

Industrialization in Indonesia since the 1970s

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Introduction

During the period from the latter half of the 1980s until just before the Asian currency crisis in 1997, Indonesia's economic development had drawn expectations and attention from various quarters, along with Malaysia and Thailand within the same Association of Southeast Asian Nations (ASEAN). In fact, the 1993 report by the World Bank, entitled "East Asian Miracle: Economic Growth and Public Policy," recognized Indonesia as one of the East Asian economies with the strong economic performance, i.e. sustained economic growth (World Bank [1993]). And it was the manufacturing industry that had been the driving force behind Indonesia's economic growth during that period. Since the 1997 outbreak of the Asian currency crisis, however, the manufacturing sector in Indonesia has been mired in a situation that rules out the kind of bright prospects it had emanated previously. The Indonesian economy is still in the developing stage, and in accordance with the history of industrial structural changes in other countries, Indonesia's manufacturing industry can still be expected to serve as the engine of the country's economic development. But is it really possible in an environment where economic liberalization and globalization are forging ahead? And, what sort of problems have to be dealt with to make it possible? To answer these questions, it is necessary to know the current conditions of Indonesia's manufacturing sector, and to do that, it becomes important to think back on the history of the country's industrialization. Thus, this paper is intended to retrace and unlock the track of Indonesia's industrialization up until the establishment of the manufacturing sector in its present form, with the ultimate goal being to give answers to the above-mentioned questions. Subject to an analysis in this paper is the period from the installment of President Soeharto's administration onward when industrialization of the

¹ This paper was originally written in Japanese, March 2002.

modern industrial sector² moved into high gear.

The composition of this paper is outlined below. Section 1 first shows why it is important to examine import substitution and export orientation, both of which are used as the measures of the analysis in this paper, in tracking the history of the industrialization, and then discuss indicators of import substitution and export orientation as well as statistical data and resources needed to develop those indicators. Section 2 clarifies the status of the manufacturing industry among all industries by looking at the composition ratio of the manufacturing industry in terms of value added, imports and exports. Section 3 to 5 cover three periods between 1971 and 1995 and make an analysis of import substitution, export orientation and changes in the industrial structure for each period. Section 3 analyzes the period from 1971 through 1985, when Indonesia pursued the import substitution policy amid the oil boom. Section 4 covers the period from 1985 through 1990, when the packages of deregulatory measures were announced successively under structural adjustment policies made necessary by the fall in oil prices. Section 5 examines the period from 1990 through 1995, which saw the alternate shifts between the overheating of the economy by sharply rising investment by both domestic and foreign investors in the wake of the liberalization of investment, trade and financial services, and policies to cool down the economy. Section 6, which covers the 1995-1999 period straddling the economic crisis, is designed for an analysis of the changes in production trends before and after the economic crisis as well as the changes in the industrial structure. Section 7, after summing up the history of Indonesia's industrialization examined in the previous sections, discusses problems found in respective sectors and attempts to present future prospects for the country's manufacturing industry.

² The "modern industry" here means the manufacturing industry based on imported foreign technologies. Thus, the term "modern" is being used to signify that something is based on foreign technologies.

1. Perspective of Analysis, Indicators of Industrialization, and Statistical Data

1. Perspective of an Analysis

This paper attempts to make an analysis of the tracks of industrialization by using the two measures of import substitution and export orientation. The reason for this approach is that import substitution initially becomes necessary for a modern manufacturing industry to grow out of conventional sectors including agriculture and simple, primary processed products. During the period immediately after winning independence, Indonesia could not possess a modern manufacturing sector other than factories set up by the Netherlands, its former suzerain power, and had to totally depend on imports for goods that required the modern manufacturing process. Industrialization of the modern sector begins with import substitution, which calls for construction of domestic factories for manufacturing products that previously had to be imported.

But construction of modern-sector factories requires imports of machinery and other capital goods, and imports of capital goods require foreign currencies, and further, earning foreign currencies requires exports. The past research into the economic development process of Japan, Taiwan and South Korea has found that foreign currencies were initially earned through exports of conventional goods such as agricultural products and the primary stage of import substitution began with light industry through imports of machinery financed with foreign currencies earned by exports of conventional goods. But exports of industrial products bring in more foreign currencies than those of agricultural and other primary products. This is because, generally speaking, manufactured goods require more sophisticated technologies and have greater value added under the law of scarcity, with international prices for industrial goods being more stable than those for primary products. For these reasons, when light industry industries have developed enough to satisfy domestic demand, exports of light industrial products begin. At this point, a developing economy enters

the stage of export orientation, starting to ship light industrial products abroad to replace exports of primary and other conventional products.

By the same token, heavy industry products require technologies more sophisticated than those needed to make light industry products, and accordingly the cost of purchasing capital goods needed is higher. For these reasons, heavy industry products are considered to have a higher degree of scarcity than light industrial products, have higher value added, and benefit from more stable international market prices. Consequently, as a stage to follow exports of light industry products, a developing economy purchases capital goods needed for the development of the heavy industry sector with foreign currencies earned through exports of light industry products, thus entering the second import substitution period when the developing economy focuses on the development of the heavy industry sector for producing capital goods, intermediate goods and durable consumer goods for which it previously depended on imports. Then, as the heavy industry sector is developed enough to satisfy domestic demand, the developing economy goes into a period when main export items switch from light industry products to heavy industry products, or the stage of export orientation of heavy industry products. Generally speaking, the developing economy evolves through the process described above.³

In the sense of discussion thus far, it can be recognized that the development of manufacturing industries requires the process of import substitution and export orientation. At the same time, this means that the process of import substitution and export orientation naturally entails the increasing value added of industrial production.

³ Ohkawa [1993:13-14] and Fei, Ohkawa and Ranis [1986] use the term, the first period of export substitution, to signify the period when mainstay export items shift from primary products and other conventional products to light industry products, and use the term, the second period of export substitution, to signify the period when heavy industry products replace light industry products as main items for exports. However, the idea of export substitution also has the meaning that for example, exports of natural rubber are suspended and instead, natural rubber is supplied to domestic tire makers and others as intermediate material. The author decided to avoid the use of the idea of export substitution for the sake of avoiding confusion.

Many developing countries aim for import substitution and export orientation in their industrialization policies because both are necessary as the process of industrialization. In tracing the tracks of industrialization, therefore, the importance to examine policies designed for the promotion of import substitution and export orientation and also to look into whether both processes are actually making headway on an industry-by-industry basis.

In looking at industrialization in Indonesia, however, we need to pay heed to the following three matters. First, initial conditions for Indonesia's industrialization were different from those seen in Japan, Taiwan or South Korea in that the country had an abundance of unskilled labor as well as an abundance of natural resources. Second, as soon as Indonesia went into the process of modern industrialization, crude oil prices soared to bring in huge revenue from exports of crude oil on top of foreign aid money, finding itself in a considerably blessed position in terms of acquiring foreign currencies needed for import substitution. This made Indonesia's industrialization different from industrialization in South Korea or Taiwan in that the first stage of industrialization was attempted to immediately elevate to the "full-set" industrialization where import substitution for heavy industry products came into sight along with import substitution for light industry products. Third, in Indonesia, the full-fledged development of light industries came after the startup of heavy industries, because the downturn in crude oil prices made it necessary for Indonesia to grow out of the economy heavily dependent on oil and gas development and prompting the country to make a shift from industry protection policy, implemented as part of import substitution, to export-oriented policy, a shift that contributed to the development of light industries at this stage.

2. Indicators Employed in Analysis

The ratio of imports to domestic demand in each manufacturing sector (hereinafter referred to as import ratio) and the composition ratio of each sector's imports to total imports of manufactured goods (hereinafter referred to as import composition ratio) are used as indicators of import substitution. If the import ratio for a particular sector at a

given point of time shows a decline from an earlier different point of time, import substitution is making progress in that particular sector, while a decline in the import composition ratio leads to a judgement that import substitution in that particular sector is making headway relative to other sectors. However, imports of production goods such as machinery and chemical products, particularly imports of capital goods like machinery, are essential in the process of industrialization. The increase in the import composition ratio of these production goods was recognized in many countries in the process of their industrialization. In this respect, when the import composition ratio rises for production goods, whether it means a fallback in import substitution relative to other sectors or an increase in demand for production goods due to active industrialization needs to be determined by taking into consideration changes in other indicators as well as specific economic conditions prevailing at that particular point of time. When the import ratio rises but the import composition ratio declines, import substitution is possibly making progressing but not fast enough to catch up with the pace of increase in demand in that particular sector. Conversely, when the import ratio declines but the import composition ratio rises, import substitution is also possibly making progress despite a higher ratio of that particular sector to total imports.

The impact of import substitution on other sectors of industry is measured by the ratio of imported intermediate goods to all intermediate goods (hereinafter referred to as import dependence or as import dependence on intermediate input) used each of downstream sectors. When the degree of dependence on imports declines, it is judged that import substitution is making progress in upstream sectors of that particular sector. As for policy indicators, the direction of trade policy is judged on the basis of changes in the ratio of the combined amounts of import tariffs and import sales taxes, imposed as a policy tool to aid import substitution, to the total value of imported goods. A rise in the ratio of import tariffs and import sales taxes is interpreted as a result of the raising of the tariff and tax rates to protect that particular manufacturing sector. A decline in the ratio is judged to mean either the rates of the import tariffs and import sales taxes are lowered or the import tariffs and/or import sales taxes are abolished to result in the progress of trade liberalization. However, a decline in the ratio of import

tariffs and import sales taxes could occur when import restrictions or other non-tariff protection policies are invoked against particular products. Therefore, we need to keep in mind that a decline in the ratio of import tariffs and import sales taxes alone does not warrant an unequivocal judgment that trade liberalization measures have been taken.

Used as indicators for export orientation are the ratio of exports to total domestic supply (hereinafter referred to as export ratio) and the composition ratio of exports by each sector of total exports of manufactured goods (hereinafter referred to as export composition ratio). A rise in the export ratio is interpreted as showing progress in export orientation, while a rise in the export composition ratio is judged to represent progress in export orientation of that particular sector relative to other manufacturing sectors. When a rise in the export ratio is accompanied with a decline in the export composition ratio, that particular sector is understood to be possibly making progress in export orientation but accounts for a relatively small share of the country's overall manufacturing sector. Conversely, when the export ratio declines but the export composition ratio rises, the domestic demand is probably increasing faster than exports but that particular sector is still making progress in export orientation.

The ratio of value added contributed by each sector to overall value added in manufactured goods (hereinafter referred to as value added composition ratio), is used as an indicator of changes in the industrial structure. Further, in order to assess the relationship between respective changes in import substitution and export orientation and the industrial structure,⁴ this analysis looks at the relationship between the rise/fall in the import ratio and the rise/fall of the value added composition ratio as well as the relationship between the rise/fall in the export ratio and the rise/fall of the value added composition ratio, for each manufacturing sector. Specifically, data is tabulated for four

⁴ Import substitution, in other words, means the rise in the ratio of domestically produced goods to the total supply of a particular product, and as such, leads to an increase in production. Similarly, export orientation means an increase in production provided that domestic demand is fully satisfied. In this meaning, the progress in import substitution and export orientation, as far as production is increased, is considered to bring a positive impact in terms of the industrial structure.

groups: sectors with the higher import ratio and the higher value added composition ratio; sectors with the higher import ratio and the lower value added composition ratio; sectors with the lower import ratio and the higher value added composition ratio, and sectors with the lower import ratio and the lower value added composition ratio. When the number of sectors with the lower import ratio and the higher value added composition ratio, or the number of sectors with the higher import ratio and the lower value added composition ratio is larger than the total number of sectors covered, it can be judged that the industrial structure has changed as a result of import substitution. As for the rise/fall in the export ratio and the rise/fall in the value added composition ratio, data is also collected for four groups. When the number of sectors with the higher export ratio and the higher value added composition ratio or the number of sectors with the lower export ratio and the lower value added composition ratio is larger than the total number of sectors covered, it can also be concluded that the industrial structure has changed as a result of export orientation.

