

## THE PATTERN AND STRATEGY OF INDUSTRIALIZATION IN TAIWAN: SPECIALIZATION AND OFFSETTING POLICY

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### INTRODUCTION

**T**HIS paper attempts to review the pattern and strategy of Taiwan's industrialization over the last three decades. The facts concerning rapid growth, significant structural change, specialized industrialization, and export expansion are presented first. Then, the policy package instituted to support this export-led development is examined.

Due to an outward-oriented strategy from the early 1960s on, Taiwan's industrialization has been characterized by a specialization pattern, with Taiwan becoming a heavy exporter of simple manufactured goods. One of the most important factors for this export-led industrialization is the import costs of the materials and unfinished goods which are to be reexported after additional processing. This study examines how the government controls these costs under its "offsetting" trade policy package. It points out how the policy discriminates against users serving the domestic market in favor of those producing goods for export. The discriminatory trade policy package has two sets of components: one embodies strict import controls, the other provides incentives for exports. The term "offsetting" implies that almost all the export incentive measures tend to counter the barriers caused by the import controls component.

The paper is organized as follows: the first section demonstrates the rapid growth performance and industrialization in Taiwan. The export-oriented specialization pattern is emphasized. In Section II, based mainly on the composition of trade, industrialization subphases are divided and the trend of real wages in the manufacturing is examined. The offsetting trade policy package is studied in Section III. Concluding remarks are in Section IV.

### I. SPECIALIZATION PATTERN OF INDUSTRIALIZATION

#### A. *Economic Performance and Structural Change*

Economic performance in Taiwan over the last three decades is presented in Table I. The coincidence of high growth rates in both GNP and exports is

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The author wishes to acknowledge the kind assistance of Institut d'Étude des Pays en Développement in providing research facilities and also wishes to thank Professors J.P. Peemans, R.I. Wu, A. Jacquemin, P. De Ville, and M.P. Donsimoni for their valuable suggestions and encouragement.

TABLE I  
INDICATORS OF TAIWAN'S ECONOMY, 1953-81

	Population	GNP	Per Capita GNP	Exports	Imports
Average growth rate (%)					
1953-62	3.5	7.5	4.1	19.5	17.0
1963-72	2.9	10.8	8.1	29.9	23.5
1973-81	1.7	8.3	6.3	24.0	25.5
Index 1952=100					
1961	137	191	142	532	509
1971	185	507	291	5,614	2,919
1981	223	1,178	560	56,523	30,740

Sources: Executive Yuan, Council for Economic Planning and Development (CEPD), *Taiwan Statistical Data Book, 1982* (1982), Tables 1-1a and 1-1b.

Note: GNP is based on constant 1976 prices. The export and import figures are based on custom statistics and current prices.

TABLE II  
SECTORAL SHARES AND CONTRIBUTIONS TO THE GROWTH OF GDP, 1953-81

	(%)												
	Growth Rates					Shares of GDP					Contribution Ratios <sup>a</sup>		
	GDP	A	I	S	M	A	I	S	M/I <sup>b</sup>	A	I	S	M <sup>b</sup>
Average													
1953-62	7.5	4.8	11.7	7.5	12.5	32.1	20.9	47.0	66.1	20.5	32.6	46.9	70.6
1963-72	10.8	4.0	18.7	8.5	20.1	22.0	32.5	45.5	74.0	8.1	56.0	35.9	80.0
1973-81	8.4	2.1	11.0	7.6	10.9	12.1	43.5	44.4	76.9	3.0	57.0	40.0	76.2

Source: CEPD, *Taiwan Statistical Data Book, 1982* (1982), Tables 1-1b and 3-7b.

Notes: 1. The growth rates are based on constant 1976 prices, while the sectoral shares are based on current prices.

2. A, I, S, and M denote the agricultural, industrial, service, and manufacturing sectors.

<sup>a</sup> Contribution ratios are the product of the respective sectoral growth rates and shares of GDP divided by the growth rate of GDP.

<sup>b</sup> The shares and contributions of manufacturing concern only the industrial sector.

a significant phenomenon. As we will see later, export expansion is the most important factor contributing to rapid economic development, i.e., it is the handmaiden of successful growth. GNP grew rapidly over the period, with real average growth rates of 7.5 per cent in 1953-62, 10.8 per cent in 1963-72, and 8.3 per cent in 1973-81.

Another important phenomenon is the remarkable structural change involving the agriculture (A), industrial (I), and service (S) sectors. Although agriculture was not the major sector during 1953-62, it dropped 20 percentage points in terms of share of GDP between 1953-62 and 1973-81. The industrial sector gained 22 percentage points during the same period, while the service sector maintained roughly the same share. As a consequence, during the period 1973-81 the share of agriculture was only 12.1 per cent while the industrial sector reached 43.5 per cent of GDP (Table II). This structural change represents Taiwan's "industrialization."

Using the decomposition method to measure the sectoral contributions to the overall rate of growth of GDP, we find that the industrial sector contributed more than did the service sector after the 1960s. In the same way, we find that manufacturing's contribution to the growth of the industrial sector was vital, amounting to 71 per cent to 80 per cent over the period as a whole. Furthermore, the contribution ratios of manufacturing to growth of GDP (obtained by the product of the two contribution ratios—manufacturing to industry and industry to GDP—were respectively 23 per cent, 45 per cent, and 43 per cent in the three decades.

The figures presented suggest that industrialization is a function of both economic growth and structural change. Therefore, industrialization is used as a synonym for economic development hereafter. The structural change in manufacturing may be regarded as the core of the industrialization process.

#### B. *Specialization in Manufacturing*

This subsection further examines the structural changes in manufacturing during the period 1953–81. There are many different indices to demonstrate such change.<sup>1</sup> The following one is simple, but useful. We can classify manufacturing industries into four groups: (1) food, beverages, and tobacco; (2) nondurable consumer goods; (3) intermediate goods industries; and (4) metal and machinery. The data on structural change in manufacturing can be obtained from Table III which shows the relative share of each group (and industry) during the period. Over the last three decades, one outstanding characteristic of the structural change among these four groups was the replacing of the foodstuffs group, an agricultural raw-materials-based industry, by the metal and machinery group. The percentage changes in these two groups' shares were almost the same, namely, –21 per cent and +26 per cent respectively, between 1953 and 1981. The other two groups maintained relatively stable shares, amounting to 55 per cent to 60 per cent during the same period.

