

# GROWTH AND STRUCTURAL CHANGE IN THE MANUFACTURING SECTOR IN THAILAND

1960-69

NARONGCHAI AKRASANEE

## INTRODUCTION

**D**URING THE 1960s Thailand underwent a period of rapid growth and structural change in the manufacturing sector. This was a period of active promotion of industry through various tax privileges and tariff protection. While traditional industries continued to expand, many new industries were set up to produce goods previously imported.

Growth and structural changes of value added, imports, and exports of the manufacturing sector during the 1960s are the subject of this paper. The discussion is devoted mostly to the period 1960-69, with reference to change during two subperiods, 1960-64 and 1964-69. Details of the subperiods are given in the Appendix Tables I to III. An extended analysis of structural change in terms of import substitution and sources of growth a la Chenery may be found in another paper.<sup>1</sup> Policy factors which led to these changes, and recent developments, are discussed in my former papers [4] [1] [3].

### I. THE MANUFACTURING SECTOR BEFORE 1960

Prior to the 1930s there were two major types of manufacturing activities in Thailand, one rice and lumber milling, the other cottage and handicraft type production such as pottery, jars, wicker works, and home woven textiles, mostly for household or small community consumption.<sup>2</sup> Other types of manufacturing activities, as Ingram states, were virtually non-existent. In 1919 the British consul reported that there were only seven "factories" in Bangkok.<sup>3</sup> Thus a large part of the demand for manufactured goods, including a significant amount of textiles, was satisfied by imports [9, p. 119].

The belated start of factory type manufacturing can be attributed to many factors, perhaps the most interesting being the Bowring Treaty<sup>4</sup> of 1855 with Great Britain

---

An earlier version of this paper is a part of the author's Ph. D. dissertation [2].

<sup>1</sup> [5]. The Chenery's paper referred to here is [8, pp. 624-53].

<sup>2</sup> This section is based on the following works: [9]; [10]; [13]; [15].

<sup>3</sup> The seven factories were: one cement plant, three aerated water plants, a soap factory, a cigarette factory, and a leather factory. The definition of factory was not clear, but it obviously excluded rice and lumber mills and workshops. See [9, p. 133].

<sup>4</sup> [9, pp. 33-35], for details of the Bowring Treaty.

which imposed a 3 per cent limit on import duties. This constraint on tariff revenue led to the imposition of "inland transit duties" on internal shipments of certain articles, the average rate being about 10 per cent ad valorem [9, p. 134]. The low import duty and the inland transit duty were believed to distinctly discourage local entrepreneurs. In 1926 the Bowring treaties were revised, a number of import duties were increased, and inland transit duties abolished. Although the purpose of higher import tariffs was to increase government revenue, many industries were established as a result.

During the 1930s and 1940s many new industries and factories were set up, among them sugar, matches, liquor, cigarettes, beer, soap, glass bottles, and perfumery and cosmetics. Muscat also notes that curtailment of imports during World War II provided additional protection and stimulated the growth of domestic manufacture of such items as textiles and shoes [13, p. 187]. But the private enterprise system in manufacturing was still limited in scale. In the late 1940s and all through the 1950s industrialization was characterized by active government participation in the form of government enterprise.<sup>5</sup> The list of government-owned industries grew to more than 120 by 1958, then the trend reversed.<sup>6</sup> In the 1959-60 period, following the coup led by Field Marshall Sarit Thanaraj, the government adopted a new set of industrial policies aimed at developing a system of private enterprise, and reducing direct government participation. It was in the 1960s that a modern system of private enterprise in manufacturing actually began in Thailand: a system that led to rapid expansion of the manufacturing sector.

Thus prior to 1960 manufacturing activity in Thailand was concentrated in rice and lumber processing. Other manufacturing activities were either very small, or confined to certain areas of the country, and in most cases were of low efficiency. Value added in manufacturing has been estimated at 10.3 per cent of GNP in 1950, compared to 12.6 per cent in 1960. Labor force participation in manufacturing was only 2.2 per cent in 1947, and 3.6 per cent in 1960.<sup>7</sup>

## II. INDUSTRIAL GROWTH OF THE 1960s

During the 1960s the manufacturing sector went through a period of growth and structural change. Traditional products maintained a normal rate of expansion, while many new industries were established. Some substituted previously imported manufactured goods. Others were new exports which replaced exports of the same products in primary forms.<sup>8</sup>

<sup>5</sup> Factors that led to this policy and its abandonment were discussed in [2, Chapter 4].

<sup>6</sup> See [15, Appendix A, pp. 308-16]. The proportion of value added generated from government enterprises to total value added in manufacturing was not known. However, in 1957, the World Bank Mission had the impression that, although the share might be small compared to the aggregate number of all private establishments, government influence in industry was very large. The mission estimated that fixed capital invested in government factories at the time was between 700 to 800 million baht.

<sup>7</sup> [9, pp. 285-86]. It is likely that figures for value added omitted much small-scale and handicraft production. The only available estimate of value added in small scale manufacturing was about 10 per cent of total manufacturing value added. See [20, Vol. 3].

<sup>8</sup> Myint describes this activity as "export substitution." See [14, pp. 58-72].

TABLE  
GROSS VALUE ADDED BY INDUSTRIAL ORIGIN, 1960  
GROWTH, AND CONTRIBUTION

Industrial Origin	Value Added (Billions of Baht)	
	1960	1969
Agriculture	21.5	41.7
Mining and quarrying	0.6	2.1 <sup>a</sup>
Manufacturing	6.6	20.0 <sup>b</sup>
Construction	2.5	8.6
Electricity & water supply	0.2	1.6
Transportation and communication	4.0	8.0
Wholesale and retail trade	8.2	22.9
Banking, insurance & real estate	1.0	4.8
Ownership of dwellings	1.5	2.6
Public administration & defense	2.5	5.6
Services	5.2	13.3
Gross domestic product	53.8	131.0 <sup>c</sup>

Source: [17].

<sup>a</sup> Exclude value added of tin metal.

The overall cumulative rate of growth of value added in manufacturing was calculated at 13.0 per cent per annum for the 1960s, contributing 17.4 per cent to the growth of GDP.<sup>9</sup> The rate accelerated from 11.9 per cent in the 1960-64 period to 13.8 per cent in the 1964-69 period (see Appendix Table I). This compares favorably with the performance of other sectors of the economy in the same period and indicates that manufacturing was the leading sector in the 1960s. Table I shows value added by industrial origin, their annual rates of growth, and percentage contribution to the increase in GDP.

To evaluate the performance of an individual industry in the manufacturing sector, it is not sufficient to merely consider the rate of growth of value added, since, for industries with a small base, a slight increase in value added would lead to deceptively high rates of growth. Thus, we will also consider the extent to which the growth of an industry has contributed to the overall growth of value added of the sector. This procedure is also carried out for import and export evaluation.

We first consider the structure of the manufacturing sector in 1960, as indicated by value added share. From Table II, we see that manufacturing activity was

<sup>9</sup> The contribution of sector *i* to the increase in GDP between periods *o* and *t* is measured by  $\frac{i_t - i_o}{GDP_t - GDP_o}$ . This parameter may underestimate the real contribution of sector *i* because of the external economies it might have generated. It may also overestimate its real contribution if protection has increased its price relatively more than prices of others. Table II illustrates growth and structural change of value added in manufacturing from 1960 to 1969. It also shows the structural change when processed food, beverages, and tobacco, are excluded from manufacturing.

I  
AND 1969, STRUCTURAL CHANGE, RATE OF  
TO THE INCREASE IN GDP

(In current prices)

Proportion of Sector Value Added to GDP		Annual Percentage Rate of Growth of Value Added	Contribution to the Increase in GDP
1960	1969		
40.0	31.8	7.6	26.2
1.1	1.6	14.8	7.9
12.3	15.3	13.0	17.4
4.6	6.7	14.8	7.9
0.4	1.2	26.0	1.8
7.4	6.1	8.0	5.2
15.2	17.5	12.1	19.0
1.9	3.7	19.1	4.9
2.8	2.0	6.3	1.4
4.6	4.3	9.3	4.0
9.6	10.2	11.0	10.5
100.0	100.0	10.4	100.0

<sup>b</sup> Include value added of tin and the adjusted value added of petroleum products.

<sup>c</sup> Include the adjusted value added of petroleum products.

concentrated mostly in processed food, followed by beverages and tobacco, consumer nondurables, intermediate products II, intermediate products I, transport equipment, construction materials, machinery, and consumer durables.<sup>10</sup> Cereal products in processed food had the largest share of 19.8 per cent, due to rice milling. Tobacco and beverages were the next two largest industries. Other sizable industries were clothing, consumer chemical products, meat and meat products, other food preparations, textile fabrics and gunny sacks, basic construction materials (cement), printing and publishing, lumber and plywood, sugar and confectionary, motor vehicle industry (repairs and body building) and other transport equipment, wood products, oils and fats, and miscellaneous manufactured goods. The rest of the industries had a value added share of less than 1 per cent. When food, beverages, and tobacco are excluded, almost half of the manufacturing output belonged to consumer nondurables, with clothing and consumer chemical products being the most important industries. Industries in order of value added share are the same as above. Thus it is apparent that in 1960 the manufacturing sector was producing mostly simple consumer products for the basic needs of the people.