3. Statistical Data and Sources

The above-mentioned indicators are based on data that can be obtained from the input-output table, published in about every five years. This paper makes use of the input-output table for its analysis between 1971 and 1995. In tracing the tracks of industrialization, it is necessary to examine changes in the industrial structure of the manufacturing sector by chronological order. Thus, this paper uses the input-output table based on producer prices in a total of 66 sectors.⁵

⁵ Indonesia's input-output tables have the three different numbers for industry sectors covered: 19, 66 and about 170. The 1971 table covered 175 sectors, the 1975 table 179 sectors, the 1980 table and the 1985 table 170 sectors, and 1995 table 172 sectors. The number of sectors covered by the most detailed tables is varied year by year, and the frequent changes in industry sector codes make them unsuitable to use in an analysis of the tables of different years. On the other hand, the tables for 66 sectors offer stability in the use of industry codes and are also easy to use for a times-series analysis.

The input-output table does not include price levels for each sector. So, it cannot be expressed in real terms unless price data is borrowed from other statistics and processed in a manner that suits each sector in the input-output table. For this reason, it is not necessarily clear whether an increase in terms of value means stems from a rise in prices or from an increase of volume. In this respect, it cannot be denied that an analysis based on the input-output table has its limits.

On the other hand, an analysis for the period from 1995 through 1999 is conducted by converting large and medium manufacturing statistics industrial statistics into input-output table codes. This method is instrumental in closely following the kaleidoscopic changes seen before and after the economic crisis, in addition to the fact that a fully reliable input-output table was not available until 2000. The period straddling the economic crisis is analyzed by examining specific indicators like the value added composition ratio and the growth of value added in real terms for each year of the period.

2. Position of Manufacturing Sector among All Industries

Table 1 shows the composition ratios for the sectors of agriculture, forestry and fisheries, mining, manufacturing, construction and services in terms of value added, imports and exports of goods and services of all the industries.

First, the agriculture, forestry and fisheries sector and the services sector accounted for 30 to 40%, respectively of the value added in 1971, with the manufacturing sector's composition ratio standing low at only 12.1%. Later, the composition ratio for the agriculture, forestry and fisheries sector declined steadily and slumped to 17.5% in 1995. On the other hand, in the wake of the oil boom, the mining sector raised its composition ratio to as high as around 25% in 1980. But the subsequent fall in crude oil prices brought down the sector's composition ratio. The services sector has managed to maintain the high composition ratio in the 30% to 40% range, though always showing fluctuations in response to the changes in the ratios of the other manufacturing sectors as well as to the cyclical ups and downs of the

Table 1. Composition of Major Industries (%)

	1971	1975	1980	1985	1990	1995
Share of Value Added						
Agriculture	35.0	29.2	24.6	22.9	20.5	17.5
Minning & Guarrying	7.3	18.6	25.7	14.9	12.3	7.7
Manufacturing	12.1	11.2	10.3	15.6	20.2	23.6
Construction	4.6	5.3	5.3	6.4	5.7	6.7
Services	41.1	35.8	34.0	40.2	41.3	44.5
	100.0	100.0	100.0	100.0	100.0	100.0
Share of Imports						
Agriculture	3.1	4.8	3.8	5.3	1.7	2.9
Minning & Guarrying	0.5	0.6	7.9	7.5	5.1	3.0
Manufacturing	87.4	84.9	76.4	68.2	79.1	75.4
Construction	0.0	0.0	0.0	0.0	0.0	0.0
Services	9.0	9.7	11.9	19.1	14.1	18.8
	100.0	100.0	100.0	100.0	100.0	100.0
Share of Exports						
Agriculture	32.7	13.2	12.3	6.9	2.6	1.6
Minning & Guarrying	33.7	67.8	70.1	43.4	24.9	15.0
Manufacturing	10.6	7.6	9.1	37.1	53.7	57.3
Construction	0.0	0.0	0.0	0.0	0.0	0.0
Services	23.1	11.4	8.4	12.6	18.8	26.0
	100.0	100.0	100.0	100.0	100.0	100.0

(1) Agriculture is composed of agriculture, fishery and forestry.

(Source) Processed in accordance with Input-Output Table of Indonesia

economy. In the meantime, the value added composition ratio of the manufacturing sector has steadily increased since 1985. It overtook the mining sector in 1985, surpassed the agriculture, forestry and fisheries sector in 1995 to come closer to 25%, becoming the second biggest industry sector next only to the services sector. As for imports, the composition ratio of manufactured goods remained high in the 70% to 90% range throughout the period of the analysis. However, reflecting progress in import substitution due to industrialization, the import composition ratio of manufactured goods, which stood at as high as nearly 90% in 1971, fell to 75.4% in 1995 after repeated fluctuations, showing a medium- and long-term downtrend. Still, in the short to medium term, the import composition ratio of manufactured goods remains vulnerable to cyclical changes in terms of income factors. By contrast, the import composition ratio of agricultural, forestry and fisheries products, which was a mere 3.1% in 1971, rose to 5.3% in 1985 apparently because the income elasticity of demand for these products was low relative to demand for industrial products. The

composition ratio of services imports is on the long-term uptrend. But the import composition ratio of services increased during the periods of from 1980 to 1985 and from 1990 to 1995, when the import composition ratio of manufactured goods declined, suggesting it is sensitive to the rise/fall in the import composition ratio of manufactured goods.

As for exports, the composition ratio of agricultural products and mineral products stood at over 30% respectively in 1971, while the ratio of manufactured goods was only about 10%, less than a little over 20% for services exports. The export composition ratio for mineral products surged to around 70% from 1975 to 1980 in the wake of rising crude oil prices, but followed the downtrend since 1985 and came down to the low of 15.0% by 1995. In addition to the decline in crude oil prices, the drop in the composition ratio for mineral products was apparently caused by the rise in the composition ratio of manufactured products as exports of refined petroleum, which are included in manufactured goods, replaced exports of crude oil as a result of the rush of construction of oil refineries in Indonesia in the 1980s and 1990s. On the other hand, the export composition ratio of manufactured products, which broke through 10% to plunge to 7.6% in 1975, rose sharply from 1985 through 1990, and topped 50% to reach 57.3% in 1995.

As seen above, the import composition ratio of manufactured goods remained overwhelmingly high in the 70% to 90% range throughout the period under review. For value added and exports, however, the share of manufactured goods was lower than agricultural, forestry and fisheries products in 1971, and increased only after the oil boom came to an end in 1985. As of 1995, manufactured goods achieved the export composition ratio of over 50%, but their value added composition ratio was still less than 25%, falling short of the ratio for the services sector. Therefore, given the overwhelming import composition ratio of manufactured goods, including production goods and raw materials throughout the period of the analysis and the increasing value added and export composition ratios for them in 1985 onward, we can see the tracks of the increasingly evident industrialization in Indonesia since 1985, after staying in the shadow of the mining sector amid the oil boom until that year.

3. Powerful Industrialization for Import Substitution and Broad-based Industrialization for Export Orientation (1971-1985)

1. Era of Industrialization Policy for Import Substitution

Generally speaking, the majority view had it that Indonesia's industrialization policy for import substitution was implemented simultaneously and in parallel with the oil boom that began in 1973. Certainly, there is no question that the oil boom had spurred the import substitution policy. But the First Five-Year Program announced in 1969 designated fertilizers, cement and agricultural machinery as priority areas for industrialization. In the same year, Indonesia also announced a policy for the promotion of domestic production of automobiles requiring automakers to shift gears from semi-knockdown production to full knockdown production (the Institute of Developing Economies [1970:454]). Considering these developments, it can be argued that the import substitution policy was already in place in 1969. Subsequently, beginning in 1970, Indonesia successively adopted such measures as import tariff hikes and import bans targeted at specific industry sectors. On the other hand, Indonesia basically permitted foreign companies to make direct investment freely in the country, as demonstrated by the fact that the enactment of the law on foreign investment in 1967 preceded the 1968 enactment of the law on domestic investment, with the bulk of foreign direct investment flowing into synthetic fibers and other spinning sectors. However, as Indonesian industrialists intensified their calls for the government to protect domestic industries, the government gradually began to become selective in accepting foreign direct investment, starting with the 1970 designation of sectors where foreign companies were not allowed to enter any longer. The oil boom that began in 1973 made major oil-producing nation Indonesia very rich, and the Indonesian government, which was previously forced to depend on foreign aid to procure funds for economic development, gradually began to adopt nationalistic policies toward foreign direct investment and trade in general. Thus, Indonesia strengthened protectionism through both tariff and non-tariff barriers and tightened the

screws further on foreign investment. In particular, after the anti-Chinese and anti-Japanese “Malari disturbances” that broke out in 1974 when then Japanese Prime Minister Kakuei Tanaka visited Indonesia, the government in the same year further intensified restrictions on foreign capital, requiring all foreign-affiliated companies in the country to raise the ratio of Indonesian capital to 51% or more within 10 years. In the process of industrialization, meanwhile, using the ample revenue from oil exports that flowed to state-owned oil firm Pertamina, state enterprises established new factories or boosted production capacity of existing factories one after another in such areas as oil refining, fertilizers, cement, basic iron/basic iron/steel and aluminum. The downturn in crude oil prices, which peaked out in 1982, prompted a reconsideration of the industrialization policy for import substitution. In 1983, the rupiah, Indonesia’s currency, was devalued, and large-scale industrialization projects were either scaled back or postponed. Yet, the course correction for macroeconomic policy as a whole was limited (Hill [2000]), and Indonesia continued to undertake projects by state enterprises that were already under way at the time. The examples of continued projects include the startup of the Cilacap oil refinery and the start of production of hot-rolled basic iron/basic iron/steel and slab basic iron/basic iron/steel by PT Krakatau Steel in 1983, the launch of construction work on a purified terephthalic acid (PTA) plant by Plaju and completion of the Asahan aluminum project in 1984. Meanwhile, this period saw the activated entry into manufacturing operations by Chinese corporate groups, including Soedono Salim (Salim Group), who founded a flour miller, PT Bogasari, in 1969; William Soeryadjaya (Astra Group), who established PT Astra Motor, an auto importer, seller and assembler, in a joint venture with Toyota Motor Corp. in 1971; The Ning King (Argo Manunggal Group), who established PT Darma Manunggal as an integrated spinning and weaving concern in 1972; and Prajogo Pangestu (Barito Pacific Group), who founded a company for manufacturing and exporting plywood in 1977 (Mihira and Sato ed. [1992: 139-156]).

2. Validation of Results of Industrialization Policy for Import Substitution

(1) Validation by Import Ratios

Table 2 shows the changes in the period from 1971 to 1985 in the value added composition ratio, the import composition ratio, the export composition ratio of each sector in the manufacturing sector, the import ratio, the export ratio and the ratio of import tariffs and import sales taxes of each sector, as well as the changes in the import dependence on intermediate input in the period from 1980 to 1985. Points that should be kept in mind in looking at the table are explained in the note at the foot of the table⁶.

