one thing, the observed positive association between plant size and export orientation would seem to indicate the importance of scale economies in exporting, and/or an

[5] An important short-term consideration has been the need to reduce the huge trade deficits owing to the much increased oil import bill since 1974 (cf. Bautista, 1977).

[6] This would seem attributable in large measure to the strong biases of the prevailing incentive structure against labor use (cf. Power and Sicat, 1971 and ILO, 1974).

inadequate encouragement to relatively smaller firms to export their products. With regard to the latter, are information requirements, technical, financial and marketing assistance, etc. provided to small establishments as much as to the large enterprises? It should also be of policy interest that labor-intensive firms could export relatively significantly but, beyond a certain level of capital-labor ratio, it is greater capital intensity that favors exporting. Current efforts at organizing labor-intensive enterprises (e.g., in embroideries, leather goods, handicrafts) towards export activity might be expanded.

That corporations and foreign management are a plus factor in exporting suggests the need to look into the specific advantages in the various aspects of production and marketing enjoyed by such firms so that they may be extended more generally. It would also appear that the stability of the export market relative to domestic sales is an important consideration among export producers. This implies that policy efforts to protect exporting firms from severe fluctuations of foreign demand could increase significantly the export orientation of the country's manufacturing sector.

A particularly interesting result of the regression analysis is that plants established during the Control Period of the 1950s were significantly lower in the degree of export orientation relative to comparable establishments (in terms of other plant characteristics) set up before 1950 or after 1959. This would appear to confirm the view expressed in earlier studies (e.g., Power and Sicat, 1971) that the system of trade and exchange controls, overvaluation of the domestic currency and active promotion of "new and necessary industries" in the 1950s served to encourage only the inward-looking industries and firms.

Returning to the question of efficiency in the pattern of export growth, there is clearly a need to incorporate into the formulation of export promotion policies resource allocation criteria that permit a comparison of the social costs of earning (or, in the case of import-replacing firms, of saving) comparable amounts of foreign exchange in alternative production activities. Such "domestic resource cost" will depend on the characteristics of firms and, in a larger context, industries relating to input and output quantities and, in view of well-known distortions in commodity and factor markets in the LDCs, also on their shadow prices.[7]

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[7] There is now a fairly extensive literature on domestic resource cost; Bruno (1963) and Krueger (1966) are two seminal studies.

TABLE 1

Average Export Orientation of Sampled Establishments by 4-digit ISIC Industry (in per cent)