During the 1960s the most important development in manufacturing was the expansion of petroleum products, which, by itself, grew at the annual rate of 108.9 per cent, and contributed 14.3 per cent to the overall growth of manufacturing value added. This was the same as the contribution from all nondurable consumer goods, and was only 2 and 1.5 percentage points less than beverages and tobacco, and processed food respectively. Next in importance were intermediate products

<sup>10</sup> This type of classification follows some of the World Bank studies by Bela Balassa. See [6].

TABLE  
GROWTH AND STRUCTURAL CHANGE OF  
1960-

	Proportion of Industry Value Added to Total Value Added	
	1960	1969
Processed food	31.9	21.2
Meat and meat products	5.0	2.4
Sugar and confectionary	2.5	1.8
Dairy products	0.4	0.8
Cereal products	19.8	13.0
Food preparations	4.2	3.1
Beverages and tobacco	25.5	19.4
Beverages	10.7	10.9
Tobacco manufactures	14.8	8.5
Construction materials	3.5	5.5
Basic construction materials	3.4	5.5
Non-metallic mineral products	0.1	0.1
Intermediate products I	6.8	5.9
Oils and fats	1.1	0.5
Pottery and sanitary wares	0.2	0.2
Lumber and plywood	3.2	2.9
Leather	0.4	0.2
Thread and yarn	0.8	0.8
Glass and glass products	0.3	0.7
Chemical materials	0.3	0.4
Iron and steel basic industries	0.3	0.3
Non-ferrous metal basic industries	0.1	2.2
Petroleum products	0.0	9.6
Intermediate products II	7.7	11.4
Textile fabrics and gunny sacks	3.9	5.5
Wood products	1.7	2.6
Paper products	0.3	0.3
Rubber products	0.6	0.9
Metal manufactures	0.8	1.6
Intermediate chemical products	0.5	0.5
Consumer nondurables	18.5	15.7
Clothing	7.4	5.6
Other textile articles	0.2	0.1
Shoes	0.9	0.5
Printing and publishing	3.3	3.0
Precision instruments	0.1	0.1
Toys, sport goods, jewelry, etc.	1.1	1.4
Leather goods (not shoes)	0.1	0.1
Consumer chemical products	5.5	5.0
Consumer durables	0.6	0.9
Motorcycles and bicycles	0.1	0.4
Consumer electrical goods	0.5	0.5
Machinery	0.7	2.3
Agri. & non-electrical machinery	0.5	1.7
Electrical machinery	0.2	0.6
Transport equipment	4.8	5.9
Motor vehicle industry	2.7	4.6
Other transport equipment	2.1	1.3
Total manufacturing	100.0	100.0
Manufacturing excl. foods, beverages, and tobacco	—	—

Source: Appendix Table I.

II  
MANUFACTURING VALUE ADDED,  
69

Annual Rate of Growth 1960-69	Contribution to Total Value Added Increase 1960-69	Proportion of Industry Value Added to Total Value Added <sup>a</sup>	
		1960	1969
7.9	15.8		
4.2	1.1		
9.0	1.5		
22.2	1.1		
7.8	9.7		
9.1	2.5		
9.6	16.4		
13.1	11.0		
6.3	5.4		
19.0	6.6	8.1	9.3
19.1	6.5	7.9	9.2
11.1	0.1	0.2	0.1
11.2	5.5	16.0	10.0
2.0	0.1	2.7	0.8
8.2	0.1	0.6	0.3
11.4	2.7	7.6	4.8
5.2	0.1	1.0	0.4
13.5	0.8	1.8	1.4
22.3	0.9	0.8	1.2
17.5	0.4	0.6	0.6
14.9	0.3	0.6	0.5
52.8	3.2	0.3	3.7
108.9	14.3	0.1	16.1
18.0	13.2	18.2	19.2
17.2	6.2	9.2	9.2
18.6	3.1	3.9	4.4
15.7	0.4	0.7	0.6
19.4	1.1	1.3	1.6
21.5	2.0	1.9	2.7
13.2	0.5	1.1	0.8
10.9	14.3	43.4	26.5
9.5	4.7	17.5	9.5
5.6	0.1	0.4	0.1
7.2	0.4	2.0	0.9
11.5	2.8	7.8	5.0
9.8	0.0	0.2	0.1
16.3	1.5	2.5	2.3
7.8	0.0	0.2	0.1
11.8	4.8	12.9	8.5
18.0	1.0	1.4	1.5
25.1	0.5	0.3	0.6
14.7	0.6	1.1	0.9
28.8	3.1	1.7	3.9
28.3	2.3	1.3	2.9
30.6	0.8	0.4	1.0
15.6	6.5	11.3	10.0
20.2	5.6	6.2	7.8
6.6	0.8	5.0	2.1
13.0	100.0	—	—
17.2	—	100.0	100.0

<sup>a</sup> Manufacturing excluding food, beverages, and tobacco.

at higher levels of fabrication, contributing 13.2 per cent to the overall increase in manufacturing value added, with an 18.0 per cent annual rate of growth from 1960 to 1969. Machinery, consumer durables, and transport equipment had very high growth rates during the first subperiod due to their small bases in 1960. The high rates of growth continued through the second subperiod, resulting in overall annual growth rates of 28.8 per cent, 18.0 per cent, and 15.6 per cent respectively. Despite being small industries, the three groups together contributed 10.6 per cent to the overall increase of value added. Construction materials also grew rapidly, at an annual rate of 18.9 per cent. Other industry groups of mostly traditional products already being produced in large quantities in 1960 had substantially lower rates of growth, and, except for consumer nondurables and intermediate products at lower levels of fabrication, the rates were lower than the rate of growth of GDP.<sup>11</sup> The processed food industry group grew at an annual rate of 7.9 per cent, and its contribution to the increase in value added declined from 22.4 per cent in the first subperiod to 13.2 per cent in the second. Similarly, the contribution from beverages and tobacco fell from 21.9 per cent to 14.1 per cent. Consumer nondurables did slightly better, especially in the second subperiod when it was growing at 13.1 per cent. Its overall annual rate of growth was 10.9 per cent. The mixed development in intermediate products I group resulted in the 11.2 per cent rate of growth for the whole period and contributed only 5.5 per cent to the increase in manufacturing value added. (For reference to subperiods, see Appendix Table I.)

The large scale production of petroleum products began in 1964. Starting with one refinery, with a daily capacity of 36,000 barrels, petroleum refining in Thailand then expanded to three large refineries, with a daily capacity of 120,000 barrels in 1969, satisfying about 65 per cent of the domestic demand for petroleum products.<sup>12</sup>

Every industry in intermediate products II contributed to the impressive expansion of the group. In this group textile fabrics and gunny sacks were the most important. They grew at the rate of 23.6 per cent in the early 1960s, but the rate of growth declined somewhat in the second subperiod, resulting in an overall growth rate of 17.2 per cent. Rubber products expanded during the period following the establishment of a vehicle tire and tube industry in 1965, which grew at the rate of 28.8 per cent per year in the second subperiod. Wood, paper, and metal products all increased at impressive rates throughout the period, and together they contributed 5.2 per cent to the increase in value added. Wood products comprised mostly wooden furnitures and door-window frames. The production of paper and paper products ranged from basic paper material, products for packaging industries, to paper consumer products. Metal products included the production of nails, wires, nuts and bolts, metal cans and containers, utensils, and cutlery. An industry which did not do as well in this group is intermediate chemical products including

<sup>11</sup> GDP in current prices grew from 54 billion in 1960 to 131 billion in 1969 or at the annual rate of 10.4 per cent [17]. The annual rate in 1962 constant prices was 8.0 per cent.

<sup>12</sup> The share of domestic production in total demand is derived from Appendix Tables I-IV. Other information about various industries described in this paper in addition to the ones noted are from the following three major sources: [11, pp. 21-43] [16] [12].

the production of synthetic, plastic goods, and alums. However, its rate of growth of 13.1 per cent was still above average.

Five of the industries in intermediate products I grew very rapidly, while the other four had growth rates below the average rate of the sector. The most important industry was non-ferrous metal. Due to the tin smelting industry which began production in 1965-66, the growth rate of non-ferrous metal was 52.8 per cent, contributing 3.2 per cent to the increase in manufacturing value added. Iron and steel grew at 14.9 per cent annually. Glass and glass products, chemical materials, and thread and yarn, had accelerated growth rates, resulting in overall annual rates of 22.5 per cent, 17.4 per cent, and 13.5 per cent respectively. Major products in the glass industry are glass sheets for construction, and glass bottles used in the beverage and pharmaceutical industries. Chemical materials are basic chemical products such as caustic soda and hydrochloric acid. The growth of thread and yarn was due to the production of vegetable fibers such as corded or combed jute, kenaf, cotton, and kapok. Lumber and plywood contributed a significant 2.6 per cent to the overall growth of value added, but its rate of growth for the whole period was below average. With a dwindling supply of timber raw material due to the lack of forest conservation and an inadequate replanting policy, expansion in this industry has been limited. Oils and fats, pottery and sanitary wares, and leather grew very little during the whole period.

Among consumer durables, machinery, and transport equipment, the motor vehicle industry was the most important. Its annual rate of growth of value added was 20.2 per cent, and this contributed 5.6 per cent to the increase in manufacturing value added. In this industry assembly of passenger cars and trucks grew from zero in 1960 to an annual production of 6,110 car units and 5,588 truck units in 1969 [16, p. 2]. Motorcycles and bicycles grew at an annual rate of 25.1 per cent, but, because of the industry's size, it only contributed 0.5 per cent to the increase in value added. Production in consumer electrical goods, agricultural and nonelectrical machinery, and electrical machinery represented mostly the assembly of imported parts and components. It was in these industries that many new products were established, including radio and television, household appliances, sewing machines, tractors, electric bulbs, and storage batteries.