Let us now consider the evolution of individual industries. We find that there are some fast rising industries (those growing faster than the average), such as electrical and non-electrical machinery, clothing and footwear, leather and leather products, metal products, transport equipment, and chemicals. Later on, we will find (in Table VII) that almost all these fast rising industries are also of rising importance in the exports field. Conversely, some industries are slow growing or even stagnant—such as food, tobacco, textiles, furniture, and paper products. These industries may be divided into two categories: one where export shares decrease—food and tobacco; the other where they do not—textiles, furniture, and wood products.

What is the meaning of this industrialization pattern? To answer this question, we can make a comparison with the general pattern throughout the world. Li

<sup>1</sup> For example, the Hoffman ratio (the relative share of consumer goods industries to capital goods industries) is normal. However, a serious problem in using this index is that the ratio will vary, sometimes quite sharply, depending on how consumer and capital goods industries are differentiated.

TABLE III  
COMPOSITION OF MANUFACTURING IN TERMS OF VALUE ADDED, 1953-81

	1953	1956	1961	1966	1971	1976	1981
							(%)
Food, beverages, and tobacco	33.2	34.6	29.8	22.0	14.2	12.2	12.0
Food	23.6	30.6	26.5	18.2	11.0	10.9	6.0
Beverages	0.5	0.6	0.6	0.8	0.5	0.6	0.6
Tobacco	9.1	3.4	2.7	3.0	2.7	0.7	5.4
Nondurable consumer goods	31.4	25.3	21.7	21.9	27.9	29.3	25.4
Textiles	20.4	14.8	11.3	13.1	12.8	12.1	9.2
Clothing and footwear	3.0	2.9	3.5	3.0	7.4	5.8	5.9
Furniture	1.0	1.1	1.1	1.1	0.6	0.6	0.6
Printing and publishing	3.9	4.1	4.4	2.8	2.3	2.3	2.1
Miscellaneous manufactures	3.1	2.4	1.4	1.9	4.8	8.5	7.6
Intermediate goods industries	28.3	29.3	33.5	35.7	32.1	29.4	29.8
Wood products	5.1	4.9	4.9	3.9	3.7	2.7	2.3
Paper and paper products	3.3	4.5	3.5	3.3	2.6	2.2	2.1
Leather and leather products	0.4	0.4	0.3	0.1	0.6	1.1	1.6
Rubber products	1.4	1.3	1.2	1.0	1.1	1.5	1.3
Chemicals	9.8	7.5	9.3	11.6	10.8	12.5	11.1
Petroleum and coal products	4.2	4.4	6.2	8.3	8.5	4.2	7.7
Nonmetallic mineral products	4.1	6.3	8.1	7.5	4.8	5.2	3.7
Metals and machinery	7.1	10.8	15.0	20.4	25.8	29.1	32.8
Metal products	0.9	2.7	4.1	2.4	3.1	4.3	6.2
Basic metals	2.0	2.2	3.1	3.3	2.9	3.8	3.3
Non-electrical machinery	1.7	1.1	2.7	3.8	3.5	3.8	3.2
Electrical machinery	1.1	2.4	2.3	6.2	11.1	11.7	12.4
Transport equipment	1.4	2.4	2.8	4.7	5.2	5.5	7.7
Total	100	100	100	100	100	100	100

Source: Executive Yuan, Directorate-General of Budget, Accounting and Statistics, *National Income of the Republic of China, 1982* (1982), Table 2.

Note: The value added is computed in terms of factor cost at current prices.

[16, pp. 151-52] collects data from twenty-one large countries (those with populations over 20 million) and thirty-three small countries to show the worldwide industrialization pattern among four subgroups of countries, differentiated by income level. Because of differences in data sources, this comparison cannot be conducted strictly according to the classification of Table III. However, it is still possible to compare the patterns in terms of Li's classification<sup>2</sup> at different income stages. Four years (1967, 1970, 1976, and 1981) are chosen for the comparison, because in those years Taiwan had income levels respectively equivalent to the

<sup>2</sup> Li classifies the twenty industries shown in Table III into five groups: foodstuffs (food, beverages, and tobacco); wearing apparel (textiles, leather products, and clothing and footwear); furniture and wood products; chemical and allied industries (rubber products, chemical products, and petroleum and coal products); and adds nine other industries. See Li [16, Table 3.3].

four income stages of the small countries group (see Table IV).<sup>3</sup> In order to show the degree of specialization, the share of the  $r$  largest industry groups in overall manufacturing output can be estimated to arrive at the "concentration ratio,"  $C_r$ , which is similar to conventional industry or market concentration ratios, but at a more aggregated level. The ratios of Taiwan's  $C_r$  to those of other countries can then be compared.

Table IV shows the measures of  $C_r$  in Taiwan and other countries for different income-level subgroups or stages. Here,  $r$  is denoted by the subscripts 1, 2, 3, and 4, respectively. The higher the ratio, the higher the degree of specialization. The declining trend of the manufactured concentration ratios, indicating diversification with increasing income levels, is significantly slower in Taiwan than in either the large or small countries groups. The difference in  $C_4$  between the lowest and highest income stages was only 5 percentage points in Taiwan, whereas it was over 20 percentage points for both the large and small countries groups of Li's survey. Thus, it is clear that Taiwan tended to follow a specialization pattern during its industrialization process.

