share of total exports on the direct wage coefficient yields a negative correlation coefficient of -.12, which is not significant at the 5 per cent level. On the direct and indirect wage coefficient, it is .09, which also indicates no significant correlation. The inference can then be made that the commodity structure of Philippine exports in 1965 has not been influenced significantly by the degree of sectoral labor intensity as represented by either of the two wage coefficients.[10]

The ranking of industries by labor intensiveness differs somewhat according to which of the two measures is used. The agricultural sectors, except I-O Sector No. 03 (Coconut and copra) which is wholly dependent on a perennial crop, are characterized by high values of the direct wage coefficient, exceeded only by the non-agricultural I-O Sector No. 70 (Professional, scientific equipment and parts). As might be expected, the indirect wage component of manufacturing industries are generally higher in comparison with that of the primary-producing sectors. The important exceptions are those that do not depend on locally-produced raw materials, e.g., I-O Sector No. 48 (Petroleum refinery products) which uses imported crude oil as the principal material input and ranks lowest in the magnitude of the wage coefficient with or without the indirect wage component. Thus the ranking of sectors according to the direct and

indirect wage coefficient shows a general improvement in the relative positions of the manufacturing industries. Most notably, the I-O Sector No. 17 (Grain mill products), which draws its principal raw materials from a highly labor-intensive agricultural sector (I-O Sector No. 1, Palay and corn with a value of the direct wage coefficient of .5140), registers quite a jump to the top position. Other good examples are I-O Sector Nos. 30 (Lumber), 20 (Other food products), 35 (Other wood products), 45 (Desiccated and other coconut products), 31 (Plywood and veneer), 32 (Wood furnitures), and 28 (Footwear). Notice however that, despite the general lowering of the position of the agricultural sectors when indirect wages are included, some of them retain relatively high rankings, e.g., I-O Sector Nos. 09 (Forestry), 10 (Fishing) and 06 (Fruits and vegetables). On the other hand, in exporting copra, abaca and tobacco, the higher employment-generating opportunities offered by the manufacturing industries using these agricultural products as principal raw materials are not being exploited.

IV

Over the period 1954-1969 the value of total exports in U.S. dollars increased at an average annual rate of 5.7 per cent. In quantity terms the growth rate was 4.7 per cent, the overall price index for exports fluctuating around

a one per cent growth trend. During 1960-1969 exports rose in value terms by 6.0 per cent per annum and 4.6 per cent in quantity terms. These figures are low in relation to the export performance of LDCs in general, which registered an average annual rate of increase in value index of 6.2 per cent in the period 1960-1969. They are extremely low when compared with the phenomenal rates of export expansion in the 1960s experienced by South Korea (38.9 per cent) and Taiwan (23.1 per cent).[11]

The relative magnitude of the employment repercussions of a rapid growth of exports for the Philippines can be illustrated by considering a hypothetical 20 per cent annual rate of increase in total exports over a period of six years beginning 1965. At the end of this period (1971) the value of exports in 1965 prices would be about ₱8.21 billion, increasing by ₱5.46 billion from 1965. Using an average direct wage coefficient of .20 (based on the 1965 aggregative values of output and compensation of employees) it would mean an increase in the compensation of employees directly by ₱1.09 billion. This is over one-third of the total wages paid in 1965 of the 29 export-producing sectors (cf. Table 2). At an assumed average annual wage per worker of ₱1,900,[12] a conservative estimate of additional employment of 574 thousand would be attributable to the 6-year expansion of exports. This represents more than four-fifths (82.1 per

cent) of the 699 thousand unemployed workers in 1971 estimated from the BCSSH Labor Force Survey for August (Mijares and Ordinario, 1972). Thus, in failing to expand exports substantially in the postwar period, the Philippines missed the possibilities offered by foreign trade for generating employment which could have helped significantly in alleviating the present severe underutilization of the labor force.

An additional consideration in any serious investigation of the employment effects of export growth is the change in the commodity composition of exports over time. If the structure of exports changes in the direction of the labor-intensive products, then the labor-surplus LDC is able to make better use of its resources with beneficial consequences on labor absorption. In the Philippine case such pattern of export growth, if observed actually, would add to the limited effects on employment from a low rate of increase of total exports.