The growth in construction materials was the result of expansion in the cement industry. The 1960s was a construction boom period, in both private and public construction, requiring a large supply of cement. Thus, from 1964 to 1969, the production of Portland cement rose from 1.1 million to 2.4 million tons [16, pp. 29-30]. Cement and concrete products also had a large increase. Consequently, during 1960-69, value added in basic construction materials rose at the annual rate of 19.1 per cent and contributed 6.5 per cent to the increase in value added.

In almost all consumer goods industries the growth in value added was below the average rate of the sector. In consumer nondurables, only the rate of growth of miscellaneous manufactured products (such as toys, sporting goods, jewelry, and matches) was above average. Consumer chemical products and printing-publishing did not do too poorly, however, with growth rates of 11.8 per cent and 11.5 per cent respectively. Clothing was a large industry to start with. Thus, even



though its rate of growth was low, its contribution to the increase in manufacturing value added was 4.7 per cent. In beverages and tobacco, the slow rate of growth was due to the slow growth of tobacco manufactures. The beverage industry, which includes soft drink bottling, ice factory, beer, and distilled whisky, rose at an annual rate of 13.1 per cent. This industry alone contributed 10.9 per cent to the overall increase in sector value added.

Among processed foods, every industry except dairy products rose very slowly. In fact the production of meat and meat products in 1969 was lower than 1964, due to the large decline in the number of hogs and cattle slaughtered in the Bangkok-Thonburi area which could not be compensated for by increases elsewhere.<sup>13</sup> In cereal products, rice milling has been the biggest industry. But in 1969 the production of husked rice remained almost the same as in 1967 and 1968 [18]. The growth in value added of sugar and confectionery in the first subperiod was an impressive 15.4 per cent, but the rate declined to 4.2 per cent during the second subperiod, resulting in the overall growth rate of 9.0 per cent. Food preparations include many industries, two of the most significant are gourmet seasoning and tapioca products. Gourmet seasoning began its production in the late 1950s, and in 1969 the import of monosodium glutamate was virtually completely eliminated. Tapioca products are among a few manufactured products which have been exported in significant quantity. Dairy products was a new industry which started during the 1960s. It was mostly the production of sweet condensed milk, using imported dry milk powder and dry butter fat. For the whole period, its annual rate of growth was 22.2 per cent. Still being a small industry, it contributed only 1.1 per cent to the increase in value added in the manufacturing sector.

The pattern of growth in value added described above led to basic changes in the structure of the manufacturing sector as shown in Table II. Although the manufacturing activity was still concentrated in foods, beverages and tobacco, and consumer nondurables, the value added shares of these three groups of industries declined significantly. For processed food, value added fell from 31.9 per cent of total manufacturing value added in 1960 to 21.2 per cent in 1969. The shares of beverages and tobacco, and consumer nondurables fell from 25.5 and 18.5 per cent to 19.4 and 15.7 per cent respectively. Intermediate products I also had a lower value added share in 1969, due largely to the relatively small increase of lumber and plywood value added. In contrast, we see a large increase in value added shares of petroleum products, intermediate products II, construction materials, machinery, and transport equipment. Consumer durables increased in its share, but it was still small.

It is interesting to note that the 9.6 per cent value added share of petroleum products in 1969 placed petroleum the industry third in importance after cereal products and beverages. Other industries with a large increase in their shares were non-ferrous metal, textile fabrics and gunny sacks, basic construction materials,

<sup>13</sup> Slaughtering in Bangkok-Thonburi has been monopolized by the Municipality which has a long and well-known record of poor management and corruption. The number of hogs and cattle slaughtered in Bangkok-Thonburi was as follows: 1960: 709,275; 1964: 676,876; 1969: 213,656 [19, Vol. 14, No. 3, 1966] [19, Vol. 18, Nos. 2-4, 1970].

metal manufactures, agricultural and non-electrical machinery, and motor vehicle industry. Due to below average rates of growth, value added shares of cereal products, meat and meat products, tobacco manufactures, oils and fats, and lumber and plywood fell significantly.

If processed food, beverages, and tobacco were excluded from the sector, the average annual growth rate of the sector would increase to 17.2 per cent. Leading industries in terms of growth rate and contribution to the increase in sector value added are the same as before. But changes in the significance of an industry as measured by its value added share now depends on whether the industry's growth rate was greater or less than 17.2 per cent.

The decline in importance of industries in consumer nondurables is now brought out very clearly. Every industry in the group had a smaller value added share. Intermediate products I also declined in importance. It was only in non-ferrous metals and glass products that the share increased. On the other hand, the share of petroleum products in 1969 far exceeded the total share of intermediate products I. The significance of intermediate products II increased only slightly, due to the increase in shares of wood, rubber, and metal products, while textile fabrics and gunny sacks remained the same, and paper and intermediate chemical products fell. A slight increase in share was also found in basic construction materials and motor vehicle industry. Among consumer durable and machinery industries, only consumer electrical goods' share fell.

It is apparent that growth in the manufacturing sector during the 1960s was concentrated mostly in intermediate products (including petroleum products), consumer durables, transport equipment, machinery, and construction materials. In processed food, beverages and tobacco, and consumer nondurables, the growth rates were relatively low, with only a few exceptions. This pattern of growth resulted in the decline in importance of traditional manufactured goods, while investment goods type industries became much more important.

### III. GROWTH AND STRUCTURAL CHANGE IN MANUFACTURED IMPORTS

During the 1960s manufactured imports also underwent basic structural change. Inspection of Table III shows that at the beginning of the period the most important manufactured imports in terms of share in total manufactured imports belonged to the two intermediate products groups and petroleum products, e.g., 27 per cent for intermediate products I and petroleum products, and 26.2 per cent for intermediate products II. In these groups, imports of petroleum products and textile fabrics accounted for almost half of the share, with the remainder representing mostly metal manufactures, iron and steel, rubber products, chemical materials, and paper products. Other groups of imports with a large share were machinery, consumer nondurables, and transport equipment. While both types of machinery contributed to the large share of machinery imports, shares of consumer nondurable and transport equipment imports were accounted for mostly by consumer chemical imports such as pharmaceuticals, soaps-detergents-cosmetics and motor vehicles.

TABLE  
GROWTH AND STRUCTURAL CHANGE IN

	Proportion of Imports to Total Manufactured Imports	
	1960	1969
Processed food	8.6	5.1
Meat and meat products	0.0	0.1
Sugar and confectionary	0.1	0.0
Dairy products	3.9	2.7
Cereal products	1.2	0.4
Food preparations	3.4	2.0
Beverages and tobacco	1.8	2.5
Beverages	0.2	0.1
Tobacco manufactures	1.5	2.4
Construction materials	0.6	1.0
Basic construction materials	0.4	0.7
Non-metalic mineral products	0.2	0.4
Intermediate products I	13.7	15.6
Oils and fats	0.4	0.5
Pottery and sanitary wares	0.3	0.3
Lumber and plywood	0.0	0.2
Leather	0.1	0.0
Thread and yarn	1.5	1.8
Glass and glass products	0.6	0.5
Chemical materials	2.8	4.3
Iron and steel basic industries	7.0	6.7
Nonferrous metal basic industries	1.0	1.4
Petroleum products	13.3	6.3
Intermediate products II	26.3	19.0
Textile fabrics and gunny sacks	11.1	4.6
Wood products	0.1	0.1
Paper products	2.6	2.8
Rubber products	3.2	1.3
Metal manufactures	7.0	4.8
Intermediate chemical products	2.4	5.4
Consumer nondurables	10.8	13.4
Clothing	1.3	0.6
Other textile articles	0.9	0.3
Shoes	0.1	0.1
Printing and publishing	0.5	0.4
Precision instruments	1.3	2.1
Toys, sport goods, jewelry, etc.	2.0	6.5
Leather goods (not shoes)	0.0	0.1
Consumer chemical products	4.7	3.4
Consumer durables	2.4	2.4
Motorcycles and bicycles	1.1	1.4
Consumer electrical goods	1.3	1.0
Machinery	13.9	22.8
Agri. & non-electrical machinery	9.7	14.6
Electrical machinery	4.2	8.3
Transport equipment	8.7	11.8
Motor vehicle industry	7.9	10.3
Other transport equipment	0.8	1.4
Total manufacturing	100.0	100.0
Total mfg. excl. food, beverages, and tobacco	—	—

Source: Appendix Tables II-IV.