As the period under review was the period during which the industrialization policy for import substitution was implemented, the import ratio is examined at first to see the import substitution achieved by each sector. In this period, the import ratio declined for 16 out of 23 sectors⁷. The import ratio for the overall manufacturing sector

⁶ The first of the points to be kept in mind is that while the value added composition ratio, the import composition ratio and the export composition ratio for the sector of refined petroleum represent the composition ratios to manufactured goods as a whole, the composition ratios for all other sectors represent the ratios to manufactured goods excluding refined petroleum. Thus, the ratios for all the sectors other than refined petroleum add up to 100. The reason for this treatment of refined petroleum is that, as shown by Table 4, the composition ratio of refined petroleum was extremely large in 1985 for exports and value added and prices of refined petroleum changed hugely from 1971 due to the oil boom, and unless refined petroleum are excluded, exports and value added for the other sectors in the year would be overly underestimated. The second point is that for rubber/plastic wares, no simple comparison can be made between the respective ratios of 1980 and 1985. In the 1971 table up to the 1980 table, the process of making rubber resin from natural rubber sap was classified in the natural rubber sector of primary industries. But the process was classified in the sector of rubber/plastic wares from the 1985 table onward. Thus, strictly speaking, the total value added, exports and imports of manufactured goods as a whole in 1985 would increase due to the addition of that process. In order to reflect that factor in the comparison between 1985 and other years, it may be more appropriate to prepare the tables that exclude rubber/plastic wares. However, because the value of output of rubber resin produced by this process accounts for only a fraction of the value of manufactured products as a whole, this paper uses the tables with no adjustment made for the sector.

⁷ As far as Table 2 is concerned, the import ratio of cigarettes is 0.0% for both 1971 and 1985. But the calculation to two places of decimals showed the decline in the import ratio. Hereinafter, when

Table 2 . Structural Change in Manufacturing Industries from 1971 to 1985 (Continues)

	Share of Value Added (%)				Share of Import (%)				Share of Exports (%)			
	1971	1975	1980	1985	1971	1975	1980	1985	1971	1975	1980	1985
Processed/Preserved Food	0.5	1.2	1.5	1.2	0.8	0.8	1.0	0.9	1.1	0.7	0.3	0.3
Oil and Fat	2.9	0.7	1.0	2.6	0.1	0.1	0.2	0.1	34.9	13.3	5.8	0.5
Milled Rice	7.2	13.1	12.4	7.2	5.4	7.4	6.6	0.2	0.0	3.8	3.5	0.7
Flour/Flour Products	1.0	2.9	2.2	1.5	1.0	0.1	0.2	0.2	0.0	0.2	0.1	0.0
Sugar/Sugar Products	6.2	5.5	2.3	2.8	1.1	0.8	0.2	0.0	2.9	4.2	1.7	0.6
Other Food Products	5.9	5.1	4.5	4.2	0.3	0.2	3.3	0.6	33.0	5.2	2.0	2.2
Beverages	1.5	1.5	1.2	1.1	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.1
Cigarettes	6.2	8.9	10.7	12.6	0.0	0.2	0.0	0.0	0.0	0.4	0.1	0.1
Yarn Spun	1.7	1.8	2.3	2.8	3.1	2.7	0.4	0.5	0.2	0.0	0.2	0.4
Textiles/Apparel/Leather	16.3	11.9	9.5	7.9	3.1	1.7	1.3	1.0	4.7	2.1	10.1	16.0
Bamboo/Wood/Rattan Products	2.2	2.9	6.9	9.2	0.2	0.1	0.0	0.0	0.2	0.7	20.3	28.7
Paper/Paper Products/Cardboard	4.8	4.1	2.6	3.1	3.8	1.6	2.3	2.8	0.0	3.6	0.3	0.6
Fertilizer/Pesticide	0.2	1.7	2.4	3.7	3.1	9.1	1.1	1.1	0.0	0.1	2.2	2.4
Chemicals	5.3	4.3	6.1	5.2	6.6	10.0	12.9	21.0	1.9	11.7	2.7	4.6
Refined Petroleum	12.4	6.0	1.9	28.2	1.3	9.2	1.9	4.6	16.7	67.9	47.8	58.0
Rubber/Plastic Wares	0.9	1.2	2.3	5.3	0.6	0.7	0.8	1.0	0.1	0.1	0.1	20.5
Non-metallic Mineral Products	4.0	3.6	2.6	3.7	1.0	0.7	0.8	2.2	0.1	0.1	0.3	0.2
Cement	1.1	1.3	2.4	2.0	1.1	1.6	0.4	0.0	0.0	0.0	1.2	0.4
Basic Iron/Steel	0.3	0.3	3.0	3.6	5.6	9.8	9.2	5.8	1.3	0.1	1.3	0.9
Non-ferrous Basic Metal	1.4	1.2	1.5	2.9	1.0	1.5	1.8	2.4	15.5	37.7	39.9	16.7
Fabricated Metal Products	4.4	3.8	3.1	3.6	3.9	6.4	5.8	7.8	0.0	1.1	0.5	0.1
Machine/Electrical	1.8	3.2	9.3	6.6	48.7	26.1	21.9	32.6	1.5	8.8	6.2	2.8
Transport Equipment	22.7	18.9	8.9	6.4	7.5	17.2	27.8	16.7	0.0	5.5	0.6	0.1
Other Manufactured Products	1.2	1.0	1.3	1.0	1.6	1.3	1.9	2.7	2.3	0.7	0.3	0.9
Total Manufactured Industries	112.4	106.0	101.9	128.2	101.3	109.2	101.9	104.6	116.7	167.9	147.8	158.0

showed an 8.2-point drop from 28.6% to 20.4%, with the marked decline registered between 1980 and 1985. By sector, nine sectors showed the fall of two-digit or larger: fertilizers/pesticide (with the drop of 72.4 points in the import ratio); basic iron/basic iron/steel (44.6 points); yarn spun (35.4 points); machine/electrical machinery/apparatus (32.4 points); cement (25.1 points); flour/flour products (23.0 points); processed/preserved food (19.2 points); milled rice (13.2 points); and paper/paper products/cardboard (11.0 points).

Of these nine sectors, the three sectors of fertilizers/pesticide, basic iron/steel

the tables for different years show the identical figures, the calculation to two places of decimals is adopted to detect potential difference.

Table 2 . Structural Change in Manufacturing Industries from 1971 to 1985 (Continued)

	Import Ratio (%)				Export Ratio (%)				Import Related Tax (%)				Dep. on Import (%)	
	1971	1975	1980	1985	1971	1975	1980	1985	1971	1975	1980	1985	1980	1985
Processed/Preserved Food	32.5	17.7	22.2	13.3	5.8	0.9	1.0	1.7	30.2	38.4	18.1	10.6	9.4	5.5
Oil/Fat	1.5	2.1	5.2	1.1	25.6	16.1	18.7	1.8	12.2	29.5	7.1	5.7	1.8	3.2
Milled Rice	13.5		12.6	0.3	0.0	0.3	0.9	0.3	0.0		0.0	2.3	0.2	0.1
Flour/Flour Products	25.0	0.8	2.6	2.0	0.0	0.1	0.1	0.1	4.0	21.1	4.8	4.8	33.2	47.8
Sugar/Sugar Products	9.6		2.5	0.5	2.3	2.5	4.1	2.6	40.6		18.3	9.3	2.5	1.5
Other Food Products	2.3	1.2	26.1	3.5	20.2	1.7	1.9	4.5	39.1	59.9	2.1	9.0	10.5	9.2
Beverages	5.0	3.9	5.5	2.4	0.1	0.2	1.9	1.1	61.7	98.7	67.9	8.9	21.8	7.2
Cigarettes	0.0	0.9	0.3	0.0	0.0	0.1	0.1	0.1	90.7	155.1	67.6	9.8	15.2	6.0
Yarn Spun	40.5	32.7	6.9	5.1	0.4	0.0	0.5	1.6	12.4	15.7	11.0	7.0	89.4	63.1
Textiles/Apparel/Leather	7.1	5.6	6.3	4.8	1.0	0.3	5.8	22.1	83.5	59.2	29.6	11.6	15.2	12.1
Bamboo/Wood/Rattan Products	3.3	2.1	0.6	0.2	0.3	0.5	21.7	38.4	45.4	44.5	17.1	16.3	3.0	1.6
Paper/Paper Products/Cardboard	34.4	18.7	28.0	23.4	0.0	2.4	0.6	2.3	19.5	31.2	15.5	8.6	70.3	39.7
Fertilizer/Pesticide	81.4		18.6	9.0	0.2	0.3	5.3	7.1	6.1		1.4	2.4	46.1	42.4
Chemicals	35.6	42.2	53.7	56.2	1.5	4.6	3.0	9.7	20.9	27.8	5.0	5.7	56.3	54.6
Refined Petroleum	4.3	51.0	5.8	7.6	5.3	50.9	42.9	45.2	10.5	5.3	6.5	1.6	42.7	16.2
Rubber/Plastic Wares	21.0	18.7	11.6	7.3	0.3	0.1	0.2	35.9	51.7	91.9	17.0	11.9	75.8	36.3
Non-metallic Mineral Products	14.7	8.9	15.8	20.8	0.1	0.0	0.8	1.0	50.6	230.4	13.5	4.1	30.8	17.7
Cement	25.8	41.7	11.2	0.7	0.0	0.0	4.1	2.2	35.4	22.5	5.4	9.7	54.2	10.4
Basic Iron/Steel	85.0	79.1	60.3	40.4	12.7	0.8	2.6	3.6	4.5	17.9	7.5	4.5	61.4	31.0
Non-ferrous Basic Metal	37.1	56.4	59.0	43.9	43.9	63.3	79.9	67.1	10.0	10.8	4.3	8.1	11.7	30.9
Fabricated Metal Products	28.6	36.8	42.1	38.8	0.0	0.5	0.7	0.4	21.2	24.5	7.6	7.1	59.7	38.9
Machine/Electrical Machinery/Apparatus	88.9	70.3	52.3	56.5	4.3	6.1	3.9	4.3	6.8	18.9	9.9	9.8	71.0	69.1
Transport Equipment	18.1	28.1	52.9	42.1	0.0	0.6	0.3	0.2	31.6	29.2	9.2	5.4	82.2	54.2
Other Manufactured Products	37.8	36.0	48.8	50.0	7.8	1.5	1.8	11.1	23.1	27.8	18.3	8.1	44.3	32.6
Total Manufacturing Industries	28.6	29.2	28.3	20.4	4.0	5.3	8.7	17.4	7.1	7.0	5.1	4.1	20.0	4.6

- (1) The import ratio is obtained by dividing imports of goods by domestic demand (intermediate demand + private consumption + government consumption + inventory change).
- (2) The export ratio is obtained by dividing exports of goods by total production.
- (3) The ratio of import tariffs and import sales taxes is obtained by dividing the combined total of import tariffs and import sales taxes by the value of imports of goods.
- (4) In the 1975 table, since subsidies provided to the milled rice, sugar/sugar products and fertilizers/pesticide sectors were deducted from the amounts in the columns for the import tariffs and import sales taxes, the actual combined amounts of import tariffs and import sales taxes are not known. In addition, imports of the three sectors were included in the value of imports of goods, but excluded from the composition of demand. For these reasons, the columns for the import ratio and the ratio of import tariffs and import sales taxes in the 1975 table for these three sectors are left blank.
- (5) As for the value added composition ratio, the import composition ratio and the export composition ratio, the ratios for the refined petroleum sector are those against the total value of all manufactured goods, but the ratios for all other sectors are the ratios against the total value of all manufactured goods minus the value of refined petroleum.
- (6) No comparison is available for the indicators for rubber/plastic wares in 1980 and 1985. But the composition ratios for 1985 were calculated with rubber/plastic wares included.