Computed average annual rates of change of exports from the 29 I-O sectors considered in this study are presented in Table 4 together with the sectoral wage coefficients as reproduced from Table 2. Because of the wide fluctuations characterizing year-to-year movements, three-year moving averages of the export values were taken first before the trends were fitted, the least squares

TABLE 4: Average annual rates of change of exports during 1954-[illegible] and sectoral wage coefficients in 1965

BCS I-O No.	Name of I-O Sector	Export Growth Rate Percent	Direct Wage Coefficient	Direct & indirect wage coefficient
03	Coconut and copra	-.63	.1769	.3418
04	Abaca and other fibers	-3.70	.2488	.3333
05	Tobacco	-16.31a/	.2623	.3490
06	Fruits and vegetables	-2.06a/	.3119	.3970
09	Forestry	7.92a/	.3658	.4463
10	Fishing	23.47	.3470	.4008
12	Metallic mining	13.66	.2146	.3104
15	Processed fruits and vegetables	7.36	.1408	.2966
17	Grain mill products	1.93	.1623	.4977
19	Sugar and confectioneries	1.17	.0839	.3516
20	Other food products	35.08	.2282	.4292
22	Brewery and malt products	10.56	.1880	.2770
24	Tobacco products	-11.02a/	.1747	.3529
25	Knitting and textile mill products	1.26a/	.2352	.3116
26	Cordage and other native textiles	-12.62a/	.2359	.3612
28	Footwear	26.59	.2058	.3760
29	Made-up textile products	10.85	.1008	.2701
30	Lumber	-2.81a/	.2331	.4309
31	Plywood and veneer	22.89	.1649	.3892
32	Wood furniture	7.43	.2105	.3783
35	Other wood products	27.56	.2173	.4210
42	Paints and related compounds	5.90	.1612	.3117
43	Medical and pharmaceutical products	52.28	.1628	.2621
44	Washing and cleaning cmpds.	26.34	.1784	.3361
45	Desiccated and other coconut products	10.81	.1465	.3929
48	Petroleum refinery products	87.60b/	.0414	.0610
58	Other metal products	36.22	.2228	.3303
70	Professional, scientific equipment and parts	-53.47c/	.4637	.4932
71	Other manufactured products	11.69	.2591	.3316

NOTES: a/Period covered is 1962-1969 due to lack of comparable data in 1954-1961.
b/Period covered is 1958-1969; zero export value in 1954-1967.
c/Period covered is 1954-1964; zero export value in 1965-1969.

SOURCES: Central Bank Statistical Bulletin (1971); Foreign Trade Statistics of Asia and the Far East (1962-1969); Mijares (1972)

method being used to determine the exponential growth rates over the period 1954-1969. As indicated, however, export values of some commodities are obtainable only for the period 1962-1969; in these cases year-to-year percentage changes of the three-year averages were calculated, the arithmetic mean of the annual rates of change being reported in the table. As much as possible export levels are expressed in quantity terms. In many cases, however, only f.o.b. values in U.S. dollars are available and hence adjustment for intertemporal price changes is necessary. This was done by converting export values from dollars to pesos using the effective exchange rate for exports and then deflating by the wholesale price index of export products in Manila for the different commodity groups as published in the Statistical Bulletin of the Central Bank.

What is most striking about the sectoral export rates of change is the wide range of their distribution. Among the high export growth rate sectors are Petroleum Refining (87.60 per cent), Pharmaceuticals (52.28 per cent), Other Metal Products (36.22 per cent) and Other Food Products (35.08 per cent). As might be expected from the very low rate of growth of total exports observed earlier, these sectors are only minor contributors to total exports, their joint share in 1965 amounting to .53 per cent (cf. Table 2). It is also unfortunate that the labor content of these rapid-

ly growing export products except one (Other Food Products) are relatively small as judged from the values of either of the two wage coefficients. That the sector experiencing the highest rate of export growth (Petroleum Refining) is also the most capital intensive is an observation that does not speak well of the degree of orientation of the export structure to comparative advantage.

On the other side are a number of industries that show negative rates of change, among them such major contributors as the four agricultural sectors with a combined share of nearly one-fourth of total exports and having reasonably high values of the direct and indirect wage coefficient. Again it is almost symbolic of the perverse pattern of Philippine export growth in the postwar period that the most labor intensive sector (Professional, scientific equipment and parts) has had the worst export experience among the 29 export-producing industries considered here.