III  
MANUFACTURED IMPORTS, 1960-69

Annual Rate of Growth 1960-69	Contribution to Total Increase in Imports 1960-69	Proportion of Imports to Total Domestic Demand (%)	
		1960	1969
5.1	3.0	13.3	8.5
19.6	0.1	0.3	0.6
2.5	0.0	1.4	0.4
6.5	1.9	91.7	60.6
-0.2	-0.0	2.9	1.3
4.6	1.1	59.4	47.4
15.7	3.0	7.6	13.1
5.8	0.1	2.1	1.6
16.6	2.9	11.6	22.7
18.1	1.3	15.9	13.8
17.5	0.8	11.7	9.6
19.3	0.5	75.9	73.6
12.8	16.8	53.3	56.7
13.9	0.5	10.2	23.5
9.5	0.3	60.3	46.7
31.4	0.2	0.9	3.6
-3.2	0.0	10.5	5.3
13.2	1.9	40.1	50.8
8.6	0.4	41.7	36.0
16.7	5.3	90.0	88.5
10.6	6.5	97.3	88.1
15.4	1.7	88.1	55.3
2.3	1.9	99.7	34.6
7.2	14.4	69.3	49.4
0.9	0.6	63.2	33.3
11.9	0.1	3.5	2.8
12.5	3.0	93.8	77.4
0.9	0.2	79.8	45.8
6.5	3.4	88.1	58.4
21.8	7.2	76.5	84.1
13.9	15.1	37.2	34.3
1.9	0.1	20.8	5.6
-1.3	-0.1	80.7	70.1
19.0	0.2	6.1	15.9
7.7	0.3	13.3	7.8
17.1	2.5	96.2	97.3
26.5	9.3	70.4	69.3
24.6	0.1	14.0	28.4
7.2	2.5	37.8	30.6
11.2	2.4	78.3	58.4
14.2	1.5	87.6	66.2
8.2	0.9	72.2	50.6
17.4	28.4	95.6	79.3
16.3	17.6	95.2	75.5
20.0	10.8	96.7	87.2
15.0	13.7	64.8	58.0
14.6	11.9	76.0	59.7
18.2	1.8	26.8	48.2
11.2	100.0	43.8	37.9
11.5	—	63.7	50.2

The import of processed food was 8.5 per cent, composed largely of dairy products and miscellaneous food preparations such as gourmet seasoning, etc. The rest of manufactured imports had relatively small shares.

In 1969, the structure of manufactured imports concentrated more in machinery and transport equipment, although all intermediate product imports combined remained most important. Machinery imports, with an annual rate of growth of 17.4 per cent, a contribution of 28.4 per cent to the overall growth of manufactured imports, became the largest group of manufactured imports as indicated by its share of 22.8 per cent. The import of transport equipment rose at the annual rate of 15.0 per cent, resulting in its share rising from 8.7 to 11.8 per cent. This change was caused by the growth of motor vehicle import which grew at the annual rate of 14.6 per cent, and accounted for 11.9 per cent of the increase in manufactured imports. The share of construction material imports also rose, but was still very small. Other imports that increased in share were beverages and tobacco, consumer nondurables, and intermediate products I, but the increase was small for beverages and tobacco. The increase in import share of intermediate products I was due to the rapid growth of raw material imports such as thread and yarn, chemical materials, and non-ferrous metal. As for consumer nondurables, the increase was the result only of the growth in imports of miscellaneous manufactured goods.

Although imports of intermediate products II and petroleum products together contributed 16.3 per cent to the overall increase in manufactured imports, they were growing at annual rates of 7.2 per cent and 2.3 per cent respectively, well below the average rate of 11.2 per cent for imports of the whole sector. The slow rate of import growth of intermediate products II was almost entirely in the decline of textile fabric and rubber products imports for which rapid expansion in domestic value added and gross output was recorded. Since petroleum products and textile fabrics were very important imports in 1960, their slow rates of growth caused the shares of imports of intermediate products II and petroleum products to fall from 26.3 per cent and 13.3 per cent to 19.0 per cent and 6.3 per cent respectively.

In processed food, imports grew very slowly. Major imports in the group such as dairy products, gourmet seasoning, and wheat flour, were produced locally. Consequently its share of 8.6 per cent fell to 5.1 per cent at the end of the period. Finally, the share of consumer durable imports remained the same at 2.3 per cent; the decline in the share of consumer electrical goods was offset by the increase in the share of motorcycles and bicycles.

Since processed food, beverages and tobacco together represented only 10 per cent and 7 per cent of manufactured imports in 1960 and 1969, they did not affect growth and structural change of manufactured imports very much. Thus when they were excluded the annual rate of growth of manufactured imports rose to 11.5 per cent, as compared to 11.2 per cent when included.

Another interesting aspect is the relative significance of imports in satisfying total domestic demand, which may be measured by the ratio of imports to domestic demand.<sup>14</sup> As shown in Table III and Appendix Table II, manufactured imports

<sup>14</sup> Total domestic demand is defined as the sum of final and intermediate demand. This is equal to imports plus domestic gross output less exports.

remained a very important source of supply of manufactured products throughout the 1960s, with the import ratio of the whole sector falling slightly from 43.7 per cent in 1960 to 42.6 per cent in 1964, and to 37.9 per cent in 1969.<sup>15</sup> When food, beverages, and tobacco were excluded the ratio declines from 63.7 per cent in 1960 to 50.2 per cent in 1969.

The decline in the import-demand ratio was more pronounced in petroleum products, intermediate products II, consumer durables, machinery, and transport equipment, but the ratio was still very high at the end of the period. In transport equipment the fall in import ratio was due only to the lower ratio of motor vehicles. On the other hand almost every industry in intermediate products II and all industries in consumer durables and machinery had declining import ratios.

Among consumer nondurable industries the largest decline in the import ratio was in clothing. Other industries in the group with declining import ratios were other textile articles, printing and publishing, toys, sporting goods, jewelry, and consumer chemical products. But the import ratios of shoes, precision instruments, and leather goods increased, thus resulting in the small decline in the ratio of the whole group. Industries in construction materials had approximately constant import ratios. The import ratio of processed food fell from 13.3 per cent to 8.5 per cent, due mostly to the decrease in the import ratio of dairy products.

Changes in import ratios of industries in intermediate products I were mixed. Most industries had lower import ratios, but the decline was rather small. In the meantime import ratios of oils and fats, thread and yarn, lumber and plywood increased, causing the import ratio of the group to rise from 53.3 per cent to 56.7 per cent. Finally, due to a larger import ratio of tobacco manufactures (processed tobacco leaves), the beverages and tobacco industry group increased in import ratio.

The development on the import side appeared to be consistent with the pattern of industrial growth during the period. Thus while the domestic production of intermediate products was growing rapidly, as indicated by the rising value added, the growth in its imported counterpart was slow, resulting in their lower shares in total manufactured imports and, in most cases, lower import ratios. As industrialization progressed, there was a rising demand for capital goods, parts and components, which were imported in an increasing quantity. Domestic production in these industries was also growing very fast, leaving the import ratios slightly lower at the end of the period.

#### IV. GROWTH AND STRUCTURAL CHANGE IN MANUFACTURED EXPORTS

Manufactured exports from Thailand have always been small, both in the number of products and quantity exported. In the early 1960s husked rice in cereal products and lumber together accounted for about 70 per cent of total manufactured exports (see Table IV). The remaining 30 per cent was distributed among a few products,

<sup>15</sup> The process of import substitution is discussed in another paper [5].

TABLE  
GROWTH AND STRUCTURAL CHANGE IN

	Proportion of Exports to Total Exports	
	1960	1969
Processed food	82.9	55.1
Meat and meat products	3.0	0.8
Sugar and confectionary	1.1	0.6
Dairy products	0.0	0.0
Cereal products	63.8	34.2
Food preparations	15.1	19.4
Beverages and tobacco	1.0	2.9
Beverages	0.0	0.1
Tobacco manufactures	1.0	2.8
Construction materials	0.5	0.8
Basic construction materials	0.5	0.8
Non-metallic mineral products	0.0	0.0
Intermediate products I	12.3	32.2
Oils and fats	0.1	0.1
Pottery and sanitary wares	0.0	0.0
Lumber and plywood	11.4	2.2
Leather	0.2	0.1
Thread and yarn	0.2	2.7
Glass and glass products	0.2	0.0
Chemical materials	0.1	0.1
Iron and steel	0.1	0.6
Non-ferrous metal	0.1	26.3
Petroleum products	0.0	0.8
Intermediate products II	1.2	3.9
Textile fabrics and gunny sacks	0.7	3.0
Wood products	0.1	0.5
Paper products	0.0	0.1
Rubber products	0.0	0.1
Metal mfg.	0.3	0.3
Intermediate chemical products	0.1	0.0
Consumer nondurables	2.0	4.2
Clothing	0.2	0.3
Other textile articles	0.0	0.1
Shoes	0.0	0.0
Printing and publishing	0.0	0.3
Precision instruments	0.0	0.0
Toys, sport gds., jewelry	1.6	3.1
Leather goods	0.0	0.0
Consumer chem. products	0.1	0.3
Consumer durables	0.0	0.1
Motorcycles and bicycles	0.0	0.0
Consumer electrical goods	0.0	0.1
Machinery	0.0	0.1
Agri. & non-electrical machinery	0.0	0.1
Electrical machinery	0.0	0.0
Transport equipment	0.0	0.0
Motor vehicle industry	0.0	0.0
Other transport equipment	0.0	0.0
Total manufacturing	100.0	100.0
Manufacturing excl. foods, beverages, and tobacco	—	—

Source: Appendix Table III.