(Source) As same as Table 1.

and yarn spun saw their import ratios decline steadily between 1971 and 1985⁸. The yarn spun sector made the progress in import substitution through the advance into Indonesia by Japanese and Hong Kong cotton yarn spun and synthetic fiber manufacturers in the first half of the 1970s. In the fertilizers/pesticide and basic iron/steel sectors, state enterprises established many new plants and boosted production at existing plants on the strength of increasing oil revenue. In the cement sector, where import substitution went ahead rapidly from 1975 to 1985, the expansion of capacity at a factory of Indo Cement of the Salim Group helped accelerate import substitution, in addition to the new plant construction and capacity expansion by state-owned firms.

In the field of oil refining, where import substitution was accelerated by the establishment of more oil refineries by state oil firm Pertamina, any significant fall was not recognized for the long period between 1971 and 1985, but the import ratio did fall by a sharp 45.2 points for the shorter period from 1975 to 1980. For nonferrous fabricated metal products, including the Asahan aluminum project, the import ratio chalked up the two-digit fall of 15.1 points for the five years between 1980 and 1985. In the transport equipment sector, Japanese-affiliated automobile manufacturers and Astra Group and other local companies promoted import substitution under the government's policy for domestic production of automobiles, the import ratio also showed the two-digit drop of 10.8 points in the same five-year period. Thus, these sectors can be characterized as the latecomers in Indonesia's industrialization drive for import substitution.

As reviewed above, import substitution in the period from 1971 to 1985 was clearly characterized by the principal role played by state-owned enterprises that either established new plants or expanded capacity at existing factories in the

⁸ On the other hand, sugar/sugar products and bamboo/wood/rattan products are among those sectors that steadily lowered the import ratio from 1971 to 1985, though not by two-digit margins. When the period covered is shortened to that from 1971 to 1988, the sector for rubber/plastic wares also reduced the import ratio consistently, making it the sector with the continued progress in import substitution, though only on a limited scale.

fertilizers/pesticide, basic iron/steel, cement, oil refining and nonferrous metal sectors, while the private sector led import substitution in the yarn spun and transport equipment sectors.

(2) Validation by Import Composition Ratios

Next, the import composition ratios are examined. What should be noted first of all are the extremely high import ratios shown by capital goods and industrial materials, relative to all other sectors, during the whole period from 1971 to 1985. As pointed out in Section 1, the increases in the import composition ratios for capital goods and industrial materials were a phenomenon observed by many other countries that went through the process of industrialization, and thus the increases for Indonesia can also be interpreted as the evidence of the rapid pace of industrialization during this period. In particular, machine/electrical machinery/apparatus constantly registered the biggest import composition ratio, except for 1980, followed by transport equipment, which showed the highest ratio in 1980. The combined import composition ratio for machine/electrical machinery/apparatus and transport equipment, or capital goods, regularly maintained the level of around 50%. Particularly, the fact that the share of machine/electrical machinery/apparatus of total imports of manufactured goods reached as high as 47.8% in 1971 further solidifies the basis for an argument that industrialization for import substitution in Indonesia started before the oil boom. Similarly, the import composition ratios for industrial materials industries, such as chemicals, basic iron/steel and fabricated metal products, are higher than most other sectors.

Next, the extent of import substitution is examined based on the changes in the import composition ratios between 1971 and 1985. The machine/electrical machinery/apparatus and milled rice sectors showed the notable declines of 16.1 points and 5.2 points, respectively. As these two sectors also registered the two-digit falls in their import ratios, the significance of import substitution is fairly large for the two sectors. The machine/electrical machinery/apparatus sector saw the import composition ratio decline between 1971 and 1980 but rise between 1980 and 1985. The

decline in the import composition ratio was remarkably huge between 1971 and 1980, pointing to the possibility that the big fall was a direct result of the hikes in the import tariffs and import sales taxes, which are explained later. The decline in the import composition ratio of milled rice reflects the advancement of the rice self-sufficiency program, which was achieved in 1984 through such policy measures as low-rate loans to rice-growing farmers and subsidies that helped lower prices of chemical fertilizers whose domestic production increase as a result of import substitution.

Sectors that recorded the big drops in their import ratios also uniformly registered the declines in their import composition ratios, though the margins of decline and the order by those margins are slightly different from the import ratio falls. Such sectors included fertilizers/pesticide (with the drop of 2.0 points in the import composition ratio), yarn spun (2.6 points), cement (1.1 points), flour/flour products (0.8 point), and paper/paper products/cardboard (1.0 point). It is almost certain that import substitution pulled ahead in these five sectors during the period under review. However, while basic iron/steel and processed/preserved food, as well as rubber/plastic wares until 1980, showed the decline in their import ratios but they actually increased their import composition ratios. As pointed out in Section 1, these developments indicate that while import substitution itself is making smooth headway in these sectors but the pace of industrialization for import substitution simply is not catching up with the remarkable rise in demand for products of the three sectors.

(3) Trends in Import Tariffs and Import Sales Taxes

After the validation of import substitution on the basis of the two indicators of the import ratio and the import composition ratio, the next subject of examination is the ratio of import tariffs and import sales taxes, one of policy measures adopted for the promotion of import substitution. As a general trend, the tax rates for the overall manufacturing sector declined steadily from 1971 to 1985. In particular, in the period between 1975 and 1985, the downtrend in the ratio of import tariffs and import sales taxes was recognized in all of the 20 sectors where the ratios were measurable. As of 1985, the ratios were below 20% in all the sectors, showing the fall and leveling of the

ratios. But overall industry protection policies for the promotion of import substitution cannot be assessed solely by the changes in the ratio of import tariffs and import sales taxes. Given the fact that in this period, Indonesia newly instituted non-tariff barriers such as import prohibition steps for specific sectors, we need to make an analysis from a more microeconomic viewpoint going forward.

Meanwhile, for the period between 1971 and 1975, the ratio of import tariffs and import sales axes was generally high relative to other periods and the ratio actually went up in some sectors, making the overall situation more complicated. As the prevailing trend as of 1971, however, it can be observed that firstly, for consumer goods, the ratio was set low for sectors providing daily necessities relative to sectors offering luxury articles of taste⁹. Secondly, the ratio of import tariffs and import sales taxes was also set low for capital goods and industrial materials for which Indonesia had to depend on imports¹⁰. Then, the comparison between 1971 and 1975 revealed that the ratio was raised in 16 out of 21 sectors¹¹. Of these 16 sectors, 11 sectors experienced the decline in the import ratio during the same period, indicating that the higher tax ratios helped achieve a certain measure of progress in import substitution in these sectors¹². This suggests that the ratio of import tariffs and import sales taxes was raised during this period as a policy measure for domestic industry protection to

⁹ While the tax rate is 0.0% for milled rice and 4.0% for flour/flour products, the tax rate is high at 90.7% for cigarettes and at 61.7% for beverages.

¹⁰ For example, the tax rate in 1971 was 6.8% for machine/electrical machinery/apparatus, 4.5% for basic iron/steel, and 6.1% for fertilizers/pesticide. Compared with other product items, the tax rate was also set low at 10.0% for non-ferrous basic metal and 10.5% for refined petroleum.

¹¹ In particular, the tax rate was raised noticeably for non-metallic mineral products (the tax increase by 179.8 points), cigarettes (64.4 points), rubber/plastic wares (40.2 points), and beverages (37.0 points).

¹² The progress in import substitution was recognized for a total of 11 sectors: non-metallic mineral products, rubber/plastic wares, beverages, other food products, flour/flour products, basic iron/steel, machine/electrical machinery/apparatus, paper/paper products/cardboard, processed/preserved food, other manufactured products, and yarn spun. On the other hand, no progress was seen in the five sectors: cigarettes, oil and fat, chemical products, fabricated metal products, and non-ferrous basic metal.

promote import substitution. On the other hand, in the five sectors of textiles/apparel/leather, bamboo/wood/rattan products, refined petroleum, cement and transport equipment for which the ratios were lowered, insufficient domestic supply presumably prompted the government to put the necessity of imports before import substitution.

At this stage, the changes in the ratios of import tariffs and import sales taxes between 1971 and 1975 are examined for the eight sectors of fertilizers/pesticide, basic iron/steel, yarn spun, cement, refined petroleum, non-ferrous basic metal, milled rice, and machine/electrical machinery/apparatus, which were previously cited as the areas with notable progress in import substitution between 1971 and 1985. First of all, only the three sectors of basic iron/steel, machine/electrical machinery/apparatus and yarn spun witnessed both the higher tax ratios and the lower import ratios. As for milled rice and fertilizers/pesticide, the ratio of import tariffs and import sales taxes is not known for the year of 1975 because of protective subsidies. Meanwhile, the tax ratios were lowered for cement and refined petroleum, indicating that at least at this point of time, industry protection through the ratio of import tariffs and import sales taxes was not introduced in earnest.

(4) Impact of Import Substitution Policy on Other Sectors

Finally, the impact of industrialization for import substitution on other sectors is reviewed here on the basis of the import dependence of intermediate input in each sector between 1980 and 1985¹³¹⁹. As discussed up so far, the progress in import substitution in many sectors lowered the import dependence of intermediate input in 20 out of 23 sectors. Also, the import dependence in the entire manufacturing sector fell

¹³ This sort of analysis is possible only for 1980 and onward. In Indonesia's input-output tables, the 1971 table and the 1975 table provided only tables for competitive imports, which do not offer the value for sector-by-sector imports of intermediate goods. On the other hand, the 1980 table provides the table for imports, and the 1985 table and tables thereafter offer tables for non-competitive imports. These tables contain the input value of imported intermediate goods to make it possible to calculate the import dependence for intermediate goods.

by 15.4 points, another indication of the remarkable achievement in import substitution in the five-year period under review.

Of the 20 sectors with the lower import dependence, the two-digit decline was registered by 10 sectors: cement (43.8 points); basic iron/steel (30.4 points); paper/paper products/cardboard (30.6 points); transport equipment (28.0 points); refined petroleum (26.5 points); yarn spun (26.3 points); fabricated metal products (20.8 points); beverages (14.6 points); nonferrous fabricated metal products (13.1 points); and other manufacturing products (11.7 points). Looking more deeply into factors that lowered the import dependence of intermediate input in these sectors, the first thing that draws attention is that import substitution of refined petroleum, as fuel, played a significant part in the import substitution of intermediate input in the beverage, paper/paper products/cardboard, cement and basic iron/steel sectors. Paper/paper products/cardboard contributed to import substitution of intermediate input in the same sector, while also aiding import substitution of intermediate input in the cement and cigarette sectors in the form of packaging material and paper for rolling cigarettes. Import substitution for basic iron/steel products, in addition to its contribution to intermediate input in the same basic iron/steel sector, also helped increase import substitution of intermediate input for fabricated metal products. Further, import substitution of chemicals and sugar/sugar products were instrumental in promoting import substitution of intermediate input in the yarn spun and beverage sectors, respectively¹⁴.

Import substitution in the sectors of refined petroleum, basic iron/steel and paper/paper products/cardboard up until 1985 has been broadly criticized as inefficient because those industries are being run by state-owned enterprises. From the standpoint of stability of international balance of payments, however, import substitution achieved in these sectors deserves the credit for producing a certain measure of benefits not only for their own sectors but also for other manufacturing sectors by helping reduce the import dependence for intermediate input.

¹⁴ Details so far in this paragraph are shown in Table A-1 in Appendix.