As the low share of the foodstuff industries in Taiwan could lead to a sharply understated concentration (specialization) level, we next exclude foodstuffs and recalculate the ratios, the figures within brackets, ( $C_r$ ), representing the results. It is now more clear that Taiwan had considerably concentrated manufacturing output. After 1970, the four largest industries (excepting foodstuffs) in Taiwan accounted for 57 per cent of manufacturing output. The values of ( $C_4$ ) in Taiwan were higher than those in the small countries group by from 10 to 21 percentage points at the various income stages. Moreover, the gap between Taiwan and the small countries group in terms of ( $C_4$ ) is increasing. If we divide the industries included in ( $C_4$ ) into two categories—export-oriented (wearing apparel, electrical apparatus, and miscellaneous manufactures) and domestic-oriented (chemical and allied industries)—the export-oriented category accounts for around two-thirds of ( $C_4$ ), that is, 37 per cent of overall manufacturing output. In fact, we find the increasing gap derives mainly from the export-oriented sectors. This suggests that Taiwan's manufacturing output is relatively concentrated in export-oriented industries, with the result that specialization emerges. This could be called an export-oriented and specialized industrialization pattern.

### C. Sources of Industrialization

Sustained economic growth requires a transformation of the structure of production that is compatible with both the evolution of domestic demand and the

<sup>3</sup> Though the data are not presented here, in general, as with the small countries group, Taiwan's manufacturing output was concentrated in six industries throughout the four stages: 1. foodstuffs, 2. wearing apparel, 3. chemical and allied industries, 4. electrical machinery, 5. transport equipment, and 6. miscellaneous manufactures. But two characteristics may be noted in the case of Taiwan: (1) a significantly lower percentage share in foodstuffs (the percentage difference between Taiwan and small country group ranging from 5 per cent to 18 per cent, and (2) significantly higher shares in the other four groups (the differences amounting to 16 per cent to 27 per cent).

TABLE IV  
COMPARISON OF MANUFACTURES CONCENTRATION RATIOS FOR THE WORLD AND TAIWAN (%)

	Large-Countries Group				Small-Countries Group				Taiwan			
	1	2	3	4	1	2	3	4	1967	1970	1976	1981
Income level stages (Average income: U.S.\$)	145	315	786	2,893	263	349	1,070	2,758	249	360	1,039	2,360
Number of countries	5	6	4	6	9	9	7	8				
$C_1$	34.6	27.4	16.2	15.2	37.0 (14.3)	34.1 (17.0)	24.9 (14.7)	17.1 (12.1)	23.3 (21.0)	22.2 (22.2)	19.0 (19.0)	20.1 (20.1)
$C_2$	59.2	45.5	31.5	27.2	51.3 (26.0)	51.1 (32.2)	39.5 (28.3)	29.2 (21.2)	44.3 (36.1)	40.7 (40.7)	37.2 (37.2)	36.8 (36.8)
$C_3$	69.8	64.1	44.8	37.6	63.0 (33.4)	66.1 (37.8)	53.1 (35.2)	38.3 (30.0)	59.4 (43.0)	57.3 (51.4)	49.4 (48.9)	49.2 (49.2)
$C_4$	75.3	70.0	54.8	47.8	70.5 (39.4)	71.9 (43.1)	60.0 (41.8)	47.1 (35.1)	66.3 (49.8)	68.0 (56.6)	61.1 (57.4)	61.3 (56.9)

Sources: Li [16, Table 3.3] and calculated from Table III.

Notes: 1. Concentration ratios,  $C_1$ - $C_4$ , are calculated according to the classifications outlined in footnote 2.

2. Parentheses denote the concentration ratios with the foodstuffs group excluded.

TABLE V  
SOURCES OF GROWTH IN MANUFACTURING OUTPUT, 1952-79

	Percent of Total		
	Home Demand	Export Expansion	Import Substitution
1952-61	80.9	12.1	7.0
1961-70	69.9	24.6	5.5
1971-79*	69.1	71.0	-52.8

Sources: The data for 1952-61 and 1961-70 are from Chen [1, Tables 5 and 6]; for 1971-79 from Sun [26, Tables 8 and 9].

\* The estimation for this period separates the effect of technological change (+12.7 per cent), which is not shown in the table.

opportunities for international trade. Thus, the question of whether the source of growth in manufacturing output stems mainly from domestic or foreign demand is now studied. Using the Chenery decomposition technique, growth in manufacturing output can be linked to three main sources:<sup>4</sup> (1) expansion of home demand, (2) expansion of export demand, and (3) the effects of import substitution. The former two are divided from the respective increments in home demand and export demand between two periods. Negative values indicate decreases in the absolute value of each demand. The effect of import substitution is indicated by the difference in import shares (imports divided by "total supply" or domestic output plus imports). If the import share increases, the level of self-sufficiency decreases, the import substitution effect being negative.

Table V summarizes two studies employing this kind of estimation to indicate the evolution of sources of growth in manufacturing output during the period 1952-79. While the comparison of different studies calls for caution, the increasing importance of foreign demand cannot be doubted: 12.1 per cent of manufacturing output growth came from export expansion in the period 1952-61; the percentage doubled to 24.6 per cent in 1961-70, and then reached 71.0 per cent (to become the largest source of growth) in 1971-79. This confirms Taiwan's export-oriented industrialization.

Beside the growing importance of export expansion, Table V also reveals a significant negative import substitution (-53 per cent) in the 1970s. As explained above, the negative import substitution effect indicates an increase in manufactured imports between 1971 and 1979. There are two possible explanations for this phenomenon, one of them being intra-industry trade and the other industrialization of the processing type in which unfinished goods are imported, to be later reexported after additional processing. Consequently, imports increase as (though less than) exports grow. With intra-industry trade, manufactured imports stimulate competition with domestic products; with processing-type industrialization, manufactured imports are inputs for processed exports. While

<sup>4</sup> See Chenery [2]. For revisions of the method, see Morley and Smith [20] and Chenery [3], in which the effect of technological change is isolated from these three main sources.