More generally, the growth rate of sectoral exports may be correlated with the wage coefficients using the least squares method. Regression on the direct wage coefficient yields a correlation coefficient of -.53, which is significant at the 5 per cent level (t=3.25). Using the direct and indirect wage coefficient as the dependent variable in the simple regression, the degree of negative association

between the growth rate of sectoral exports and labor content is even more significant, the correlation coefficient being -.80 (with t=6.93). It is difficult to avoid the judgment therefore that the more capital-intensive export products have enjoyed the more rapid growth over the period under study. Coupled with the earlier observation on the low rate of export expansion in general, the implication can only be that the Philippines has not been able to exploit fully the possibilities offered by foreign trade in reducing the severity of the employment problem.

V

In this section we attempt to evaluate the significance of the employment contribution of manufactured exports in the Philippines. As in most LDCs, much emphasis has been placed on the expansion of the manufacturing sector in Philippine development policy in the postwar period. But while this growth of manufacturing output has not been totally disappointing, especially in the 1950s, the pattern of manufacturing development has favored the import-dependent, capital-intensive industries that displaced consumer good imports in the domestic market, to the detriment of the export-oriented industries which failed to realize their comparative advantage in labor-intensive production under the prevailing incentive structure. Given the limited size of the local market for the products of import-substituting

industries, the growth rate of manufacturing fell sharply in the 1960s to the point where it ceased to be the leading sector. Increasing recognition of the necessity of an "outward -looking" development strategy that will effectively promote the expansion of manufactured exports is evident in recent year. At the same time it is thought that such shift in economic policy will enhance the labor absorptive capacity of the manufacturing sector, which has had a disppointing performance in generating employment in the past.

The present exercise is meant to demonstrate the limited medium-term employment effect of an expansion in manufactured exports without any drastic change in the export structure or in the degree of labor intensity in the export-producing industries. [Direct measures of the incremental employment-output ratio are individually estimated for the 22 export-oriented manufacturing industries and hypothetical rates of sectoral export expansion are applied to the 1965 export structure for a simulation of the employment repercussions.]

In estimating the sectoral labor coefficients, we make use of time series data on total employment, deflated value of output and average real wage of the "large" establishments (employing 20 or more workers)[13] for the period 1956-1969. The assumption is that only the large firms are actually engaged in export production during the

observation period, which is probably not too far-fetched from reality. The linear regression of sectoral employment on output yields estimates of the incremental employment-output ratio for the 22 manufacturing industries as presented in Table 5, which also gives the values of the intercept of the regression lines, the coefficient of determination adjusted for degrees of freedom, and the t-statistic.

The first point to note is that the intercept has a positive value in each regression, implying that the incremental employment-output ratio is lower than the average ratio in each sector. However, in twelve cases, the intercept value is not significantly different from zero at the 5 per cent level (where the critical t-value is 2.56); hence, for these industries, direct proportionality between output and employment may be assumed. Generally, it would still be misleading to make use of the (average) labor coefficient derived from input-output data in estimating the employment repercussions of export growth in Philippine manufacturing industries.

The regression estimates of what may be called the marginal labor coefficient are seen from Table 5 to differ widely among the different industries. Wood furnitures, Made-up textile products, Other wood products, Plywood, and Professional scientific equipment and parts are some

TABLE 5: Results of linear regression of employment on output using 19[illegible] 1969 ASM data on large establishments

I-O Sector No.	Name of I-O Sector	Intercept	Coefficient of output (No. of workers per ₱ 1,000)	R^2
15	Processed fruits and vegetables	1632 (1.40)	.0607 (3.17)	.475
17	Grain mill products	1543 (13.21)	.0080 (11.67)	.931
19	Sugar and confectioneries	17528 (11.32)	.0096 (3.20)	.481
20	Other food products	7919 (6.30)	.0182 (3.36)	.507
22	Brewery and malt Products	1762 (5.68)	.0083 (3.82)	.576
24	Tobacco products	7983 (17.36)	.0022 (13.11)	.950
25	Knitting and textile mill products	1924 (8.12)	.0793 (9.47)	.899
26	Cordage and other native textiles	1246 (1.85)	.0447 (2.85)	.415
28	Footwear	3305 (1.52)	.0586 (1.65)	.211
29	Made-up textile products	3505 (2.28)	.1409 (9.55)	.900
30	Lumber	7905 (2.17)	.0594 (4.32)	.501
31	Plywood and veneer	1469 (1.96)	.0930 (13.91)	.951
32	Wood furnitures	498 (1.33)	.1751 (3.32)	.411
35	Other wood products	117 (1.76)	.1389 (21.53)	.979
42	Paints and related compounds	116 (2.45)	.0206 (18.38)	.971
43	Medical and pharmaceutical products	755 (2.11)	.0377 (11.71)	.932
44	Washing and cleaning compounds	1635 (4.10)	.0055 (7.95)	.731
45	Desiccated and other coconut products	3642 (4.73)	.0692 (4.62)	.521
48	Petroleum refinery products	1174 (6.58)	.0003 (2.60)	.403
58	Other metal products	1035 (3.35)	.0274 (4.85)	.693
70	Profcssional, scientific equipment & parts	76 (1.56)	.0899 (4.58	.593
71	Other manufactured products	5025 (1.30)	.0014 (2.31)	.301