IV  
MANUFACTURED EXPORTS, 1960-69

Annual Rate of Growth 1960-69	Contribution to the Increase in Exports <sup>a</sup> 1960-69	Proportion of Exports to Total Exports		Contribution to the Increase in Exports (%)
		1960	1969	
3.8	29.9			
-5.7	-1.1			
2.6	0.3			
126.2	0.0			
1.4	7.5			
11.7	23.3			
22.7	4.7			
29.0	0.2			
22.5	4.5			
12.8	1.0	3.4	1.8	1.5
12.8	1.0	3.4	1.8	1.5
71.1	0.0	0.0	0.0	0.0
20.9	50.2	76.4	76.7	76.8
3.9	0.0	0.5	0.1	0.0
23.1	0.0	0.0	0.0	0.0
-9.4	-6.1	70.5	5.3	-9.3
5.1	0.1	1.0	0.3	0.1
42.5	4.9	1.4	6.4	7.5
-7.8	0.0	1.1	0.1	-0.1
7.2	0.1	0.6	0.2	0.1
29.8	1.1	0.8	1.5	1.7
108.9	50.1	0.5	62.7	76.6
559.0	1.5	0.0	1.8	2.2
23.3	6.2	7.6	9.2	9.6
27.3	5.1	4.4	7.1	7.7
23.4	0.7	0.9	1.1	1.1
37.7	0.1	0.0	0.1	0.1
23.2	0.1	0.1	0.2	0.2
8.7	0.3	1.6	0.6	0.4
-2.7	0.0	0.6	0.1	0.0
17.8	6.1	12.3	9.9	9.3
11.5	0.4	1.5	0.7	0.5
42.6	0.2	0.1	0.2	0.3
6.7	0.0	0.0	0.0	0.0
54.6	0.5	0.1	0.6	0.7
27.1	0.1	0.1	0.1	0.1
17.0	4.5	9.9	7.4	6.9
8.5	0.0	0.0	0.0	0.0
21.5	0.5	0.7	0.8	0.8
34.8	0.1	0.1	0.2	0.2
249.2	0.0	0.0	0.0	0.0
34.5	0.1	0.1	0.2	0.2
35.1	0.2	0.1	0.3	0.3
68.5	0.2	0.0	0.3	0.3
1.0	0.0	0.1	0.0	0.0
17.2	0.1	0.1	0.1	0.1
399.5	0.1	0.0	0.1	0.1
-39.6	0.0	0.1	0.0	0.0
8.6	100.0	—	—	—
20.7	—	100.0	100.0	100.0

<sup>a</sup> Manufacturing excluding food, beverages, and tobacco.



i.e., tapioca products in food preparations, hides in meat products, sugar, textile fabrics, and jewelry in miscellaneous manufactured products. In most of these products the degree of being "manufactured" was small, involving only simple processing of domestic raw materials.

During the 1960s the overall development in manufactured exports was minimal.<sup>16</sup> As traditional exports of rice and lumber grew slowly or declined, only a few new exports were introduced. Most notable were exports of tin in non-ferrous metal, processed tobacco leaves in tobacco manufactures, frozen seafood in food preparations, vegetable fibers in thread and yarn, and gunny sacks. But these were not sufficient to compensate for the decline in traditional exports, thus resulting in total manufactured exports growth of only 8.6 per cent annually.

The small development, however, altered the structure of manufactured exports because the annual rate of growth of processed food exports was only 3.7 per cent. As shown in Table IV, this resulted in the share of processed food exports falling from 82.9 per cent in 1960 to 55.1 per cent in 1969. In contrast, exports of every other product group grew at a very high rate. But this was because most products started from a very small base. Thus, except for intermediate products I, the contribution to the overall increase in manufactured exports was small.

In intermediate products I, the most important export was tin in non-ferrous metal, whose exports grew at an annual rate of 108.9 per cent and contributed 50.1 per cent to the overall increase in manufactured exports. Other important exports were iron and steel, and thread and yarn. In contrast, the traditional exports of lumber fell at an annual rate of 9.4 per cent, and the fall was measured at 6.1 per cent of the total increase in manufactured exports. On the average, the export growth rate of the group was 20.9 per cent, contributing 50.2 per cent to the increase in sector exports, and raising its export share from 12.3 per cent to 32.2 per cent. Export of petroleum products had just started, but it contributed 1.4 per cent to the increase in manufactured exports.

The share of exports of intermediate products II gained slightly, mostly due to the expansion in textile fabrics and gunny sack exports. The increase in the export of jewelry in miscellaneous manufactured products raised the share of consumer nondurable exports from 1.9 per cent to 4.1 per cent. Finally, the share of beverages and tobacco rose from 0.9 per cent to 2.9 per cent, almost totally due to the increase in tobacco leaf export. The rest of the industry had negligible export activity during the period.

When processed food, beverages, and tobacco were excluded, the rate of growth of manufactured exports was 20.7 per cent (see Table IV). This is indeed high, but about 77 per cent of it was due to tin alone. The export expansion of tin replaced lumber exports, whose export share had declined from 70.5 per cent in 1960 to 5.3 per cent in 1969. With export expansion in thread and yarn, the export share of intermediate products I remained at 76 per cent in 1969. Industries with a significant increase in the export share were textile fabrics and gunny sacks.

<sup>16</sup> The rate of growth of manufactured exports during the first subperiod was 16.9 per cent, due almost entirely to rice and tapioca exports, but it fell to only 2.4 per cent during the second subperiod (see Appendix Table III).

TABLE V  
CHANGES IN RATIO OF EXPORTS TO GROSS OUTPUT

	1960	1969
Processed food	22.5	13.6
Meat and meat and meat products	5.4	1.3
Sugar and confectionery	4.2	1.2
Dairy products	0.0	0.1
Cereal products	24.6	13.9
Food preparations	56.3	58.6
Beverages and tobacco	0.9	2.7
Beverages	0.0	0.2
Tobacco manufactures	1.6	5.2
Construction materials	3.3	1.9
Basic construction materials	3.4	1.9
Non-metallic mineral products	0.0	0.3
Intermediate products I	16.8	30.0
Oils and fats	0.5	0.5
Pottery and sanitary wares	0.6	0.1
Lumber and Plywood	35.0	7.2
Leather	4.4	4.3
Thread and yarn	2.0	19.9
Glass and glass products	4.2	0.8
Chemical materials	5.6	2.3
Iron and steel	11.4	10.1
Non-ferrous metal	9.3	78.2
Petroleum products	0.0	1.0
Intermediate products II	2.0	3.1
Textile fabric and gunny sacks	2.1	4.9
Wood products	1.1	2.1
Paper products	0.7	1.0
Rubber products	0.6	0.7
Metal mfg.	5.0	1.2
Intermediate chemical products	2.5	0.5
Consumer nondurables	2.1	2.5
Clothing	1.0	0.5
Other textile articles	0.7	10.2
Shoes	0.1	0.1
Printing and publishing	0.1	0.8
Precision instruments	3.3	9.2
Toys, sport goods, jewelry	26.8	14.7
Leather goods	1.1	0.7
Consumer chem. products	0.3	0.7
Consumer durables	0.3	0.7
Motorcycles and bicycles	0.0	0.0
Consumer electrical goods	0.4	1.2
Machinery	0.5	0.3
Agri. & non-electrical machinery	0.1	0.4
Electrical machinery	2.0	0.1
Transport equipment	0.1	0.1
Motor vehicle industry	0.0	0.1
Other transport equipment	0.2	0.0
Total manufacturing	13.2	8.8
Manufacturing excl. foods, beverages. and tobacco	5.8	6.8

Source: Appendix Tables III-IV.

Exports of toys, sporting goods, and jewelry had a declining export share, but they were the second highest after non-ferrous metal.

In order to see whether there was a tendency to export more domestically produced commodities we look at the changes in the ratio of exports to domestic production (gross output). According to Table V, the export ratio for total manufactured exports declined from 13.2 per cent to 8.8 per cent. But when food, beverages, and tobacco are excluded, the ratio rises slightly from 5.8 to 6.8 per cent. The decline in export ratio was due largely to lower ratios of processed food and lumber exports. And when food was excluded the higher ratio was mainly the result of tin exports. Otherwise, increase in export ratios was only noticeable in a few industries such as tobacco, thread and yarn, textile fabrics and gunny sacks, and other textile articles. There were also industries whose ratios were lower, i.e., basic construction materials, glass products, chemical materials, metal manufactures, intermediate chemical products, and toys, sporting goods, and jewelry. Thus on the whole we may conclude that there was no export orientation in the manufacturing sector during the 1960s.

The extent of the relatively small development in manufactured exports, especially when compared to the rapid expansion in manufactured imports, may be seen in the widening gap of the merchandise item in the current account as follows.

	(In U.S.\$ million)					
	1960	1962	1964	1966	1968	1969
Imports	450.3	548.3	679.1	879.6	1,147.9	1,229.3
Exports	405.0	453.9	584.9	664.3	635.9	696.6

Source: [7, various issues].

## SUMMARY AND CONCLUSIONS

In this paper we have discussed some aspects of the industrialization of Thailand in the 1960s. The growth of manufacturing was concentrated in intermediate products, consumer durables, transport equipment, machinery, and construction materials. With slower rates of growth in other manufactured products, the structure of production of the manufacturing sector changed, resulting in a fall in the degree of concentration in consumer goods such as processed food, beverages and tobacco, and consumer nondurables, and an increase in concentration in producer goods. On the export and import sides, this pattern of growth led to an even higher demand for imported capital goods. As the rate of growth of manufactured imports was not slowed down by the process of industrialization, and because the rate of growth of manufactured exports was relatively low, industrialization in the 1960s contributed to a worsening position in the current balance of payment accounts.

The development in the manufacturing sector discussed above indicates that the process of industrialization in Thailand during the 1960s did not seem to rely much on export expansion, whereas the requirement for imports was high. This implies that production grew to satisfy domestic demand and to substitute for imports, but

that actual import replacement was small. During the same period it was no accident that industrialization and trade policies were found to be biased in favor of import substitution industries while encouraging import of semi-manufactured products and raw materials, and strongly discriminated against exports.<sup>17</sup> This aspect, beyond the scope of the present paper, is discussed in the paper cited earlier.