ISIC No.	Name of Industry	Number of Plants	Mean Export Orientation	Standard Deviation
3111	Slaughtering & preserving meat	6	0.0	0.0
3112	Dairy products	8	2.0	5.6
3113	Canning fruits & vegetables	6	15.4	37.7
3114	Canning & processing of fish	4	42.5	40.3
3115	Vegetable & animal oils	8	23.6	43.8
3116	Grain & meal products	10	0.3	0.7
3117	Bakery products	3	0.0	0.0
3118	Sugar manufacture	25	31.2	34.6
3119	Sugar confectionaries	6	11.9	16.7
3121	Food products, nec.	17	17.1	35.6
3122	Animal feeds	3	0.0	0.0
3131	Distilling & blending spirits	4	1.2	2.5
3132	Wine products	5	0.0	0.0
3134	Softdrinks	12	1.9	6.6
3140	Tobacco manufactures	20	3.8	14.7
3211	Spinning, weaving, finishing textiles	24	4.8	13.8
3212	Made-up textile goods	2	51.8	68.2
3213	Knitting mills	4	48.8	56.3
3214	Carpets & rugs	1	18.0	0.0
3215	Cordage, rope & twine	2	55.6	8.6
3220	Wearing apparel	10	39.1	44.9
3231	Tanneries & leather finishing	3	0.0	0.0
3240	Footwear, except rubber or plastic	5	5.0	11.2
3311	Sawmills	17	23.7	35.0
3312	Wooden containers	2	50.0	70.7
3319	Wood & cork products, nec.	7	22.9	37.2
3320	Furniture & fixtures	7	44.8	42.3
3411	Pulp, paper & paperboard	4	0.0	0.0
3412	Containers of paper & paperboard	7	0.0	0.0
3420	Printing & publishing	11	0.1	0.3
3511	Basic industrial chemicals	5	0.0	0.0
3512	Fertilizers & pesticides	1	0.0	0.0
3513	Synthetic resins & plastic materials	7	1.6	4.2
3521	Paints, varnishes & lacquers	5	10.1	22.7
3522	Drugs & medicines	14	0.7	1.4
3523	Soap & cleaning preparations	7	0.1	0.3
3529	Chemical products, nec.	4	0.0	0.0
3530	Petroleum products	3	12.3	21.3
3551	Tires & tubes	5	0.0	0.0
3559	Rubber products, nec.	6	0.0	0.0
3560	Plastic products, nec.	4	12.1	23.9
3610	Pottery, china & earthware	3	0.0	0.0
3620	Glass & glass products	6	2.7	6.5
3691	Structural clay products	5	13.8	25.5
3692	Cement, lime & plaster	11	14.8	17.0
3699	Non-metallic mineral products, nec.	5	5.0	8.7
3710	Iron & steel	7	4.0	10.6
3720	Non-ferrous metal	4	6.0	12.0
3811	Cutlery & general hardware	1	0.0	0.0
3812	Metal furniture & fixtures	2	2.5	3.5
3813	Structure metal products	8	0.0	0.0
3819	Fabricated metal products, nec.	7	0.0	37.0
3822	Agricultural machinery & equipment	7	15.5	35.4
3829	Machinery & equipment except electrical, nec.	1	0.0	0.0
3831	Electrical, industrial machinery	1	1.8	0.0
3832	Communication equipment	1	0.0	0.0
3833	Electrical appliances & housewares	3	15.2	26.3
3839	Electrical apparatus & supplies, nec.	6	50	54.8
3843	Motor vehicles	8	12.5	35.4
3844	Motorcycles & bicycles	1	0.0	0.0
3851	Professional & scientific equipment	1	0.0	0.0
3852	Photographic & optical goods	2	0.0	0.0
3902	Musical instruments	1	2.2	0.0
3909	Miscellaneous manufacture	5	13.9	21.7

Source: Basic data obtained from the NEDA-World Bank Capital Utilization Survey of Philippine Manufacturing (cf. Bautista, 1975b).

TABLE 2

Selected Regression Results

Explanatory Variables	(1)	(2)	(3)
Plant size (PS)			
Sales (column 1, 2)	.046	.020	.037
Fixed assets (column 3, 4)	(1.58)	(0.72)	(1.43)
Capital-labor ratio:			
K/L	-3.656	-2.733	-3.952
	(-1.85)	(-1.46)	(-1.87)
$(K/L)^2$	.097	.086	.109
	(1.58)	(1.43)	(1.64)
Age of plant (PA)	1.707	.105	.112
	(1.31)	(1.11)	(1.09)
Plant age dummy (CP)	-7.260	-6.048	-6.916
	(-2.50)	(-2.21)	(-2.39)
Capacity utilization (CUR)	.134	.110	.125
	(2.95)	(2.56)	(2.72)
Legal form other than corporation (LF)	-11.718	-8.213	-11.56
	(-3.08)	(-2.27)	(-3.03)
Market structure (MS)	18.974	20.909	18.879
	(3.74)	(4.37)	(3.72)
Nationality of management (NM)	11.939	9.866	12.837
	(2.91)	(2.55)	(3.16)
Export market stability (XMS)	-	29.190	-
	-	(7.19)	-
Constant	7.639	5.092	7.816
Coefficient of determination ($\overline{R}^2$)	.114	.216	.113

Note: Numbers in parentheses underneath the regression coefficient estimates are their t-values.

TABLE 3

Types of Restrictive Clauses

Types of restrictive clause	Number of agreements with restrictive provisions			
	Subsidiaries/foreign branch/majority foreign capital participation	Minority foreign capital participation	Purely technical collaboration	Total
A Export restrictions of which	35	11	36	82
(1) Permission of licensor prior to export	13	2	2	17
(2) Exports permitted only to certain countries	-	-	-	1
(3) Exports prohibited to certain countries	2	-	2	4
(4) Exports prohibited	14	8	27	49
(5) Exports restricted to licensor's agents/ distributors	4	-	2	6
(6) Restriction on use of trademark for exports	2	-	3	5
B Tied-in purchase of raw materials	12	13	42	67
C Restrictions on production patterns	-	-	5	5
D Payment of minimum royalty	5	7	1	13
E Patent/process improvement by license accruing to licensor	9	4	1	14
F Agreement construed/ disputes settled according to laws other than the Philippines	2	1	-	3
Total number of agreements with restrictive provisions[a]	46	23	57	126
TOTAL NUMBER OF AGREEMENTS	129	53	72	254

[a]The total number of restrictive clauses would exceed the total number of agreements with restrictive clause since one agreement may contain more than one restrictive clause.