3. Modest But Broad-based Export Orientation

The increases in the export ratio were registered by 19 out of 23 sectors between 1971 and 1985, with the number of such sectors exceeding the number of sectors that reduced the import ratio in the same period. Moreover, the export ratio for the whole manufacturing sector also rose from 4.0% to 17.4%, and the increase margin of 13.4 points is larger than the 8.2-point decline seen in the import ratio for the entire manufacturing sector. Generally, the period prior to 1985 is recognized as the era of import substitution in view of actual policies implemented by the Indonesian government. Yet, in the period before 1985, the export ratios actually increased in a wide array of sectors, and the increase in the export ratio was bigger than the decline in the import ratio for the whole manufacturing sector, though a large portion of that increase in the export ratio came from refined petroleum. These are certainly the unexpected results of this analysis.

Still, the two-digit increase in the export ratio was reported by only the four sectors: refined petroleum (with the increase margin of 39.9 points), bamboo/wood/rattan products (38.1 points), non-ferrous basic metal (23.2 points), and textiles/apparel/leather (21.1 points), with the 14 other sectors posting only single-digit rises. Comparison with the nine sectors that registered the two-digit import ratio falls during the same period indicates that the extent of export orientation seen in this period was small relative to the extent of import substitution achieved. All in all, it can be argued that in the period from 1971 to 1985, import substitution made the powerful advance, accompanied by export orientation that was moderate in extent but seen in a broad range of manufacturing sectors.

Meanwhile, looking at the combination of import substitution and export orientation, as many as 12 sectors witnessed both the decline in the import ratio and the increase in the export ratio¹⁵, raising the possibility that the domestic surplus created

¹⁵ The 12 sectors are: bamboo/wood/rattan products, textile/leather goods, fertilizers/pesticide, paper/paper products/cardboard, cement, yarn spun, beverages, milled rice, sugar/sugar products,

through import substitution was made available for greater exports. In terms of the export composition ratio, refined petroleum, bamboo/wood/rattan products and textiles/apparel/leather saw two-digit rises in their ratios, making these three sectors the leaders in industrialization for export orientation during this particular period.

4. Changes in Industrial Structure Symbolized by Industrialization for Import Substitution

The value added composition ratio of refined petroleum rose sharply to 28.2% in 1985 primarily because of the surge in crude oil prices. In view of this extraordinary factor, in calculating the value added composition ratios, the ratio for refined petroleum is shown as the ratio to the total value added of all manufactured goods, while the ratios for all other sectors are shown as the ratios to the total value added of all manufactured goods minus refined petroleum.

Table 3 classifies manufacturing sectors solely by the rise/fall in the value added composition ratio and the rise/fall in the import ratio between 1971 and 1985. The table shows that of the 12 sectors where the value added composition ratio rose in that period, 10 sectors also registered the decline in the import ratio, indicating the close link between the changes in the value added composition ratio and industrialization for import substitution during the period. When refined petroleum and non-ferrous basic metal, both the latecomers for import substitution, which increased the import ratios between 1971 and 1985, but had the lower import ratios from 1975 to 1980, and from 1980 to 1985, respectively, are included, all the 12 sectors that made progress in import substitution also saw their value added composition ratio increase. This provides further testimony to the even closer relationship between the changes in the industrial structure and import substitution.

Regarding the 12 sectors that saw their value added composition ratio decline, six of them raised the import ratio and another six sectors lowered the import ratio,

machine/electrical machinery/apparatus, cigarettes, and flour/flour products.

Table 3. Relation between Rise/Falls of Value Added and Import Ratio on 1971-1985

		IMPORT RATIO	
		UP	DOWN
V A L U E A D D E D	U P	Non-ferrous Basic Metal, Refined Petroleum 2 Sectors	Processed/Preserved Food, Flour, Cigarettes, Yarn Spun, Bamboo/Wood/Rattan Products, Fertilizer/Pesticide, Rubber/Plastic Wares, Cement, Basic Iron/Steel, Machine/Electrical Machinery/Apparatus, Other Manufactured Products 11 Sectors
	D O W N	Other Food Products, Chemicals, Non-metallic Mineral Products, Fabricated Metal Products, Transport Equipment 5 Sectors	Oil/Fat, Rice Milled, Sugar, Beverages, Textiles/Apparel/Leather, Paper, Paper/Paper Products/Cardboard 6 Sectors

1) The values of 1971 and 1980 are compared for Rubber/Plastic Wares.

(Source) classified based on Table 2.

offering little evidence of any link between the higher import ratio and the lower value added composition ratio.

Similarly, Table 4 classifies manufacturing sectors by the rise/fall in the export ratio and the rise/fall in the value added composition ratio to show their relationship in the period between 1971 and 1985. Of the 12 sectors with the higher value added composition ratio, nine sectors also raised the export ratio while three sectors saw the export ratio decline. On the other hand, of the 12 sectors with the lower value added composition ratio, 10 sectors increased the export ratio while two sectors had the lower export ratio. Between the sectors with the rises in the value added composition ratio and those with the declines in the ratio, there was not a big difference in the number of sectors that increased the export ratio, meaning that the rises or declines in the export ratio offer little by way of explanation for the changes in the industrial structure during the period. Meanwhile, textiles/apparel/leather (one of the three sectors cited as the leading forces of industrialization for export orientation during the period) and paper/paper products/cardboard, both of which showed the noticeable trend toward import substitution as well as export orientation, actually reduced their value added composition ratios. This suggests that the extent of progress in industrialization for export orientation was of only limited scale at the time, compared with the degree of

Table 4. Relation between Rise/Falls of Value Added and Export Ratio on 1971-1985

		EXPORT RATIO	
		UP	DOWN
V A L U E	U P	Flour/Flour Products, Cigarettes, Yarn Spun, Bamboo/Wood/Rattan Products, Fertilizer/Pesticide, Refined Petroleum, Rubber/Plastic Wares, Cement, Non-ferrous Basic Metal, Machine, Electrical Machinery & Apparatus 10 Sectors	Processed/Preserved Food, Basic Iron/Steel 2 Sectors
	A D D I T I O N	Milled Rice, Sugar/Sugar Products, Beverages, Textiles/Apparel/Leather, Paper/Paper Products/Cardboard, Chemicals, Non-metallic Mineral Products, Fabricated Metal Products, Transport Equipment, Other Manufactured Products 10 Sectors	Oil/Fat, Other Food Products 2 Sectors

(1) The values of 1971 and 1980 are compared for Rubber/Plastic Wares.

(Source) classified based on Table 2.

progress seen in industrialization for import substitution.

Examining the extent of the increase in the value added composition ratio, standing out as the sectors with the increase of 3.0 points or larger are refined petroleum (15.8 points), the latecomer in import substitution that also shows a strong inclination toward export orientation, and bamboo/wood/rattan products (7.0 points), which displayed the two-pronged trend of import substitution and export orientation. The next group of sectors with the increases in the value added composition ratio include the three sectors of machine/electrical machinery/apparatus (4.8 points), fertilizers/pesticide (3.5 points) and basic iron/steel (3.3 points), all of which showed the more remarkable trend of import substitution. In addition, cigarettes (6.4 points), with little relevance in terms of either import substitution or export orientation, showed the noticeable rise in the value added composition ratio.

Conversely, sectors with the decline of 3.0 points or larger in the value added composition ratio include textiles/apparel/leather (8.4 points) and sugar/sugar products (3.4 points), both of which made headway in both import substitution and export orientation. The particularly remarkable drop in the value added composition ratio was registered by transport equipment (16.3 points), a sector that showed progress in

import substitution at last in 1980. This can be caused as indicating that domestic production of auto parts under the government's policy announced in 1976 did not go as smoothly as expected, though production by the auto assembly industry increased under the policy for domestic production of automobiles announced in 1969. Actually, unit production of automobiles increased during this period, while imports of finished vehicles decreased (Mihira and Sato ed. [1992:338]) despite the rise in the import ratio of transport equipment sector as shown in Table 2. This indicates that because of the lack of progress in import substitution in the auto parts industry, the increased assembly of automobiles led to higher imports of auto parts.

4. Era of Export Orientation and Selective Import Substitution (1985-1990)

1. Historical Backdrop Symbolized by Successive Liberalization Packages on Trade and Investment

During this period, the Indonesian economy began to feel the impact of the rapid increase in foreign direct investment from Japan and Asia's newly industrializing economies (NIEs), triggered by the devaluation of the rupiah in 1986 and the Plaza Accord of 1985, and the private sector and exports became the main engine of the development of the manufacturing sector for the first time ever. During the period, the government unleashed a string of liberalization packages on trade and investment, including the relaxation of restrictions on foreign investment, tariff cuts and the abolition of non-tariff trade barriers such as import restrictions. Companies designated as export-oriented firms on the basis of the export ratios of products, were accorded preferential treatment in the equity ratio of foreign capital, operations in bonded export processing zones and procurement of raw materials. The government also restored the drawback system, under which import tariffs imposed on raw materials and parts are refunded when finished products are exported.

Below are the points to be kept in mind in making comparison between 1985

and 1990. First, as for the input-output table of Indonesia this paper refers to quite often, the table from 1971 to 1985 uses industry codes different from those adopted for the 1990 table onward¹⁶. The second point is that some processes previously classified as the primary industry, such as husking of beans, were moved to the category of the secondary industry, beginning with the 1990 table¹⁷. Because of this change, the composition ratios for the value added, imports of manufactured goods and exports of manufactured goods for respective manufacturing sectors cannot be compared with the composition ratios for the previous period without bias, because some processing industries, previously classified in the primary industry, were added. Simple comparison of the export and/or import ratios between the pre-change tables and the post-change tables could also be misleading because the newly added primary processing sectors may show the export and/or import ratios that are different from the export and/or import ratios of the previous period. Thus, the analysis in this section

¹⁶ Specifically, the classification of sector code 2 signified hand-pounded rice in the 1971 table up to the 1985 table, but was used to mean beans in the 1990 table onward. Hand-pounded rice was classified into milled rice with the sector code 29 from 1990 onward, while beans was classified in other food crops with the sector code 6 in tables before 1985. In the input-output table covering a total of 66 sectors, sector codes 1 to 26 are assigned to the primary industry, codes 27 to 50 to manufacturing, codes 51 to 66 to the tertiary industry, which includes construction, electricity/gas/water, and transportation/communications.

¹⁷ In the changes from the 1985 table to the 1990 table, the process to peel potatoes and the process to obtain starch from sago were reclassified from sector code 4 for potatoes to sector code 30 for flour/flour products, and the process of husking of beans, such as soybeans and peanuts, was reclassified from code 6 for other food crops to code 32 for other food products. Similarly, the process to make brown sugar from sugar canes was moved from code 8 to code 31 for sugar/sugar products, and the process to express oil and fat from coconuts with code 9, and of oil palm with code 10, the process to express oil and fat from oil palm and plants and animals were reclassified into oil and fat with code 28. The process to process leaf tobacco with code 11 was moved to cigarettes with code 34, while coffee beans with code 12, the process to husk beans with code 17 for other plants, and the process to boil tea leaves with code 13 were all classified into other food products with code 32. The process to produce kapok for wad of cotton with code 17 for other plants was reclassified into yarn spun with code 35. It requires attention that in the 1995 table as well, meat packing and other sectors classified as manufacturing in the annual industrial statistics of large and medium companies are classified as the primary industry, while production of natural

excludes the seven sectors of oil and fat, milled rice, flour/flour products, sugar/sugar products. Other food products, cigarettes and yarn spun.

2. Export Ratios Higher in Most Sectors, Led by Light Industries

Table 5 shows the value added composition ratio, the import composition ratio, the export composition ratio, the import ratio, the export ratio, the ratio of import tariffs and import sales taxes, and the import dependence of intermediate input for 17 sectors, or a total of 24 sectors minus the above-mentioned seven sectors, for 1985 and 1990.