TABLE VI  
COMPOSITION OF TRADE, 1952-81

## A. Percentage Share of Exports

(%)

	Agricultural Products	(Rice)	Processed Agricultural Products	(Sugar)	Industrial Products	Primary Products*
Average						
1952-61	18.6	(12.0)	63.6	(20.6)	17.8	84.7
1962-71	13.6	(3.3)	26.5	(12.7)	59.9	40.8
1972-81	5.0	(0.2)	7.6	(2.1)	87.4	13.7

## B. Composition of Imports and Financing Sources for Imports

(%)

	Percent of Total Imports			Exports Imports	Primary Exports Imports	Agricul- tural Exports Imports	Exports of Rice & Sugar Imports
	Capital Goods	Raw Materials	Con- sumption Goods				
Average							
1952-61	20.2	69.3	10.5	61.5	52.1	11.4	38.5
1962-71	28.9	65.6	5.5	90.6	37.0	12.3	14.5
1972-81	27.4	66.2	6.4	104.3	14.3	5.2	2.4

Sources: CEPD, *Taiwan Statistical Data Book, 1982* (1982), Tables 10-7, 10-8, 10-9, and 10-12.

\* Includes agricultural products (agriculture, forestry, hunting, and fishery), minerals, and food, beverages, and tobacco preparations.

measurement of Taiwan's intra-industry trade is beyond the scope of this study, some evidence from the composition of imports (see Table VI) seems to support the importance of processing in Taiwan's industrialization.

## II. TRADE AND PHASES OF INDUSTRIALIZATION

### A. Composition of Trade

The composition of Taiwan's exports has changed significantly over the last three decades. Table VI-A shows that the export share of primary products (including agricultural products, minerals, food, beverages, and tobacco preparations) fell sharply from 84.7 per cent in the period 1952-61, to 40.8 per cent in 1962-71, and to a mere 13.7 per cent in 1972-81. The foreign exchange earned by exports of these products also decreased, from 52.1 per cent to 14.3 per cent of the amounts required to finance imports in thirty years (see Table VI-B). The importance of sugar and rice exports during the 1950s is quite evident. Exports of such agricultural and processed agricultural products characterize what has been called the primary import substitution phase (Pauw and Fei [21]). But the importance of industrial product exports rose rapidly. Over 60 per cent of exports came from industrial products after the early 1960s.



This suggests that the industrialization process passed into a second, primary export substitution phase in the early 1960s. This means that the export of primary goods as the key source of foreign exchange was replaced, in the main, by exports of industrial goods after that time. We will see that the changes in policy during the late 1950s from a "protective import substitution strategy" to the "offsetting policy package" to encourage exports was the most important factor leading to the transition from one phase to another at that time.

While significant changes were occurring in export composition, by contrast, the three-category composition of imports held constant during the period under observation. Two plausible explanations could be advanced. Firstly, due to the scarcity of resources, imported raw materials always amounted to over 65 per cent of all imports. This, it could be argued, suggests the possibility of a shortage of foreign exchange to finance sufficient materials imports, particularly in the 1950s. Indeed, foreign exchange earned from exports could only finance 62 per cent of Taiwan's imports in the 1950s.<sup>5</sup> On the other hand, the stable, low share of imported consumption goods could reveal a high degree of self-sufficiency or protection in those goods, an argument which would tend to support the processing industrialization claim. Again, the import policy on materials and capital goods is a determinate factor for this industrialization type.

In order to facilitate a further comparison, the composition of manufactured exports by industry is given in Table VII, in which the trade data is converted from the Standard International Trade Classification (SITC) into Standard Industrial Classification (SIC).<sup>6</sup> Because of the difficulties inherent in classifying trade data precisely by industrial category, some reservation is appropriate in reading this table. Still, among the four largest contributors to total manufacturing output (shown in Table IV), wearing apparel, electrical apparatus, and miscellaneous manufactures were similarly outstanding in the export field. Exports of these products amounted to over 70 per cent of total exports after 1971. The concentration ratios of manufactured exports can be calculated as in Table IV to further reveal the characteristic concentration of manufactured exports. Though the figures are not presented here, we know that manufactured exports were much more concentrated than manufacturing output generally. The shares of the four largest industries in Taiwan's overall manufactured exports were 63 per cent, 82 per cent, 90 per cent, and 74 per cent in 1966, 1971, 1976, and 1981, respectively. The concentration of manufactured exports is probably related to concentrated export markets. The United States and Japan are the main export

<sup>5</sup> Fortunately, foreign exchange constraints did not affect Taiwan's economic growth in that period due to the timely U.S. aid. See Lee et al. [14, p. 84].

<sup>6</sup> See Wang [28, p. 188]. The SITC codes corresponding to the two-digit SIC industries are given in parentheses: food (04), beverages (11), tobacco (12), textiles (65), clothing and footwear (84, 85), furniture (82), printing and publishing (892), miscellaneous manufactures (81, 83, 86, 89 except 892), wood products (63), paper and paper products (64), leather and leather products (61), rubber products (62), chemical products (05), petroleum and coal products (321, 332), nonmetallic mineral products (66), metals products (69), basic metals (67, 68), non-electrical machinery (71), electrical machinery (72), transport equipment (73).

TABLE VII  
COMPOSITION OF MANUFACTURED EXPORTS, 1956-81

	(%)					
	1956	1961	1966	1971	1976	1981
Food, beverages, and tobacco	48.7	13.5	11.1	0.7	0.2	0.2
Food	48.5	11.0	10.1	0.5	0.1	0.2
Beverages	0.2	0.2	0.1	0.0	0.0	0.0
Tobacco	0.0	2.3	0.9	0.2	0.1	0.0
Nondurable consumer goods	14.2	36.1	37.0	58.0	58.0	50.5
Textiles	9.4	28.1	19.9	14.6	14.0	10.1
Clothing and footwear	3.9	5.8	9.6	27.0	25.7	21.4
Furniture	0.0	0.0	0.1	0.5	1.3	2.0
Printing and publishing	0.0	0.0	0.2	0.1	0.1	0.1
Miscellaneous manufactures	0.9	2.2	7.2	15.8	16.9	16.9
Intermediate goods industries	26.3	36.3	29.6	14.1	12.3	13.1
Wood products	1.1	8.4	12.5	7.9	5.3	3.9
Paper and paper products	0.5	3.4	2.1	0.4	0.6	0.6
Leather and leather products	0.0	0.1	0.1	0.7	0.2	0.5
Rubber products	0.0	0.5	0.6	0.5	0.8	0.9
Chemicals	20.6	12.7	6.0	2.3	2.4	2.7
Petroleum and coal products	4.1	5.5	1.1	0.5	1.6	2.2
Nonmetallic mineral products	0.0	5.7	7.2	1.8	1.4	2.3
Metals and machinery	10.8	14.1	22.3	27.2	29.5	36.2
Metal products	2.8	1.3	3.0	2.5	3.4	5.0
Basic metals	7.7	10.0	6.6	3.3	1.7	2.4
Non-electrical machinery	0.3	0.9	4.0	4.1	4.7	5.1
Electrical machinery	0.0	1.7	8.1	15.9	17.0	19.6
Transport equipment	0.0	0.2	0.6	1.4	2.7	4.1
Total	100	100	100	100	100	100