## REFERENCES

1. AKRASANEE, NARONGCHAI. *An Application of the World Bank Methodology to the Case Study of Thailand*, Paper presented at the First Seminar on Trade and Employment organized by the Council for Asian Manpower Studies, Chiangmai, Thailand, December 2-4, 1973.
2. ————. *The Manufacturing Sector in Thailand: A Study Growth, Import Substitution and Effective Protection, 1960-69* (Ph. D. dissertation, Johns Hopkins University, 1973).
3. ————. "Selling Thai Products Abroad: Current Tax Incentives Confer Unequal Benefits," *Business Review* (Bangkok), October 1973.
4. ————. "The Structure of Industrial Protection in Thailand during the 1960's," Faculty of Economics Discussion Paper Series No. 28 (Bangkok: Thammasat University, 1973).
5. ————. "Import Substitution and Sources of Industrial Growth in Thailand, 1960-69," *Thai Economic Review*, January 1974.
6. BALASSA, B., and Associates. *The Structure of Protection in Developing Countries* (Baltimore: Johns Hopkins Press, 1971).
7. Bank of Thailand. *Annual Economic Report* (Bangkok).
8. CHENERY, H. B. "Patterns of Industrial Growth," *American Economic Review*, Vol. 50 (September 1960).
9. INGRAM, J. C. *Economic Change in Thailand, 1850-1970* (Stanford: Stanford University Press, 1971).
10. International Bank for Reconstruction and Development (IBRD). *A Public Development Program for Thailand* (Baltimore: Johns Hopkins Press, 1959).
11. ————. "Current Economic Position and Prospects of Thailand: The Industrial Sector," mimeographed (Washington, D.C., 1970).
12. ISARANGKUN, C. *Manufacturing Industries in Thailand* (Ph. D. dissertation, Australian National University, 1969).
13. MUSCAT, R. J. *Development Strategy in Thailand* (New York: Praeger, 1966).
14. MYINT, H., and Associates. *Southeast Asia's Economy: Development Policies in the 1970's* (New York: Praeger, 1972).
15. SILCOCK, T. H., ed. *Thailand: Social and Economic Studies in Development* (Canberra: Australian National University Press, 1967).
16. Thailand, Ministry of Industry, Industrial Economics and Planning Division. *Industrial Economic Records*, Vol. 4 (Bangkok, 1972).
17. Thailand, National Economic and Social Development Board (NESDB). "National Income Statistics, Revised Estimates, 1960-1969," mimeographed (Bangkok, 1970).
18. ————. *Worksheet on Value Added in the Manufacturing Sector* (Bangkok, 1970).
19. Thailand, National Statistical Office. *Quarterly Bulletin of Statistics*.
20. ————. *Report of the 1964 Industrial Census* (Bangkok, 1968).

<sup>17</sup> This statement is true in general. But it does not imply that a one to one correspondence between policies and industrial development has been found for Thailand, nor for most other countries. See [2].

APPENDIX  
GROWTH AND STRUCTURAL CHANGE OF MANUFACTURING

	Value Added (Thousand of Baht)		
	1960	1964	1969
Processed food	2,117,703	2,965,243	4,217,147
Meal products	328,854	805,594	476,453
Sugar and confectionery	166,306	295,533	360,163
Dairy products	27,622	29,451	168,116
Cereal products	1,314,741	1,483,834	2,596,798
Food preparations, nes	280,180	350,831	615,617
Beverages & tobacco	1,693,069	2,522,552	3,863,921
Beverages	711,995	1,314,809	2,166,402
Tobacco manufactures	981,074	1,207,743	1,697,519
Construction materials	229,162	492,421	1,097,773
Basic construction materials	224,327	485,733	1,085,311
Non-metallic mineral products	4,835	6,688	12,462
Intermediate products I	452,961	732,004	1,178,840
Oils and fats	75,674	86,704	90,286
Pottery and sanitary wares	16,188	21,809	33,018
Lumber and plywood	214,975	406,182	570,711
Leather	27,549	25,663	43,466
Thread and yarn	51,461	81,901	161,639
Glass and glass products	23,167	49,138	142,282
Chemical materials	17,443	23,757	74,526
Iron and steel basic industries	16,927	8,681	59,098
Non-ferrous metal basic industries	9,577	28,169	436,935
Petroleum products	2,490	139,150	1,900,600
Intermediate products II	511,404	1,036,363	2,265,093
Textile fabrics and gunny sacks	260,013	607,805	1,088,216
Wood products	110,940	161,680	516,711
Paper products	18,406	29,305	68,403
Rubber products	37,476	52,316	184,544
Metal manufactures	54,371	122,201	315,300
Intermediate chemical products	30,198	63,056	91,922
Consumer nondurables	1,227,082	1,685,599	3,176,202
Clothings	493,828	597,002	1,120,303
Other textile articles	10,481	12,794	17,116
Shoes	56,644	54,379	105,791
Printing and publishing	221,149	392,682	587,889
Precision instruments	4,409	3,937	10,238
Toys, sport goods, jewelry, etc.	70,302	95,946	274,268
Leather goods (not shoes)	5,089	5,190	10,017
Consumer chemical products	365,180	523,669	1,000,580
Consumer durables	39,817	70,070	176,372
Motorcycles and bicycles	9,668	19,309	72,553
Consumer electrical machinery	30,149	50,761	103,819
Machinery	46,836	131,762	459,079
Agricultural & non-electrical machinery	36,199	101,596	340,949
Electrical machinery	10,637	30,166	118,130
Transport equipment	319,057	641,276	1,177,406
Motor vehicle industry	176,563	492,703	924,440
Other transport equipments, nes	142,494	148,573	252,966
<b>Total manufacturing</b>	<b>6,639,581</b>	<b>10,413,440</b>	<b>19,895,554</b>

Source: [2, Appendix A].

TABLE I  
VALUE ADDED, 1960-64, 1964-69, 1960-69

Proportion of Industry Value Added to Total Value Added			Annual Rate of Growth			Contribution to Total Value Added Increase		
1960	1964	1969	1960-64	1964-69	1960-69	1960-64	1964-69	1960-69
0.318	0.284	0.211	0.087	0.072	0.079	0.224	0.132	0.158
0.049	0.077	0.023	0.251	-0.099	0.042	0.126	-0.034	0.011
0.025	0.028	0.018	0.154	0.040	0.089	0.034	0.006	0.014
0.004	0.002	0.008	0.016	0.416	0.221	0.000	0.014	0.010
0.198	0.142	0.130	0.030	0.118	0.078	0.044	0.117	0.096
0.042	0.033	0.030	0.057	0.119	0.091	0.018	0.027	0.025
0.255	0.242	0.194	0.104	0.089	0.095	0.219	0.141	0.163
0.107	0.126	0.018	0.165	0.105	0.131	0.159	0.089	0.109
0.147	0.115	0.085	0.053	0.070	0.062	0.060	0.051	0.054
0.034	0.047	0.055	0.210	0.173	0.189	0.069	0.063	0.065
0.033	0.046	0.054	0.213	0.174	0.191	0.069	0.063	0.064
0.000	0.000	0.000	0.084	0.132	0.110	0.000	0.000	0.000
0.068	0.070	0.059	0.127	0.099	0.112	0.073	0.047	0.054
0.011	0.008	0.004	0.034	0.008	0.019	0.002	0.000	0.001
0.002	0.002	0.001	0.077	0.086	0.082	0.001	0.001	0.001
0.032	0.039	0.028	0.172	0.070	0.114	0.050	0.017	0.026
0.004	0.002	0.002	-0.017	0.111	0.051	-0.000	0.001	0.001
0.007	0.007	0.008	0.123	0.145	0.135	0.008	0.008	0.008
0.003	0.004	0.007	0.205	0.236	0.223	0.006	0.009	0.008
0.002	0.002	0.003	0.080	0.256	0.174	0.001	0.005	0.004
0.002	0.000	0.002	-0.153	0.467	0.148	-0.002	0.005	0.003
0.001	0.002	0.021	0.309	0.730	0.528	0.004	0.043	0.032
0.000	0.013	0.095	1.734	0.686	1.089	0.036	0.185	0.143
0.077	0.099	0.113	0.193	0.169	0.179	0.139	0.129	0.132
0.039	0.058	0.054	0.236	0.123	0.172	0.092	0.050	0.062
0.016	0.015	0.025	0.098	0.261	0.186	0.013	0.037	0.030
0.002	0.002	0.003	0.123	0.184	0.156	0.002	0.004	0.003
0.005	0.005	0.009	0.086	0.286	0.193	0.003	0.013	0.011
0.008	0.011	0.015	0.224	0.208	0.215	0.017	0.020	0.019
0.004	0.006	0.004	0.202	0.078	0.131	0.008	0.003	0.004
0.134	0.161	0.157	0.082	0.131	0.109	0.121	0.151	0.143
0.074	0.057	0.056	0.048	0.134	0.095	0.027	0.055	0.047
0.001	0.001	0.000	0.051	0.059	0.055	0.000	0.000	0.000
0.008	0.005	0.005	-0.010	0.142	0.071	-0.000	0.005	0.003
0.033	0.037	0.029	0.154	0.084	0.114	0.045	0.020	0.027
0.000	0.000	0.000	-0.027	0.210	0.098	0.000	0.000	0.000
0.010	0.009	0.013	0.080	0.233	0.163	0.005	0.018	0.015
0.000	0.000	0.000	0.004	0.140	0.078	0.000	0.000	0.000
0.055	0.050	0.050	0.094	0.138	0.118	0.042	0.050	0.047
0.006	0.006	0.003	0.151	0.202	0.179	0.008	0.011	0.010
0.001	0.001	0.003	0.188	0.303	0.250	0.002	0.005	0.004
0.004	0.004	0.005	0.139	0.153	0.147	0.005	0.005	0.005
0.007	0.012	0.023	0.295	0.283	0.288	0.022	0.034	0.031
0.005	0.009	0.017	0.294	0.273	0.282	0.017	0.025	0.022
0.001	0.002	0.005	0.297	0.313	0.305	0.005	0.009	0.008
0.048	0.051	0.059	0.190	0.129	0.155	0.085	0.056	0.064
0.026	0.047	0.046	0.292	0.134	0.201	0.083	0.045	0.056
0.021	0.014	0.012	0.010	0.112	0.065	0.001	0.011	0.008
1.000	1.000	1.000	0.119	0.138	0.129	1.000	1.000	1.000