First, the export ratio is examined, because the period under review is defined as the era of industrialization for export orientation. The table shows all the sectors but non-ferrous basic metal raised the export ratio. There are five sectors with the two-digit increases in the export ratio between 1985 and 1999: processed/preserved food (45.7 points), other manufacturing (30.5 points), textiles/apparel/leather (23.7 points), bamboo/wood/rattan products (19.6 points), and non-metallic mineral products (12.1 points). The number is higher, albeit by only one, than the four sectors, out of the total of 24 sectors, which showed the two-digit or larger increases in the export ratio between 1971 and 1985. As for changes in the export composition ratio, the remarkable growth was recorded by textile/leather goods (12.2 points), bamboo/wood/rattan products (7.5 points), and processed/preserved food (4.4 points). Therefore, the three sectors of textile/leather goods, bamboo/wood/rattan products and processed/preserved food can be characterized as the manufacturing sectors that posted the largest growth in the era of export-oriented industrialization. On the other hand, among sectors that posted the declines in the export composition ratio are refined petroleum (24.9 points) and non-ferrous basic metal (3.6 points). Taking all these changes together, the export-oriented industrialization in the era under review can be characterized by the general trend of lessening dependence on oil and gas production and shift of emphasis from heavy industries to light industries.

gas is classified into the sector of refined petroleum in the secondary industry.

Table 5 . Structural Change in Manufacturing Industries from 1985 to 1990

	Composition (%)						Import Ratio		Export Ratio		Import-related Tax(%)		Dependence on Import(%)	
	Value-added		Import		Export		(%)		(%)					
	1985	1990	1985	1990	1985	1990	1985	1990	1985	1990	1985	1990	1985	1990
Processed/Preserved Food	1.1	2.0	0.9	0.6	0.1	4.5	13.3	13.6	1.7	47.4	10.6	4.4	5.5	4.7
Beverages	1.0	0.9	0.1	0.1	0.0	0.2	2.4	7.9	1.1	11.0	8.9	3.0	7.2	1.9
Textiles/Apparel/Leather	7.5	10.8	1.0	3.3	6.8	19.0	4.8	16.6	22.1	45.8	11.6	15.2	12.1	19.4
Bamboo/Wood/Rattan Products	8.7	13.7	0.0	0.1	12.3	19.8	0.2	1.0	38.4	58.0	16.3	3.6	1.6	3.4
Paper/Paper Products/Cardboard	3.0	5.4	2.7	2.0	0.3	1.3	23.4	15.4	2.3	7.7	8.6	17.7	39.7	19.7
Fertilizer/Pesticide	3.5	2.2	1.1	0.7	1.0	1.4	9.0	11.0	7.1	16.2	2.4	2.1	42.4	45.3
Chemicals	4.9	6.2	20.4	18.1	2.0	2.4	56.2	56.0	9.7	11.3	5.7	3.6	54.6	40.2
Refined Petroleum	37.1	24.4	4.7	3.9	59.1	34.2	7.6	12.4	45.2	47.5	1.6	2.4	16.2	18.9
Rubber/Plastic Wares	5.0	4.3	1.0	1.3	8.8	7.4	7.3	13.9	35.9	39.9	11.9	7.3	36.3	33.5
Non-metallic Mineral Products	3.5	2.5	2.1	2.5	0.1	0.8	20.8	38.0	1.0	13.1	4.1	8.7	17.7	19.9
Cement	1.9	1.1	0.0	0.0	0.2	0.5	0.7	0.3	2.2	11.2	9.7	2.3	10.4	3.8
Basic Iron/Steel	3.4	4.4	5.7	5.0	0.4	1.3	40.4	36.5	3.6	9.9	4.5	8.9	31.0	26.0
Non-ferrous Basic Metal	2.8	2.0	2.3	2.0	7.1	3.5	43.9	43.2	67.1	49.1	8.1	2.6	30.9	38.5
Fabricated Metal Products	3.4	3.6	7.6	5.0	0.1	0.7	38.8	33.2	0.4	5.8	7.1	36.5	38.9	29.3
Machine/Electrical machinery/Apparatus	6.2	8.3	31.6	38.8	1.2	1.3	56.5	64.3	4.3	4.7	9.8	4.4	69.1	66.6
Transport Equipment	6.0	7.5	16.2	13.6	0.0	0.8	42.1	42.9	0.2	3.6	5.4	11.2	54.2	49.2
Other Manufactured Products	0.9	0.8	2.6	2.9	0.4	0.9	50.0	66.3	11.1	41.6	8.1	20.1	32.6	25.4
Total Manufacturing Industries	100.0	100.0	100.0	100.0	100.0	100.0	29.7	37.4	26.0	31.2	7.1	8.1	4.6	8.6

(1) In this analysis, sectors of oil/fat, milled rice, flour/flour products, sugar/sugar products, other food products, cigarettes and yarn spun are excluded.

(2) The import ratio is obtained by dividing imports of goods by domestic demand (intermediate demand + private consumption + government consumption + inventory change).

(3) The export ratio is obtained by dividing exports of goods by total production.

(4) The ratio of import tariffs and import sales taxes is obtained by dividing the combined total of import tariffs and import sales taxes by the value of imports of goods.

(Source) As same as Table 1.

3. Import Substitution Limited to Materials Sectors

(1) Hikes in Import Tariffs and Import Sales Taxes Particularly in Raw Material Sectors

The period from 1985 to 1990 is generally regarded as the era of trade liberalization, perhaps partly because of the successive liberalization packages on trade and investment announced by the government. However, the ratio of import tariffs and import sales taxes for the manufacturing sector, which recognizably dropped until 1985, rose slightly in 1990 for eight sectors out of the 17 sectors under review. The overall

tax ratio also inched up 1.0 point from 7.1% to 8.1%.

Specifically, the tax ratio rose for fabricated metal products (by 29.4 points); other manufacturing (12.0 points); paper/paper products/cardboard (9.1 points); transport equipment (5.8 points); non-metallic mineral products (4.6 points); basic iron/steel (4.4 points), textiles/apparel/leather (3.6 points); and refined petroleum (0.8 point). All in all, the tax hikes were approved mainly for products of materials sectors and heavy industries for which import substitution was generally considered difficult, an evidence that government policies were directed toward the second round of import substitution.

(2) Marked Deceleration and Pullback in Import Substitution, Except for Some Raw Materials Sectors

The import ratio declined in only six out of the total of 17 sectors. In fact, the combined import ratio for the 17 sectors under review increased by 7.7 points, pointing to the general trend of pullback in import substitution. Amid the general retreat of import substitution, the progress in import substitution was indicated by the import ratio drops in the six sectors: paper/paper products/cardboard (8.0 points); fabricated metal products (5.6 points); basic iron/steel (3.9 points); non-ferrous basic metal (0.7 point); cement (0.4 point); and chemicals (0.2 point). The first three sectors were subject to the higher ratios of import tariffs and import sales taxes, indicating that the selective hikes in the ratios of import tariffs and import sales taxes apparently achieved a measure of success. But there was no sector that saw a two-digit drop in the import ratio, attesting to the pullback or deceleration of import substitution in intensity as well.

Sectors that showed the two-digit increase in the import ratio are non-metallic mineral products (17.2 points) and other manufacturing products (16.3 points) as well as textiles/apparel/leather (11.8 points). Food-related sectors also posted the rises in the import ratio, including process foods (0.3 point) and beverages (5.5 points), although some of food-related sectors are outside the coverage of this analysis for the period under review for above-mentioned reasons. Textile/leather goods also had an increase

of 2.3 points in the import composition ratio and a rise of 7.3 points in the import dependence of intermediate input, an indication that, as previously pointed out, the remarkable surge in exports came with the rise in imports. Apart from the data in Table 5, it is noteworthy that intra-sector transactions in the sector of textile/leather goods accounted for about 30% of intermediate input and the import dependence of intra-sector transactions soared from 3.5% to 16.1%. In other words, imports of textile/leather goods actually increased, as did their exports, despite the higher ratio of import tariffs and import sales taxes. There is a high probability that this resulted from the drawback system, under which tariffs imposed on imported raw materials are refunded when finished goods are exported.

As for the import composition ratio, machine/electrical machinery/apparatus chalked up the increase of 7.2 points, far larger than the rises posted by all other sectors. The higher import composition ratio for machine/electrical machinery/apparatus suggests the possibility of increasing imports of capital goods along with the progress in export-oriented industrialization. On the other hand, the largest drop in the import composition ratio was recorded by transport equipment (2.6 points), showing the growth of the auto parts industry in the latter half of the 1980s. So, the four sectors of paper/paper products/cardboard, basic iron/steel, fabricated metal products and transport equipment could still be counted as the sectors that managed to raise the level of import substitution, though on a limited scale, in this period under review.

(3) Import Substitution Achieved in Raw Materials Sectors

In stark contrast with the lack of progress in import substitution for manufactured goods, the import dependence of intermediate input declined in 11 sectors out of the 17 sectors, an indication of success to a certain extent of the selective hikes in the ratio of import tariffs and import sales taxes mainly aimed at materials and heavy industries.

The two-digit falls were registered by the two sectors of paper/paper products/cardboard (20.0 points) and chemical products (14.4 points), noticeably fewer

than the 10 sectors that showed the two-digit declines in the period from 1980 to 1985. When the threshold is lowered to the margin of 5 points or more, the five sectors fall in the category: fabricated metal products (9.6 points); cement (6.6 points); beverages (5.3 points); transport equipment (5.0 points); and basic iron/steel (5.0 points).

Putting Table 5 aside, a more detailed examination of these sectors show that import substitution for paper/paper products/cardboard, for which the ratio of import tariffs and import sales taxes was raised, contributed to import substitution of intermediate input as packing material for cement. Also subject to the higher ratio of import tariffs and import sales taxes, import substitution of basic iron/steel led to import substitution of intermediate input for transport equipment, including automobile bodies. Non-ferrous basic metal, with a marginal fall in the import ratio, helped import substitution of intermediate input for fabricated metal products. Chemical products, whose import composition ratio turned lower at last in 1990, contributed to import substitution of intermediate input for their own sector¹⁸.

4. Industrial Structure Changes Characterized by Export Orientation and Selective Import Substitution

Table 6 classifies manufacturing sectors solely by the rise/fall in the value added composition ratio and the rise/fall in the import ratio. First, of the nine sectors that recorded increases in the value added composition ratio, only four of them registered drops in the import ratio while five sectors had the higher import ratio. So, the decreases in the import ratio do not explain in any way the changes seen in the sectors with the higher value added composition ratio. But, among the sectors with the lower import ratio and the higher value added composition ratio, the ratio of import tariffs and import sales taxes was raised for the three sectors of paper/paper products/cardboard, basic iron/steel and fabricated metal products.

On the other hand, of the sectors showing the decreases in the value added

¹⁸ Details so far in this paragraph are shown in Table A-2 in Appendix.