Sources: The data for 1956-71 are from Executive Yuan, Research, Development and Evaluation Commission, *Commodity Trade Statistics of the Republic of China, (SITC Reclassifications) 1954-74* (Taipei: 1977); for 1976-81 from Ministry of Finance, Department of Statistics, *Monthly Statistics of Exports and Imports, the Republic of China*, December 1982.

Note: For methods of reclassification, see footnote 6.

markets for Taiwan, accounting for 50 per cent of exports during the period 1953-81. The interaction between export commodity concentration and the concentration of export markets is, however, beyond the scope of this study.

### B. Industrialization Phases

Mainly based on the composition of trade, we can further divide the industrialization process into different phases. As Pauuw and Fei [21, pp. 79-107] have shown, a series of data—composition of imports and exports, financing sources for imports (Table VI), manufacturing structure (Table III), and the structure of manufactured exports (Table VII)—can be used to distinguish different industrialization phases. Following the staging method of Ranis [22], we divide Taiwan's economic development transition phase, 1950-80, into four sub-

TABLE  
THE CHARACTERISTICS OF

Phases	Main Manufactures (1)	Product Differentiation (2)	Production Technology (3)	Factor Ratio (4)
Primary IS (1953–61)	Consumer nondurables	Little heterogenous	Easy/simple processing, low value-added	Raw-materials and land- intensive
Primary ES (1961–75)	Consumer nondurables	Homogenous abroad, but heterogenous at home	Easy/simple processing, low value-added	More labor- intensive
Secondary IS cum ES (post 1975)	Consumer durables & producer goods	Heterogenous and new product mix	Complicated, sophisticated, high-value- added	Capital-, technology-, skilled-labor- intensive

\* M and E denote import and export respectively.

phases:  $S_1$  (traditional exports, pre-1953);  $S_2$  (primary import substitution, IS, 1953–61);  $S_3$  (primary export substitution, ES, 1961–75); and  $S_4$  (secondary IS cum ES, post 1975).<sup>7</sup> Some characteristics of each phase are shown in Table VIII. Because our study is concerned with the period after 1950, subphase  $S_1$  is not a key topic here. The longest and most important subphase,  $S_3$ , may also be called the export expansion phase, which is why we devote much attention to export expansion below.

It is interesting to see the relationship between industrialization pattern and industrialization phases. Chou [4, pp. 12–13] has shown that specialization accompanies the export expansion phase through examining the trends of  $C_4$  or  $(C_4)$  for both production and exports. We can confirm that after entering the secondary IS cum ES ( $S_4$ ) phase, industrial structure alters toward diversification [i.e.,  $C_4$  and  $(C_4)$  decrease after  $S_4$ ]. In other words, during the last twenty years it was through export expansion that the specialization pattern emerged.

### C. Causes for Export Expansion

We now further study the causes for export expansion. For a labor surplus economy, like that of Taiwan, the most advantageous factor in competing for export markets is the labor force. Slowly increasing real wages are the key factor

<sup>7</sup> Some authors, for instance Chen [1], Ho [9], and Schive and Gau [24], divide Taiwan's industrialization process into four different subphases:  $S_1$ —pre-1949;  $S_2$ —1949–60 (the 1950s);  $S_3$ —1961–70 (the 1960s); and  $S_4$ —post 1970. These divisions give rise to overlappings, particularly between  $S_3$  and  $S_4$ . It could be argued that the primary ES phase ( $S_3$ ) was continuing in the early 1980s, as some secondary IS industries were still being developed.

## VIII

## INDUSTRIALIZATION PHASES IN TAIWAN

Orientation of Market (5)	Economics of Scale (6)	Composition of Trade* (7)	Scarcities (8)	Orientation of Policy (9)
Domestic market	Limited by domestic market	M: Producer goods E: Primary goods	Entrepreneurship & foreign exchange	Protection
Export market	Realized by exports	M: Producer goods E: Consumer nondurables	Trading network	Offsetting policy package
Domestic and export markets	Very important	M: Producer goods & materials E: Consumer durables & producer goods	Skilled-labor, sales-services, entrepreneurship	Turning point?

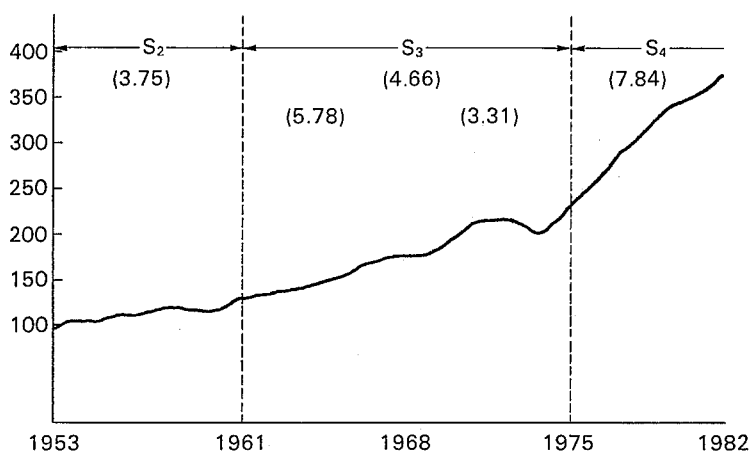
in promoting exports. Figure 1 clearly shows that the increase of real manufacturing wages continued very slow during the phases  $S_2$  and  $S_3$  (1953–75), only doubling in twenty-three years. Though surplus labor was an important factor behind this trend before the mid-1970s, a powerful government was another political and economic factor during that time. While the supply of abundant and cheap labor from the agricultural sector, coupled with low living standards in the agricultural sector and a dispersed industrial pattern reinforced low non-agricultural wage level,<sup>8</sup> the government also, unlike in many other labor surplus LDCs (Leff [15, p. 54]), has resisted “bribing” labor by legislating artificially high wages (e.g., minimum wage requirements).<sup>9</sup>