APPENDIX  
GROWTH AND STRUCTURAL CHANGE IN

	Market Value of Imports		
	1960	1964	1969
Processed food	1,098,599	1,214,845	1,716,922
Meal products	3,818	7,001	19,100
Sugar and confectionery	8,730	8,644	10,895
Dairy products	504,671	669,198	890,419
Cereal products	148,857	144,208	145,975
Food preparations, nes	432,533	385,794	650,533
Beverages & tobacco	225,108	347,588	837,055
Beverages	26,937	53,323	44,736
Tobacco manufactures	198,171	294,265	792,319
Construction materials	75,063	123,675	334,962
Basic construction materials	51,209	76,519	218,120
Non-metallic mineral products	23,854	47,156	116,842
Intermediate products I	1,760,524	2,788,581	5,208,449
Oils and fats	47,378	91,802	152,706
Pottery and sanitary wares	40,807	55,175	92,083
Lumber and plywood	4,774	3,509	55,761
Leather	10,785	5,073	8,073
Thread and yarn	193,638	362,995	593,286
Glass and glass products	71,373	107,245	150,389
Chemical materials	358,571	706,909	1,439,590
Iron and steel basic industries	901,360	1,154,094	2,236,514
Non-ferrous metal basic industries	131,838	301,779	480,047
Petroleum products	1,711,856	1,917,295	2,105,138
Intermediate products II	3,372,655	4,022,213	6,331,083
Textile fabrics and gunny sacks	1,420,004	1,766,135	1,533,190
Wood products	12,123	15,018	33,339
Paper products	328,277	456,297	948,127
Rubber products	409,899	491,829	442,409
Metal manufactures	899,785	640,463	1,589,201
Intermediate chemical products	302,567	652,471	1,784,817
Consumer nondurables	1,389,553	1,687,527	4,480,023
Clothings	160,779	154,499	189,891
Other textile articles	117,557	202,658	104,889
Shoes	9,044	21,328	43,218
Printing and publishing	67,607	100,434	132,320
Precision instruments	166,529	303,326	688,924
Toys, sport goods, jewelry, etc.	261,996	324,402	2,178,333
Leather goods (not shoes)	2,378	2,378	1,730
Consumer chemical products	603,663	578,502	1,125,140
Consumer durables	307,484	553,009	798,091
Motorcycles and bicycles	136,603	313,885	450,664
Consumer electrical machinery	170,881	219,124	347,427
Machinery	1,789,254	2,932,173	7,618,327
Agricultural & non-electrical machinery	1,251,011	2,122,100	4,857,467
Electrical machinery	538,243	810,073	2,760,860
Transport equipment	1,114,429	2,281,399	3,922,424
Motor vehicle industry	1,009,716	1,754,626	3,448,696
Other transport equipments, nes	104,713	526,773	473,728
<b>Total manufacturing</b>	<b>12,844,525</b>	<b>17,845,305</b>	<b>33,352,474</b>

Source: [2, Appendix A].

TABLE II  
MANUFACTURED IMPORT, 1960-64, 1964-69, 1960-69

Proportions of Imports to Total			Annual Rates of Growth			Contribution to Increase in Total Manufactured Imports		
1960	1964	1969	1960-64	1964-69	1960-69	1960-64	1964-69	1960-69
0.085	0.068	0.051	0.025	0.071	0.050	0.023	0.032	0.030
0.000	0.000	0.000	0.163	0.222	0.195	0.000	0.000	0.000
0.000	0.000	0.000	-0.002	0.047	0.024	-0.000	0.000	0.000
0.039	0.037	0.026	0.073	0.058	0.065	0.032	0.014	0.018
0.011	0.008	0.004	-0.007	0.002	-0.002	-0.000	0.000	-0.000
0.033	0.021	0.019	-0.028	0.110	0.046	-0.009	0.017	0.010
0.017	0.019	0.025	0.114	0.192	0.156	0.024	0.031	0.029
0.002	0.002	0.001	0.186	-0.034	0.057	0.005	-0.000	0.000
0.015	0.016	0.023	0.103	0.219	0.166	0.019	0.032	0.028
0.005	0.006	0.010	0.132	0.220	0.180	0.000	0.013	0.012
0.003	0.004	0.006	0.105	0.233	0.174	0.005	0.009	0.008
0.001	0.002	0.003	0.185	0.198	0.192	0.004	0.004	0.004
0.137	0.156	0.156	0.121	0.133	0.127	0.205	0.156	0.168
0.003	0.005	0.004	0.179	0.107	0.138	0.008	0.003	0.005
0.003	0.003	0.002	0.078	0.107	0.094	0.002	0.002	0.002
0.000	0.000	0.001	-0.074	0.738	0.313	-0.000	0.003	0.002
0.000	0.000	0.000	-0.171	0.097	-0.031	-0.001	0.000	-0.000
0.015	0.020	0.017	0.170	0.103	0.132	0.033	0.014	0.019
0.005	0.006	0.004	0.107	0.069	0.086	0.007	0.002	0.003
0.027	0.039	0.043	0.184	0.152	0.166	0.069	0.047	0.052
0.070	0.064	0.067	0.063	0.141	0.106	0.050	0.069	0.065
0.010	0.016	0.014	0.230	0.097	0.154	0.033	0.011	0.016
0.133	0.107	0.063	0.028	0.018	0.023	0.041	0.012	0.019
0.262	0.225	0.189	0.045	0.094	0.072	0.129	0.148	0.144
0.110	0.098	0.045	0.056	-0.027	0.008	0.069	-0.015	0.005
0.000	0.000	0.000	0.055	0.172	0.118	0.000	0.001	0.001
0.025	0.025	0.028	0.085	0.157	0.124	0.025	0.031	0.030
0.031	0.027	0.013	0.046	-0.020	0.008	0.016	-0.003	0.001
0.070	0.035	0.047	-0.081	0.199	0.065	-0.051	0.061	0.033
0.023	0.036	0.053	0.211	0.222	0.217	0.069	0.073	0.072
0.108	0.094	0.134	0.049	0.215	0.138	0.059	0.180	0.150
0.012	0.008	0.005	-0.009	0.042	0.018	-0.001	0.002	0.001
0.009	0.011	0.003	0.145	-0.123	-0.012	0.017	-0.005	-0.000
0.000	0.001	0.001	0.239	0.151	0.189	0.002	0.001	0.001
0.005	0.005	0.003	0.104	0.056	0.077	0.006	0.002	0.003
0.012	0.017	0.020	0.161	0.178	0.170	0.027	0.024	0.025
0.020	0.018	0.065	0.054	0.463	0.265	0.012	0.119	0.093
0.000	0.000	0.000	0.000	0.487	0.246	0.000	0.000	0.000
0.047	0.032	0.033	-0.010	0.142	0.071	-0.005	0.035	0.025
0.023	0.029	0.023	0.147	0.084	0.111	0.045	0.017	0.023
0.010	0.017	0.013	0.231	0.075	0.141	0.035	0.008	0.015
0.013	0.012	0.010	0.064	0.096	0.081	0.009	0.008	0.008
0.139	0.164	0.228	0.131	0.210	0.174	0.228	0.302	0.284
0.097	0.118	0.145	0.141	0.180	0.162	0.174	0.176	0.175
0.041	0.045	0.082	0.107	0.277	0.198	0.054	0.125	0.108
0.086	0.127	0.117	0.196	0.114	0.149	0.233	0.105	0.136
0.078	0.098	0.103	0.148	0.144	0.146	0.148	0.109	0.118
0.008	0.029	0.014	0.497	-0.021	0.182	0.084	-0.003	0.017
1.000	1.000	1.000	0.085	0.133	0.111	1.000	1.000	1.000