Table 6. Relation between Rise/Falls of Value Added and Import Ratio on 1985-1990

		IMPORT RATIO	
		UP	DOWN
V A L U E A D D E D	U P	Processed/Preserved Food, Textiles/ Apparel/Leather, Bamboo/Wood/Rattan Products, Machine, Electrical Machinery & Apparatus, Transport Equipment 5 Sectors	Paper/Paper Products/Cardboard, Chemicals, Basic Iron/Steel, Fabricated Metal Products 4 Sectors
	D O W N	Beverages, Fertilizer/Pesticide, Refined Petroleum, Rubber/Plastic Wares, Non-metallic Mineral Products, Other Manufactured Products 6 Sectors	Cement, Non-ferrous Basic Metal 2 Sectors

(Source) classified based on Table 5.

composition ratio, the import ratio increased in six sectors, with only two sectors recording the import ratio drops. This means that the higher import ratio is the sufficient condition to explain the decline in the value added composition ratio. In particular, the setback is noticeable for industries that raised the value added composition ratio up until 1985 through import substitution spurred by increased output at plants operated by state-run enterprises, including refined petroleum (with a fall of 12.7 points in the value added composition ratio), fertilizers/pesticide (1.3 points) and non-metallic mineral products (1.0 point). Despite the lower import ratio, the decline in the value added composition ratio was registered also by cement (0.8 point) and non-ferrous basic metal (0.8 point). Thus, except for basic iron/steel (with a rise of 1.0 point), the value added composition ratio declined in the sectors that experienced the smooth progress in industrialization for import substitution from 1971 to 1985. Table 7 classifies manufacturing sectors by the rise/fall in the export ratio and the rise/fall in the value added composition ratio to ascertain the relationship between the two ratios. The export ratio increased for the 17 sectors but one. Of the 16 sectors with the higher export ratio, the value added composition ratio rose for the nine sectors, two more than the seven sectors for which the ratio fell. With only one out of the 17 sectors showing the drop in the export ratio, the rise/fall in the export ratio does not provide enough ground on which to talk much about the rise/fall in the value added

Table 7. Relation between Rise/Falls of Value Added and Export Ratio on 1985-1990

		EXPORT RATIO	
		UP	DOWN
V A L U E A D D E D	U P	Processed/Preserved Food, Textiles/ Apparel/Leather, Bamboo/Wood/Rattan Products, Paper/Paper Products/ Cardboard, Chemicals, Basic Iron/Steel, Fabricated Metal Products, Machine, Electrical Machinery & Apparatus, Transport Equipment 10 Sectors	0 Sectors
	D O W N	Beverages, Fertilizer/Pesticide, Refined Petroleum, Rubber/Plastic Wares, Non-metallic Mineral Products, Cement, Other Manufactured Products 6 Sectors	Non-ferrous Basic Metal 1 Sector

(Source) classified based on Table 5.

composition ratio.

Instead, looking at the extent of the increase in the value added composition ratio, the two sectors with the largest increases, bamboo/wood/rattan products (5.0 points) and textile/leather goods (3.3 points), also showed the sizable rises in the export ratio, indicating that the changes in the industrial structure in the period under review were characterized by export-oriented industrialization. Processed/preserved food, that saw its export ratio jump, also recorded an increase, though small at 0.9 point, in the value added composition ratio.

As discussed above, the changes in the industrial structure from 1985 to 1990 are characterized by the progress in export-oriented industrialization in terms of the extent of increase in the export ratio, as exemplified by bamboo/wood/rattan products and textile/leather goods, and also by the decline in the relative weight in the industrial structure of fertilizers/pesticide, refined petroleum, cement, non-ferrous basic metal and some other sectors, all of which achieved smooth import substitution from 1971 to 1985. However, though limited in number of sectors, the recognizable degree of progress in import substitution was achieved for paper/paper products/cardboard, basic iron/steel and fabricated metal products, as they were covered by the government's specific policy for the second round of import substitution.

5. Deceleration/Retreat of Export Orientation and Revival of Import Substitution (1990~1995)

1. Era of Rising Real Exchange Rate and Cyclical Fluctuations

The first half of the 1990s is generally considered as an era of export orientation or export-led economic growth, in a continuation of the latter half of the 1980s. However, the real exchange rate of the rupiah, which had been guided by the central bank to fall within a band of 2% to 6% each year since the 1986 devaluation, actually turned up after bottoming out in 1991, due to the near-two-digit rise in domestic prices¹⁹. Meanwhile, it was from around 1989 that foreign direct investment from Japan and Asian NIEs began to increase, which helped the Indonesian economy register strong growth from 1989 to early 1990. Given the upturn of the rupiah's real exchange rate and strong domestic growth, therefore, the early part of the 1990s can be considered as the period of transition from export-led growth to domestic demand-led growth.

Subsequently, the economic boom fueled by robust domestic demand began to show signs of overheating around 1991, leading to a deterioration of the current account balance and the sharp rise in money supply. To cope with the overheating of the economy, then Finance Minister J.B. Sumarlin moved to tighten credit in February 1991 by the mandatory conversion of bank deposits held by state-owned enterprises into central bank certificates (*Sertifikat Bank Indonesia: SBI*), or the so-called "Sumarlin Shock." But this drastic remedy caused the economy to gradually slacken. In addition, foreign companies' confidence in the Indonesian economy was shaken, prompting them to redirect flows of their direct investment to the emerging markets of China and Vietnam. In an effort to reverse such a situation, the Indonesian government in May 1994 backed down on the restrictions on foreign capital introduced in 1974 and

¹⁹ The real exchange rate from 1985 to 1999 calculated in accordance with averaged nominal exchange rate and wholesale price index of the United States (transformed as 1996=100) of *International financial statistics* of IMF, and wholesale price index of Indonesia (transformed as 1996=100) of BPS are shown in Table A-3 in Appendix.

set forth a new policy allowing 100% ownership by foreign companies. The about-face in policy triggered a rapid inflow of foreign direct investment which in turn induced active investment by domestic firms, with the Indonesian economy going into the unprecedented period of the economic boom from 1995 to July 1997, when the currency crisis hit the country.

However, the input-output tables of 1990 and 1995 show little trace of the economic stagnation around 1993. The changes between 1990 and 1995 are likely to clearly show the economic situation characterized by the higher real exchange rate and growth led by domestic demand. During this period, the government invoked some policy measures implying the revival of the drive for import substitution. These policy measures included the high import tariff on ethylene for producing polyethylene, slapped to coincide with the startup of the Chandra Asri Petrochemical Center (CAPC), Indonesia's first domestic ethylene production plant.

2. Revival of Limited But Extensive Import Substitution

(1) Ratio of Import Tariffs/Import Sales Taxes Raised in Extensive Sectors

Table 8 shows the value added composition ratio, import composition ratio, export composition ratio, import ratio, export ratio, ratio of import tariff and import sales taxes, and the import dependence of intermediate input for the country's 24 manufacturing industries in 1990 and 1995.

First, the ratio of import tariffs and import sales taxes rose in 16 sectors out of the 24 sectors between 1990 and 1995, with the ratio for the entire manufacturing sector going up by 2.6 points from 4.4% to 7.0%.

The margin of increase was particularly large for food, as well as for the materials sector, which experienced smooth import substitution from 1971 and 1985. For example, food-related sectors showing the higher ratio included processed/preserved food (19.6 points), beverages (10.5 points), other food products (4.6 points), flour/flour products (3.9 points), and sugar/sugar products (1.2 points). Raw materials sectors that saw the ratio rise were refined petroleum (5.9 points),

Table 8 . Structural Change in Manufacturing Industries from 1990 to 1995

	Composition (%)						Import Ratio		Export Ratio		Import-related Tax (%)		Dependence on Import (%)	
	Value-added		Import		Export		(%)		(%)					
	1990	1995	1990	1995	1990	1995	1990	1995	1990	1995	1990	1995	1990	1995
Processed/Preserved Food	1.4	4.0	0.5	0.9	4.2	3.2	13.6	5.5	47.4	13.9	4.4	24.0	4.7	3.1
Oil/Fat	2.9	2.8	0.3	0.7	2.5	3.3	5.1	8.0	25.3	22.5	4.1	1.7	0.5	0.2
Milled Rice	3.5	3.3	0.1	1.2	0.0	0.0	0.2	3.9	0.02	0.01	0.0	0.0	0.3	0.2
Flour/Flour Products	2.4	3.1	0.8	0.4	0.5	0.4	11.0	3.6	5.1	2.7	0.8	4.7	22.3	19.2
Sugar/Sugar Products	2.0	3.5	0.6	0.6	0.2	0.1	11.2	6.0	2.8	0.7	0.2	1.4	0.5	0.8
Other Food Products	5.2	6.3	0.9	0.8	2.7	1.9	7.3	3.6	15.4	6.1	1.8	6.4	11.6	3.9
Beverages	0.6	0.9	0.1	0.2	0.2	0.0	7.9	6.7	11.0	1.2	3.0	13.5	1.9	5.0
Cigarettes	9.4	8.2	0.0	0.4	0.4	0.4	0.1	2.0	1.57	1.56	4.0	7.7	9.9	12.9
Yarn Spun	3.3	3.6	3.5	2.9	0.7	2.5	31.2	22.8	6.5	15.6	3.0	1.8	60.6	40.8
Textiles/Apparel/Leather	7.7	8.8	3.1	3.6	17.7	20.8	16.6	14.9	45.8	42.9	15.2	3.2	19.4	18.0
Bamboo/Wood/Rattan Products	9.8	6.2	0.1	0.1	18.4	15.4	1.0	1.1	58.0	46.1	3.6	14.2	3.4	4.2
Paper/Paper Products/Cardboard	3.8	4.6	1.9	2.3	1.2	3.9	15.4	14.9	7.7	18.3	17.7	7.0	19.7	21.0
Fertilizer/Pesticide	1.6	1.2	0.6	0.4	1.3	0.9	11.0	7.6	16.2	12.3	2.1	5.7	45.3	58.1
Chemicals	4.4	6.2	17.0	15.8	2.2	4.3	56.0	41.7	11.3	13.2	3.6	8.4	40.2	37.2
Refined Petroleum	17.4	9.0	3.6	4.0	31.8	15.6	12.4	19.4	47.5	41.6	2.4	8.3	18.9	22.7
Rubber/Plastic Wares	3.1	5.2	1.2	1.2	6.9	8.2	13.9	6.5	39.9	25.7	7.3	13.4	33.5	21.4
Non-metallic Mineral Products	1.8	2.1	2.4	1.1	0.8	1.0	38.0	16.0	13.1	11.3	8.7	10.5	19.9	9.5
Cement	0.77	0.78	0.0	0.3	0.4	0.0	0.3	8.8	11.2	0.5	2.3	5.2	3.8	7.2
Basic Iron/Steel	3.2	3.4	4.7	4.9	1.2	0.9	36.5	33.5	9.9	6.9	8.9	6.6	26.0	28.4
Non-ferrous Basic Metal	1.4	1.0	1.9	2.5	3.3	3.1	43.2	51.0	49.1	50.5	2.6	6.0	38.5	24.1
Fabricated Metal Products	2.5	2.2	4.7	3.2	0.6	1.5	33.2	30.4	5.8	13.5	36.5	10.2	29.3	37.9
Machine/Electrical Machinery/Apparatus	5.9	6.1	36.4	36.2	1.3	8.8	64.3	62.7	4.7	24.7	4.4	5.0	66.6	51.4
Transport Equipment	5.3	6.3	12.8	12.5	0.8	1.6	42.9	36.7	3.6	5.6	11.2	10.1	49.2	50.9
Other Manufactured Products	0.6	1.3	2.7	3.9	0.8	2.3	66.3	52.1	41.6	37.7	20.1	21.9	25.4	24.1
Total Manufacturing Industries	100.0	100.0	100.0	100.0	100.0	100.0	28.5	24.4	23.2	19.8	4.4	7.0	8.6	7.0

(1) The import ratio is obtained by dividing imports of goods by domestic demand (intermediate demand + private consumption + government consumption + inventory change).

(2) The export ratio is obtained by dividing exports of goods by total production.

(3) The ratio of import tariffs and import sales taxes is obtained by dividing the combined total of import tariffs and import sales taxes by the value of imports of goods.