Taiwan’s abundant and cheap labor force, coordinated with simple processing technology makes its labor-intensive, nondurable consumer goods industries (e.g., textiles, clothing, and electronic apparatus) very competitive in MDC markets. These industries led in the creation of an epoch of export expansion in Taiwan’s industrialization during the 1960s and 1970s. From 1975 on, a rapid increase in real wages has induced the economy to enter the  $S_4$  phase. Liang and Liang [18, pp. 216–21] have compared factor intensity among four groups of industries and find low capital (fixed assets)/labor ratios in export industries. Scott [25, pp. 355–57] also shows that Taiwan tends to export products which embody

<sup>8</sup> For the subsistence level of agricultural wage rates in Taiwan, see Wu [29, pp. 104–20]. For data concerning the dispersed industrial pattern, see Chou [4, Appendix A].

<sup>9</sup> An exception might be public enterprises with their artificially high institutional wage structure before the mid-1970s. In general, the labor market in Taiwan is “unprotected,” i.e., there are very low minimum wages and an absence of collective bargaining (Wu [29, pp. 123–26]).

Fig. 1. The Trend of Real Wages in Manufacturing (1953=100)



Sources: The data for 1953-72 were compiled by the author from Galenson [8, Table 6.19]; the consumer price index after 1972 may be found in CEPD, *Taiwan Statistical Data Book, 1983* (1983), Table 9-1, and monthly earning in manufacturing in CEPD, *Industry of Free China*, Vol. 57, No. 5 (May 1982), Table 17.

Note: Figures in parentheses are the average growth rates for the period concerned.

relatively little human and physical capital and to import those which embody relatively high proportion of both.<sup>10</sup>

Have the low wage levels been sufficient to support Taiwan's comparative advantage? The answer must be negative, for otherwise, how do we explain the fact that manufactured exports did not expand significantly during the S<sub>2</sub> phase (before 1961)? It has been shown that due to a scarcity of resources (particularly before the second IS phase), export processing required imported capital and raw materials (about 90 per cent of all imports, see Table VI). Scott [25, pp. 321-25] estimates the cost structure of some of Taiwan's export industries in 1971 and finds that the overall percentage of sales value represented by the cost of materials and equipment might be around 70 per cent to 75 per cent, or even more, for a typical exporter. If such an exporter is to export profitably at world prices without the benefit of any subsidy, he must be able to buy materials and equipment at world prices. This involves trade policy design, i.e., the package of protections, tariffs, and export incentives, a subject which will be studied in the next section.

### III. THE EVOLUTION OF THE OFFSETTING POLICY PACKAGE

The preceding section has shown that export expansion has been a crucial factor in determining Taiwan's industrialization pattern, and that exports are developed

<sup>10</sup> However, Lin [19, pp. 131-37] and Liang and Liang [18, p. 221] show that Taiwan's exports to LDCs are relatively more capital intensive than those to MDCs. This suggests a "dual" trade structure. Also, they recognize that many considerations other than factor intensities are important in determining trade patterns—transport costs, trade policies, tariffs and protectionism, etc.

by low real wage costs and a policy package which influences the relative prices of imported materials and equipment. Here, we examine the offsetting trade policy package in some detail to illustrate the possibilities for and characteristics of export expansion during the  $S_3$  phase.<sup>11</sup>

A. *The Main Package: Import Controls cum Tax Rebates*

There are two kinds of import restrictions: tariff and nontariff restrictions. A tariff structure that was designed for a completely different economy, that of the Chinese mainland, was adopted in Taiwan with the emergence of a bona fide need to impose foreign exchange controls in early 1951. In this initial tariff structure, rates for raw materials were frequently set at the same levels as, or even above, those for processed goods. The tariff schedule underwent major revisions in 1955, 1959, 1965, and 1974, but the continuing relatively high levels of duties on primary and intermediate goods served to maintain the relatively low levels of effective protection characteristic of the early 1950s.

Lee et al. [14, pp. 81–87] have calculated the effective protection and subsidy in Taiwan with 1969 input-output data and have shown that there were some redundant protections and even negative effects for downstream goods. The same conclusion can be found in many other studies, such as those by Hsing [10], Lee [13], and Lin [19, pp. 90–95]. Basically speaking, the tariff structure did not alter the characteristic bias against exports stemming from high import costs of materials during the last thirty years, even in the  $S_3$  phase. Moreover, this bias was augmented by other governmental measures: a defense surtax on tariffs (called a “temporary tax” after August 8, 1967), harbor dues levied on imported goods, and high import duties (called “duty-paying value”).<sup>12</sup> The ratios of customs revenues to imports are presented in Table IX and indicate the general level of protective tariffs. Chung [5] indicates that this ratio for Taiwan ranked twenty-fourth among the ratios for eighty-two countries (even higher than those of the Republic of Korea and Singapore) in 1977. This suggests that, on the aggregate level, high import tariffs and biases against exports still exist.

To reduce the rates on materials and intermediate goods, it is necessary to increase the rates on finished goods by way of compensation because the government relies heavily upon customs revenues as a source of funds. Over 20 per

<sup>11</sup> For an overview of Taiwan's policy evolution during the 1950s and 1960s and its background, see Chou [4, pp. 16–20].