Source: Table W in UNCTAD, 1972.

APPENDIX

Other Regression Results

Explanatory Variables	(1)	(2)	(3)
Plant size (PS)			
Sales (column 1, 2)	.013	.038	- .002
Fixed assets (column 3, 4)	(0.48)	(1.34)	(-.10)
Capital-labor ratio (K/L)	-.264	-.871	.004
	(-0.38)	(-1.17)	(0.00)
Age of plant (PA)	.097	.122	.102
	(1.03)	(1.22)	(1.06)
Plant age dummy (CP)	-6.096	-7.321	-5.940
	(-2.22)	(-2.52)	(-2.18)
Capacity utilization (CUR)	.105	.128	.107
	(2.46)	(2.84)	(2.46)
Legal form other than corporate (LF)	-7.873	-11.354	-8.021
	(-2.18)	(-2.99)	(-2.21)
Market structure (MS)	7.873	18.720	20.648
	(2.18)	(3.68)	(4.31)
Nationality of management (NM)	10.249	12.383	10.441
	(2.65)	(3.02)	(2.72)
Export market stability (XMS)	29.340		29.660
	(7.22)		(7.27)
Constant	4.684	7.193	4.723
Coefficient of determination ($\overline{R}^2$)	.214	.111	.214

Note: Numbers in parentheses underneath the regression coefficient estim[illegible] their t-values.

REFERENCES

Balassa, B., "Export Incentives and Export Performance in Developing Countries: A Comparative Analysis," World Bank Staff Working Paper No. 248 (January 1977).

Bautista, R.M., "Industrial Capital Utilization in the Philippines," I.E.D.R. Discussion Paper No. 74-13, U.P. School of Economics (September 30, 1974).

________, "Employment Effects of Export Expansion in the Philippines," *Malayan Economic Review,* XX (April 1975), 49-69. (a)

________, "The NEDA-World Bank Capital Utilization Survey of Philippine Manufacturing," *Philippine Review of Business and Economics,* XII (June 1975), 77-103. (b)

________, "Recent External Disturbances and the Philippine Economy," I.E.D.R. Discussion Paper No. 77-5, U.P. School of Economics (October 3, 1977).

Bruno, M., *Interdependence Resource Use and Structural Change in Israel* (Jerusalem: Bank of Israel, 1963).

International Labour Office, *Sharing in Development: A Program of Employment, Equity and Growth for the Philippines* (Geneva: ILO, 1974).

Krueger, A., "Some Economic Costs of Exchange Control: The Turkish Case," *Journal of Political Economy,* LXXIV (October 1966), 466-480.

Naya, S. "Natural Resources, Factor Mix and Factor Renewal in International Trade, "*American Economic Review,* LVII (May 1967), 561-570.

Power, J.H., "The Structure of Protection in the Philippines," Chap. 11 in Balassa and Associates, *The Structure of Protection in Developing Countries* (Baltimore: The Johns Hopkins Press, 1971), 261-287.

________, and G.P. Sicat, *The Philippines: Industrialization and Trade Policies* (London: Oxford Univ. Press, 1971).

Staelin, C.P., "The Impact of Export Incentives and Export-Related Policies on the Firms of the Less Developed Countries: A Pilot Study," Center for Research on Economic Development, University of Michigan (January 1976).

United Nations Commission on Trade and Development, *Restrictions on Exports in Foreign Collaboration Agreements in the Republic of the Philippines* (Geneva: UNCTAD, 1972).

Winston, G., "Capital Utilization in Economic Development," *Economic Journal,* LXXXI (March 1971), 36-60.

Zafra, U.A., *The Laurel-Langley Agreement and the Philippine Economy* (Manila: National Economic and Development Authority, 1973).