## APPENDIX

## GROWTH AND STRUCTURAL CHANGE IN MANUFACTURED

	Market Value of Exports (Thousand of Baht)		
	1960	1964	1969
Processed food	2,087,708	4,199,830	2,919,835
Meal products	74,922	54,707	44,181
Sugar and confectionery	26,567	233,998	33,596
Dairy products	0	4	468
Cereal products	1,606,321	3,183,308	1,813,945
Food preparations, nes	379,898	727,813	1,027,645
Beverages & tobacco	24,600	81,671	154,857
Beverages	530	5	5,261
Tobacco manufactures	24,070	81,666	149,596
Construction materials	13,657	39,956	40,423
Basic construction materials	13,656	39,876	40,297
Non-metallic mineral products	1	80	126
Intermediate products I	310,868	209,132	1,706,327
Oils and fats	1,899	3,954	2,679
Pottery and sanitary wares	162	579	1,056
Lumber and plywood	286,942	171,318	118,184
Leather	4,181	3,936	6,539
Thread and yarn	5,876	7,678	142,930
Glass and glass products	4,371	5,031	2,109
Chemical materials	2,383	1,748	4,462
Iron and steel basic industries	3,224	11,034	33,750
Non-ferrous metal basic industries	1,830	3,854	1,394,618
Petroleum products	0	6,371	40,532
Intermediate products II	31,050	58,300	204,651
Textile fabrics and gunny sacks	17,978	36,370	158,615
Wood products	3,598	7,266	23,979
Paper products	158	3,566	2,821
Rubber products	596	1,305	3,892
Metal manufactures	6,371	7,853	13,504
Intermediate chemical products	2,349	1,940	1,840
Consumer nondurables	50,215	98,997	219,889
Clothings	5,967	19,590	15,931
Other textile articles	209	780	5,104
Shoes	131	282	235
Printing and publishing	263	598	13,357
Precision instruments	225	10	1,956
Toys, sport goods, jewelry, etc.	40,226	65,972	165,481
Leather goods (not shoes)	156	267	326
Consumer chemical products	3,038	11,498	17,499
Consumer durables	279	5,085	4,118
Motorcycles and bicycles	0	15	78
Consumer electrical machinery	279	5,070	4,040
Machinery	423	1,333	6,355
Agricultural & non-electrical machinery	54	896	5,950
Electrical machinery	369	437	405
Transport equipment	470	526	1,969
Motor vehicle industry	0	439	1,964
Other transport equipments, nes	470	37	5
<b>Total manufacturing</b>	<b>2,519,270</b>	<b>4,701,201</b>	<b>5,298,956</b>

Source: [2, Appendix A].

TABLE III  
EXPORTS, 1960-54, 1964-69, 1960-69

Proportion of Exports to Total Exports			Annual Rate of Growth			Contribution to the Increase in Exports		
1960	1964	1969	1960-64	1964-69	1960-69	1960-64	1964-69	1960-69
0.828	0.893	0.551	0.190	-0.070	0.037	0.968	-2.141	0.299
0.029	0.011	0.008	-0.075	-0.041	-0.056	-0.009	-0.017	-0.011
0.010	0.049	0.005	0.722	-0.321	0.026	0.095	-0.335	0.002
0.000	0.000	0.000	0.910	1.592	1.261	0.000	0.000	0.000
0.637	0.677	0.342	0.186	-0.106	0.013	0.722	-2.290	0.074
0.150	0.154	0.193	0.176	0.071	0.116	0.159	0.501	0.233
0.009	0.017	0.029	0.349	0.136	0.226	0.026	0.122	0.046
0.000	0.000	0.000	-0.688	3.021	0.290	-0.000	0.008	0.001
0.009	0.017	0.028	0.357	0.128	0.224	0.026	0.113	0.045
0.005	0.008	0.007	0.307	0.002	0.128	0.012	0.000	0.009
0.005	0.008	0.007	0.307	0.002	0.127	0.012	0.000	0.009
0.000	0.000	0.000	1.990	0.095	0.710	0.000	0.000	0.000
0.123	0.044	0.322	-0.094	0.552	0.209	-0.046	2.504	0.502
0.000	0.000	0.000	0.201	-0.074	0.038	0.000	-0.002	0.000
0.000	0.000	0.000	0.374	0.128	0.231	0.000	0.000	0.000
0.113	0.036	0.022	-0.120	-0.071	-0.093	-0.052	-0.088	-0.060
0.001	0.000	0.001	-0.014	0.105	0.050	-0.000	0.004	0.000
0.002	0.001	0.026	0.069	0.794	0.425	0.000	0.226	0.049
0.001	0.001	0.000	0.035	-0.159	-0.077	0.000	-0.004	-0.000
0.000	0.000	0.000	-0.074	0.206	0.072	-0.000	0.004	0.000
0.001	0.002	0.006	0.360	0.250	0.297	0.003	0.038	0.010
0.000	0.000	0.263	0.204	2.248	1.088	0.000	2.326	0.501
0.000	0.001	0.007	49.240	0.447	5.989	0.002	0.057	0.014
0.012	0.012	0.038	0.170	0.285	0.232	0.012	0.244	0.062
0.007	0.007	0.029	0.192	0.342	0.273	0.008	0.204	0.050
0.001	0.001	0.004	0.192	0.269	0.234	0.001	0.027	0.007
0.000	0.000	0.000	1.179	-0.045	0.377	0.001	-0.001	0.000
0.000	0.000	0.000	0.216	0.244	0.231	0.000	0.004	0.001
0.002	0.001	0.002	0.053	0.114	0.086	0.000	0.009	0.002
0.000	0.000	0.000	-0.046	-0.010	-0.026	-0.000	-0.000	-0.000
0.019	0.021	0.041	0.184	0.173	0.178	0.022	0.202	0.061
0.002	0.004	0.003	0.346	-0.040	0.115	0.006	-0.006	0.003
0.000	0.000	0.000	0.389	0.456	0.425	0.000	0.007	0.001
0.000	0.000	0.000	0.211	-0.035	0.067	0.000	-0.000	0.000
0.000	0.000	0.001	0.227	0.861	0.546	0.000	0.021	0.004
0.000	0.000	0.000	-0.540	1.872	0.271	-0.000	0.003	0.000
0.015	0.014	0.031	0.131	0.201	0.169	0.011	0.166	0.045
0.000	0.000	0.000	0.143	0.040	0.085	0.000	0.000	0.000
0.001	0.002	0.003	0.394	0.087	0.214	0.003	0.010	0.005
0.000	0.001	0.000	1.066	-0.041	0.348	0.002	-0.001	0.001
0.000	0.000	0.000	10.066	0.390	2.491	0.000	0.000	0.000
0.000	0.001	0.000	1.064	-0.044	0.345	0.002	-0.001	0.001
0.000	0.000	0.001	0.332	0.366	0.350	0.000	0.008	0.002
0.000	0.000	0.001	1.013	0.460	0.685	0.000	0.008	0.002
0.000	0.000	0.000	0.043	-0.015	0.010	0.000	-0.000	0.000
0.000	0.000	0.000	0.028	0.302	0.172	0.000	0.002	0.000
0.000	0.000	0.000	24.740	0.349	3.995	0.000	0.002	0.000
0.000	0.000	0.000	-0.344	-0.435	-0.396	0.000	0.000	0.000
1.000	1.000	1.000	0.168	0.024	0.086	1.000	1.000	1.000

APPENDIX TABLE IV  
TOTAL DOMESTIC PRODUCTION

(Thousand of baht)

	1960	1964	1969
Processed food	9,278,317	13,061,851	21,509,600
Meat products	1,394,258	3,627,405	3,403,235
Sugar and confectionery	627,828	1,178,606	2,728,507
Dairy products	45,787	73,546	579,710
Cereal products	6,535,175	7,352,499	13,049,236
Food preparations, nes	675,269	837,795	1,748,912
Beverages & tobacco	2,781,062	3,975,590	5,693,706
Beverages	1,252,040	1,928,149	2,843,809
Tobacco manufactures	1,529,022	2,047,441	2,849,906
Construction materials	409,566	880,189	2,128,229
Basic construction materials	402,002	869,532	2,086,128
Non-metallic mineral products	7,564	10,657	42,101
Intermediate products I	1,851,970	2,621,027	5,688,072
Oils and fats	419,251	480,356	500,203
Pottery and sanitary wares	26,980	36,349	106,167
Lumber and plywood	820,769	1,165,384	1,630,603
Leather	95,988	89,417	151,450
Thread and yarn	294,695	478,912	718,396
Glass and glass products	104,213	221,041	269,984
Chemical materials	42,261	77,448	192,077
Iron and steel basic industries	28,211	14,468	335,784
Non-ferrous metal basic industries	19,602	57,652	1,783,408
Petroleum products	5,219	261,644	4,018,100
Intermediate products II	1,527,960	3,003,419	6,693,407
Textile fabrics and gunny sacks	843,082	1,834,040	3,232,207
Wood products	334,887	474,203	1,166,391
Paper products	21,764	49,508	280,323
Rubber products	104,680	146,460	527,935
Metal manufactures	128,061	316,703	1,146,345
Intermediate chemical products	95,486	182,505	340,001
Consumer nondurables	2,393,830	3,364,402	8,805,667
Clothings	618,961	748,183	3,191,746
Other textile articles	28,336	34,592	49,901
Shoes	138,894	145,368	228,490
Printing and publishing	439,918	782,473	1,576,120
Precision instruments	6,783	6,890	21,212
Toys, sport goods, jewelry, etc.	150,163	209,814	1,128,675
Leather goods (not shoes)	14,794	14,858	43,934
Consumer chemical products	995,981	1,422,224	2,565,589
Consumer durables	85,599	148,507	573,503
Motorcycles and bicycles	19,416	38,782	230,327
Consumer electrical goods	66,183	109,725	343,176
Machinery	82,136	238,613	1,989,936
Agri. & non-electrical machinery	63,273	177,116	1,585,809
Electrical machinery	18,863	61,497	404,127
Transport equipment	606,081	1,272,134	2,840,910
Motor vehicle industry	318,971	973,622	2,330,911
Other transport equipments, nes	287,110	298,512	509,999
Total manufacturing	19,021,740	28,728,386	59,941,130
Mfg. excl. food, beverages, and tobacco	6,962,361	11,690,945	32,737,824

Source: [2, Appendix A].