NOTE: Numbers in parentheses are values of the t-statistic for the intercept and coefficient estimates.

industries that have shown relatively high labor-absorptive capacities in the past; on the other hand, Petroleum refining, Other manufactured products, Tobacco products; Washing and cleaning compounds, and Grain mill products have absorbed fewer laborers for each additional unit of output.[14]

The values of the adjusted coefficient of determination range from very low (.211 for Sector 28) to very high (.979 for Sector 35). Except for two industries (Footwear and Other manufactured products), at least 40 per cent of the observed variation of sectoral employment is seen to be explained by the variation of output. Evidently, there are other influences on the demand for labor and it can only improve the estimates of the marginal labor coefficient if these are included in the regression.

With the average real wage used as an additional explanatory variable, an improvement in the values of the test statistics is observed for the following industries:

I-O Sector No. 20 (Other food products)

$$N = \underset{(18.14)}{12413} + \underset{(10.54)}{.08010}\,Q - \underset{(-8.39)}{1.112}\,W \qquad \bar{R}^2 = .943$$

I-O Sector No. 28 (Footwear)

$$N = \underset{(2.44)}{3325} + \underset{(4.31)}{.08060}\,Q - \underset{(-2.72)}{.9324}\,W \qquad \bar{R}^2 = .542$$

I-O Sector No. 32 (Wood furnitures)

$$N = 228 + .1995Q - .0510W \qquad \bar{R}^2 = .864$$
$$(2.09)\ (5.50)\ (-3.87)$$

I-O Sector No. 45 (Dessicated and other coconut products)

$$N = 4769 + .0706Q - .1860W \qquad \bar{R}^2 = .832$$
$$(2.73)\ (6.69)\ (-2.72)$$

where N = number of workers employed
Q = value of output at 1957 prices, in thousand pesos
W = average wage earnings of workers deflated by the price index of sectoral output (1957=100), in pesos

and the numbers in parentheses are t-values of the coefficient estimates.

For the other industries, inclusion of the sectoral real wage in the regression has the consequence of decreasing the adjusted coefficient of determination (with low t-values for the estimated coefficient of W) and/or lowering the t-value for the coefficient of Q below the critical level.[15] The estimates of the output coefficient in the above regressions replace those of the corresponding industries in Table 5 in the numerical evaluation below of the employment repercussions of various assumed growth rates of manufactured exports.

With given initial conditions in 1965, we consider three possibilities of proportional export expansion in manufactures over a period of ten years, namely, that exports from each industry increase two-fold, five-fold and ten-fold. The implied annual compound growth rates are 7.2, 16.5 and 25.9, respectively. The first is more than double the actual growth rate of 3.34

per cent for manufactured exports during 1954-1969 when expressed as the average of the growth rates of sectoral exports weighted by the 1965 export values. An annual growth rate of 16.6 per cent might still be considered within feasible range under conditions of active export promotion that have started only recently in the Philippines. Finally, a sustained export growth rate in manufactures of 25.9 per cent annually over ten years probably borders on wishful thinking for the Philippines but as a hypothetical possibility we also consider the magnitude of its effect on employment.

Table 6 presents the additional number of employed workers in each of the export-producing manufacturing industries directly attributable to the ten-year expansion of sectoral exports at each of the specified growth rates beginning 1965. These estimates are derived on the basis of fixed incremental employment-output ratio for each industry as obtained above.[15] Examining first sectoral employment repercussions, we find only a few industries that generate significant amounts of employment from the proportional export expansion. These are Coconut products, Made-up textile products, Plywood and veneer, and Sugar which together account for slightly over nine-tenths of the induced labor absorption. Not surprisingly, each of these industries has a large share of total exports in 1965 or a high value of the marginal labor coefficient or both.