<sup>12</sup> The “duty-paying value” was 120 per cent of the c.i.f. import costs before February 1980, after which time the ratio was cut to 115 per cent, and then to 110 per cent in May 1983. The defense surtax on customs tariffs was imposed in April 1958. The rate was a homogeneous 20 per cent on the tariff of all imported goods till July 1968, after which it was changed to a multiple system. This surtax was terminated in 1973. The rate of harbor dues on traded goods was first levied at 1.5 per cent on both imports and exports (in August 1947), then at 2 per cent from December 1950. From November 1958 it was levied only on imports, first at 3 per cent, then at 3.75 per cent (from August 1967) and later at 4 per cent (from December 1971). In order to reduce the costs of exporting, the harbor dues levied on imported materials intended for exports was cut to 1 per cent from June 1973 on.

TABLE IX  
THE RATIOS OF CUSTOMS REVENUES TO IMPORTS AND TAX REVENUES, 1953-82  
(NT\$ million)

Selected Year	Customs Duties (1)	Harbor Dues (2)	Customs Revenues (3)=(1)+(2)	Imports Values (4)	Tax & Monopoly Revenues (5)	Tariffs Rate (%) (6)=(3)/(4)	Revenues Rate (%) (7)=(3)/(5)
1953	575	68	643	2,754	2,964	23.3	21.7
1961	1,823	216	2,039	12,894	9,554	15.8	21.3
1975	23,527	4,621	28,148	226,460	97,504	12.4	28.9
1977	32,023	5,851	37,874	323,839	139,306	11.7	27.4
1982	56,323	12,568	68,891	763,084	338,087	9.0	20.4

Source: CEPD, *Taiwan Statistical Data Book, 1982* (1982), Tables 8-5a and 10-4.

Note: Monopoly revenues derive from tobacco and wine monopoly revenues, which amounted to 590, 2,286, 13,125, 16,608, and 33,963 (NT\$ million) in the years cited.

cent of the government's tax and monopoly revenues derive from customs revenues (see Table IX) making this the biggest source of government income. In the study cited above, Chung points out that the ratio of Taiwan's customs revenues to overall government revenues stood at eighteenth among eighty-two countries in 1977. This poses difficulties for rectification of the tariff structures. On the one hand, reduction in the tariff rates on production goods will be resisted by the protected domestic firms; while on the other hand, increased rates on final goods will also be opposed by the users. Both financial and protection considerations impede the government's pursuit of a "rationalized" customs tariff system.

Under these circumstances, two questions present themselves: (1) Will the relatively low tariff on finished goods induce a lot of imports? and, (2) How are exports of processed goods possible? The former question involves the issue of nontariff import barriers while the latter involves another policy package of export incentives. We now consider each in order.

At the beginning of the 1950s, for reasons both of balance of payments and protection, many commodities were placed on the list of import controlled items. At that time, the saving of foreign exchange was a much more important consideration than was protection.<sup>13</sup> Gradually, as the balance of payments improved, the aim of import controls shifted to protection and the justification of import controls on the basis of domestic availability became an important principle. The system of nontariff restrictions forms a powerful regulatory and protective instrument which compensates for the low effective protection level on finished goods to prevent import competition. Taiwan's protective scheme (high tariffs on intermediate goods and complex nontariff restrictions on finished goods) is very powerful even today. This explains why imported consumer goods continued to make up only a low share of total imports over the last thirty years (see Table VI).

<sup>13</sup> For the same conclusion, see Yin [30, p. 4], Hsing [10, p. 145], Tu [27, p. 90], and Scott [25, p. 378].

High import costs of materials and equipment make the export of processed goods difficult, and thus another compensatory package of export incentives is a necessary condition for export expansion. Among such export incentives, tax rebates are the most important.<sup>14</sup> The tax rebates for exports comprise rebates of both customs duties and commodity taxes on imported raw materials. Scott finds that "unless these taxes were rebated, he [exporter] could not possibly export" [25, p. 325]. Hsing states that "about two-thirds of 177 kinds of manufactures could not be exported or could be exported only with extreme difficulty" [10, p. 165]. Lin [19, pp. 101-3] also reaches the same conclusion. The average ratio of tax refund for exports to overall tax revenues (in those categories) was 24.4 per cent during the period 1955 to 1982. It is evident that tax rebates significantly stimulated export expansion, because the tax refund ratios increased markedly at the S<sub>3</sub> phase.<sup>15</sup>

Tax rebates entail high administrative costs. Technical standards for tax rebates for each export good were set up on the basis of technical data submitted by firms applying for such rebates, and the number of categories of manufactured inputs could reach one thousand or even more for a single finished product. Thus, the administrative work is very heavy both for the government and exporters, and although many technical improvements have been adopted, it is still time-consuming. Under the circumstances, reduced customs duties plus administrative costs or protected inefficiency are the costs of this offsetting policy package—import tariffs-cum-export rebates. Moreover, domestic consumers will be the final bearers of these costs. This is the situation described in the phrase "domestic sales subsidizing export sales," i.e., income from sales in the domestic market at higher monopolistic prices can be transferred to subsidize sales in the export market at lower, competitive prices through the above offsetting policy package.

#### B. *Another Offsetting Package*

The second form of offsetting policy package is "a lot of bureaucratic red-tape" cum "export-promotion facilities." There are many bureaucratic controls, such as registrations, import and export licensings, and supervision of foreign exchange transactions, the high administrative costs of which could not help but hurt price competition in the world market. To dismantle such impediments, the Taiwan government has taken certain measures such as (1) the establishment of a system of bonded factories and warehouses from 1965 on, and (2) the creation of Export

<sup>14</sup> In addition to tax rebates there are other tax incentives aimed at encouraging exports in the Status for Encouragement of Investment, e.g., (1) exemption from business and related stamp taxes; (2) a deduction of 2 per cent of annual total export earnings from taxable income; and (3) a 10 per cent tax reduction for manufacturing, mining, or handicrafts enterprises that export more than 50 per cent of their output. The latter allowance (3) was terminated in December 1970.

<sup>15</sup> The average ratios of tax refund and tax reduction for exportation to the overall concerned tax revenues were: 3.84 per cent for the 1955-60 fiscal year, 25.73 per cent for the 1961-75 fiscal year, and 23.39 per cent for the 1976-82 fiscal year (see Ministry of Finance, *Yearbook of Tax Statistics, R.O.C. in 1982* (1983), Table 21).



Processing Zones where exporting firms could enjoy all of the tax benefits as well as a remarkable cutback in red-tape (also from 1965).<sup>16</sup>

Some organizations were also set up to promote exports. For instance, the China External Trade Development Council was founded in July 1970 to promote exports and conduct market research, many foreign business representative offices were built to handle trading affairs, and the China Export-Import Bank was established in 1979 to provide loans to foreign buyers to facilitate the purchase of domestically manufactured capital goods.

Finally, a system of low cost loans was initiated by the Bank of Taiwan in July 1957 to encourage exports. The export loans program helped to meet the short-term fund needs of manufacturers in their export operations—from raw materials procurement to finished goods delivery. The benefit of such loans to exporting firms has been appreciable. The loans were designed to offset the disadvantages of a weak private enterprise financial structure and one of the shortcomings of the state-owned banking system: the almost complete lack of a program for short-term operating funds.

### *C. Operation, Effects, and Prospects of the Policy*

It is clear that the compatibility of Taiwan's export expansion with its protective measures is dependent on the offsetting policy package. Two views of the operation of the offsetting policy could be advanced. On the one hand, it could support simple, labor-intensive processed export products in a very competitive market, making the prices of such exports very attractive. On the other hand, it could be seen as protecting the domestic market, thereby maintaining the high prices required to provide the subsidies to support export incentives through the tax systems, i.e., "domestic sales subsidizing export sales." It appears that the goal of protection in this operation is not the fostering of domestic upstream industries to provide inputs for processed exports. Otherwise, conflicts between the upstream industries and downstream exports would exist.

In any case, this policy package has two effects, one on the structure of production, and the other on organizational structure. Firstly, the operation of the offsetting policy package leads to an expansion of simple processing industries based on their advantage in labor costs. This is one of the most important factors in explaining Taiwan's successful export-led industrialization. Secondly, operation of the package stimulates small firms to engage in export business both through the direct effects of subsidies and through the indirect effects on production structure. Meanwhile, the maintenance of protective measures prevents import competition and induces protective monopoly in the domestic market.

<sup>16</sup> Exports in 1980 from the three existing zones amounted to U.S.\$1,424 million, while imports were U.S.\$1,005 million, 7.2 per cent and 5.1 per cent respectively of total annual exports and imports. About 4.4 per cent of Taiwan's manufacturing employment (80,761 people) was in the zones in 1980. Scott [25, pp. 336-40] provides a cost-benefit analysis for the EPZs; Schive [23] studies the local content behavior of firms in the EPZs; the historical background for the establishment of the Kaohsiung EPZ can be found in Li [16, pp. 352-58].

Of course, the offsetting policy package is not without its limitations. Two conflicts, between producers and consumers and exporting producers and upstream producers may also be further discussed. On the one hand, more and more domestic consumers recognize the cost to their welfare under this policy package due to the high degree of protection. Hence the call for the government to dismantle import protection. The same request comes from the trade-deficit partners—in particular the United States (trade surplus from the United States amounted to U.S.\$6.7 billion in 1983). On the other hand, interest-conflict between exporting and domestic upstream industries is also becoming more and more acute. The development of some upstream industries is normal when downstream processing industries can provide a sufficient market. But under the offsetting policy package, exporting firms can meet their needs with imported materials and equipment with nearly no tariff costs through the tax rebate operation. Hence, domestic upstream industries must produce at least as efficiently as existing foreign firms, otherwise domestic processing firms will not use home-made materials. This would prove a serious barrier to the entry of domestic firms into these upstream industries, were it not for government protection. The attempt to satisfy both parties inevitably leads to contradictions between export and protection policies, thus inducing additional regulations. Much debate surrounds the issue of whether this policy package should be altered.

From the first oil crisis (1973) on, there has been a wide divergence in "public opinion." One side in the debate has advocated that the government continue to play a central role in choosing, assisting, guiding, and directly investing in so-called "strategic" or "key" industries. The other side claims that the only role of government is to induce a more efficient market and efficient institutions, and that the offsetting policy package should be dismantled. The former choice, which is broadly reminiscent of Japan's industrial policy (see Kogiku [11]), tends to protection, intervention, and regulation. The latter tends to create a *laissez-faire* atmosphere in which entrepreneurs carry out their own restructuring. In short, this is perhaps another one of those decisive moments, like the one at the end of the 1950s, for carefully considering how to improve the policy package so as to maintain a healthy climate for future development.

#### IV. CONCLUDING REMARKS

Taiwan's rapid structural change and high growth in the last few decades have been demonstrated in this paper. Much evidence supports the contention that export expansion has been the most important source of growth in manufacturing output since the early 1970s. Therefore, the specialization pattern is a function of Taiwan's export-oriented growth strategy. Also, mainly on the basis of trade composition, we have shown that Taiwan's industrialization process can be divided into different phases, namely, the primary IS, the primary ES, and the second IS cum ES. While adducing the key facts of this economic performance, we also illustrate its chief causes. The success of export expansion is dependent on (1) a relatively cheap labor force and (2) the import of production

goods at close to world prices. In the case of Taiwan, both conditions have been satisfied by government intervention. Each has been advanced in turn.

On the one hand, the government designed a very delicate institutional system to squeeze and transfer agricultural surplus from agricultural sector, the low level of rural living standards serving to hold down nonagricultural real wages before the mid-1970s. Both factors combined to ensure the abundant and cheap labor force necessary to expand labor-intensive exports since the  $S_3$  phase.

On the other hand, import costs of production goods discriminate against users serving the domestic market in favor of those producing exports. This is ensured through an offsetting policy package: import controls cum tax rebates. Another offsetting package (e.g., inefficient banking services cum export loans) further discriminates between export-oriented and domestic-oriented firms. As a result, those firms processing exports can use imported materials and equipment obtained at close to world prices as well as benefit from various bureaucracy-skirting measures. This induces an export-led specialization pattern and results in "domestic sales subsidizing export sales."

However, it is arguable whether the offsetting trade policy can support Taiwan's industrialization toward the secondary IS cum ES phase. This matter requires further investigation.

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