(Source) As same as Table 1.

fertilizers/pesticide (3.6 points), non-ferrous basic metal (3.4 points), and cement (2.9 points), all of which were the sectors where state enterprises led the drive toward increased production between 1971 and 1985. Chemical products (4.8 points), rubber/plastic wares (6.1 points) and some other sectors that showed the results of import substitution at last in 1990 can also be included among raw material sectors. Of them, the ratio increase for chemical products apparently reflected the tariff protection

policy favoring the Chandra Asri Petrochemical Center.

The noteworthy development was that of the seven sectors where the ratio of import tariffs and import sales taxes was raised from 1985 to 1990, the four sectors saw their ratio decline from 1990 to 1995. This suggests the selective protection policies introduced since 1985 proved to be short-term and timed. Specifically, the marked decline was registered by fabricated metal products (26.3 points), which saw the ratio shoot up by 29.4 points from 1985 to 1990, and paper/paper products/cardboard (10.7 points), whose ratio rose 9.1 points in the earlier period. Also, the ratio declined 1.1 points for transport equipment after the rise of 5.8 points from 1985 to 1990, and fell 2.3 points for basic iron/steel after the increase of 4.4 points in the earlier period. Despite the declines in the ratio of import tariffs and import sales taxes, these sectors lowered their import ratio from 1990 to 1995.

Tariff hikes and other protection measures for materials industries could help undermine the competitiveness of downstream sectors that use these materials for intermediate input. Conversely, the ratio drop for the paper/paper products/cardboard sector, which provides cement and other downstream sectors with packing materials, is of note as a timed protection measure. Of the sectors getting intermediate input from the paper/paper products/cardboard sector, the export ratio of the paper/paper products/cardboard sector itself showed a two-digit growth between 1990 and 1995, indicating the positive effect of the ratio decline in advancing the sector's extent of export orientation. Similarly, the ratio fell 12.0 points for textiles/apparel/leather and 1.2 points for yarn spun, showing the government's consideration for export competitiveness in its policy toward these two sectors regarding the ratio of import tariffs and import sales taxes. As reviewed above, the government's policy regarding the ratio of import tariffs and import sales taxes during the 1990-1995 period was designed to raise the ratio extensively, but paid heed to not to hamper the export competitiveness of some sectors, including an impact on downstream sectors.

(2) Rise in Ratio of Import Tariffs/Import Sales Taxes and Import Ratio Drop

As previously stated, apparently responding to the rises in the ratio of import

tariffs and import sales taxes in the 16 sectors out of the 24 manufacturing sectors, the import ratio fell from 1990 to 1995 for 17 sectors out of the 24 sectors. The import ratio for manufactured goods as a whole also decreased from 28.5% to 24.4%. This indicates that import substitution, which decelerated and retreated from 1985 to 1990, was regaining momentum from 1990 and 1995.

Table 9 classifies the manufacturing sectors by the rise/fall of the ratio of import tariffs and import sales taxes and the rise/fall of the import ratio between 1990 and 1995. The table shows an overwhelming 11 sectors, or nearly half of the total, lowered the import ratio with the higher ratio of import tariffs and import sales taxes.

Of particular interest, as many as five food-related sectors showed the lower import ratio with the higher ratio of import tariffs and import sales taxes: processed/preserved food (a drop of 8.1 points in the import ratio); flour/flour products (7.4 points); sugar/sugar products (5.2 points); other food products (3.7 points); and beverages (1.2 points). On the other hand, the import ratio increased for oil and fat (2.9 points) and milled rice (3.7 points), both of which had the lower ratio of import tariffs and import sales taxes, indicating the rise/fall of the tax ratio clearly affected the progress in import substitution. Among raw materials sectors, the import ratio dropped for non-metallic mineral products (22.0 points), chemical products (14.3 points), rubber/plastic wares 7.4 points), and fertilizers/pesticide (3.4 points), showing the

Table 9. Relation between Rise/Falls of Import Tariff/Sales Tax and Import Ratio

		Import Tariff and Import Sales Tax	
		UP	DOWN
I M P O R T R A W M A T E R I A L S	U P	Cigarettes, Bamboo/Wood/Rattan Products, Refined Petroleum, Cement, Non-ferrous Basic Metal 5 Sectors	Oil/Fat, Milled Rice 2 Sectors
	D O W N	Processed/Preserved Food, Flour/Flour Products, Sugar/Sugar Products, Other Food Products, Beverages, Fertilizer/Pesticide, Chemicals, Rubber/Plastic Wares, Non-metallic Mineral Products, Machine, Electrical Machinery & Apparatus, Other Manufactured Products 11 Sectors	Yarn Spun, Textiles/Apparel/Leather, Paper/Paper Products/Cardboard, Basic Iron/Steel, Fabricated Metal Products, Transport Equipment 6 Sectors

(Source) classified based on Table 8.

recognizable impact of the higher tax ratio. However, despite rises in the ratio of import tariffs and import sales taxes, the import ratio also climbed by the margin of more than 5 points for cement (8.5 points), non-ferrous basic metal (7.8 points) and refined petroleum (7.0 points), with no noticeable effects of the protection policy.

On the other hand, some sectors demonstrated the progress in import substitution despite the downtrend of the ratio of import tariffs and import sales taxes, including yarn spun (a fall of 8.4 points in the import ratio), transport equipment (6.2 points), fabricated metal products (2.8 points), and paper/paper products/cardboard (0.5 point). No comparison is available to provide definitive data for yarn spun, because the sector was out of the scope of analysis in the preceding five-year period. But the remaining three sectors had the higher tax ratio from 1985 to 1990 but the lower tax ratio from 1990 to 1995. It is interesting to confirm a measure of success achieved by the short-term and timed protection measures.

As for the import composition ratio, no sectors registered the composition changes of over 2 points from 1990 to 1995, attesting to little change in the overall structure of imports of manufactured products. Meanwhile, the import composition ratio of machine/electrical machinery/apparatus, a good indicator of progress in industrialization, stood at 36.2% in 1995, with a slight fall of 2 points from 1990, pointing to the continuing progress of industrialization in Indonesia.

(3) Results of Import Substitution Measured by Intermediate Input Import Dependence

The import dependence of intermediate input declined for 13 sectors out of the 24 sectors, by and large confirming the results of import substitution. In particular, the two-digit drops were registered by the four sectors of yarn spun (19.8 points), machine/electrical machinery/apparatus (15.2 points), non-ferrous basic metal (14.4 points), and rubber/plastic wares (12.1 points).

The declines in the import dependence for the yarn spun, machine/electrical machinery/apparatus and non-ferrous basic metal stemmed primarily from the drops in the import dependence of intermediate transactions within their own sectors. But the

import dependence drop for the rubber/plastic wares came chiefly from the fall in the import dependence of input from chemical products. The import dependence of input from chemical products rose for yarn spun, but declined for machine/electrical machinery/apparatus and non-ferrous basic metal, providing a general indication that during this period, import substitution in chemical products was conducive to import substitution of intermediate input in downstream sectors²⁰. However, some critics point out that to the extent of the rise in the protective tariffs on chemical products, downstream sectors that purchase import-substituted chemical products lost their competitiveness.

3. Retreat of Export Orientation Observed in Many Sectors

Apparently reflecting the rising real exchange rate of the rupiah and growing domestic demand amid the economic expansion, only seven sectors out of the total of 24 increased the export ratio in the period between 1990 and 1995, with the export ratio of manufactured goods as a whole actually slipping 3.4 points from 23.2 % to 19.8% during the same period. This development came in stark contrast with the period from 1985 to 1990, when the export ratio climbed for almost all sectors.

The falls in the export ratio were particularly noticeable among food and materials industries. Specifically, almost all food-related sectors showed the declines, including processed/preserved food (33.5 points), beverages (9.8 points), other food products (9.3 points), oil and fat (2.8 points), flour/flour products (2.4 points), and sugar/sugar products (2.1 points). This appears to have mirrored suppliers' rapid shift of attention to the domestic market to meet robust domestic demand amid the rising real exchange rate in the food sector, where the shift between the domestic and export market is relatively easy compared with most other sectors. In addition, except for all food-related sectors other than oil and fat made headway in import substitution during the period under review, partly due to the higher ratio of import tariffs and import sales

²⁰ Details so far in this paragraph are shown in Table A-4 in Appendix.

taxes. Thus, there also is a possibility that the protection of upstream industries, including their own and other sectors, undermined the export competitiveness of these sectors.

As for sectors that appear to handle mostly industrial materials and intermediate goods, the export ratio declined for rubber/plastic wares (14.2 points), cement (10.7 points), refined petroleum (5.9 points), fertilizers/pesticide (3.9 points), basic iron/steel (3.0 points), and non-ferrous basic metal (1.8 points). Also, all these sectors other than basic iron/steel had the higher ratio of import tariffs and import sales taxes. As with food-related sectors, the drops in the export ratio for these sectors may have been caused, on top of strong domestic demand, by the protection of upstream industries, including their own and other sectors, that perhaps negatively affected their export competitiveness.

Meanwhile, the export ratio for bamboo/wood/rattan products, which had steadily risen from 1971 to 1990, fell back by the two-digit margin of 11.9 points. Behind the export ratio decline for the sector since 1990 were depleting natural forests that provide material for plywood as well as the global trend toward tighter control over natural forest resources, as seen by the adoption of the "Guidelines for Sustainable Management of Rain Forests" by the International Tropical Timber Organization (ITTO). Another conceivable factor is the growing shift of global demand from plywood to high-value added products such as particle boards (Aratani [1998:166-184]).

Among other sectors that had the lower export ratio are rubber/plastic wares (14.2 points) and textiles/apparel/leather (2.9 points). But the two sectors saw the export composition ratio rise by 1.3 points and 3.1 points, respectively. Taken together, these changes suggest that the two sectors' export ratio fell because of the greater growth of domestic demand and that the export orientation trend still remained strong for these sectors.

The relatively small number of the seven sectors, out of the total of 24 sectors, which showed the rises in the export ratio, are machine/electrical machinery/apparatus (20.0 points), paper/paper products/cardboard (10.6 points), yarn spun (9.1 points),

fabricated metal products (7.7 points), transport equipment (2.0 points), chemical products (1.9 points), and non-ferrous basic metal (1.4 points). The export composition ratio increased for six sectors of them, with the exception being non-ferrous basic metal, whose export composition ratio fell. The above six sectors plus rubber/plastic wares and textiles/apparel/leather were the sectors that made the genuine progress in export-oriented industrialization during the period under review in that these eight sectors managed to move ahead toward export orientation in the face of the rising real exchange rate and expanding domestic market. In particular, the industrialization of the machine/electrical machinery/apparatus , transport equipment and chemical products sectors, which previously had difficulty pushing ahead with industrialization, was paced mainly by foreign companies following the liberalization of foreign direct investment in 1994.

4. Changes in Industrial Structure That Reflect Import Substitution

Table 10 classifies manufacturing sectors by the rise/fall in the import ratio and the rise/fall in the value added composition ratio between 1990 and 1995. Of the 17 sectors that lowered the import ratio, 15 sectors saw the valued added composition ratio increase. On the other hand, of the seven sectors that increased the import ratio, six sectors reduced the value added composition ratio. Thus, the rise/fall of the import ratio and the rise/fall of the value added composition ratio are recognized to have the inverse relationship, indicating that import substitution during this period was an important determinant for the changes in the industrial structure.

In terms of the size of the increase in the value added composition ratio, the number of sectors with the rise of one point or more is only six: processed/preserved food (2.6 points); rubber/plastic wares (2.1 points); chemical products (1.8 points); sugar/sugar products (1.5 points); textiles/apparel/leather (1.1 points); and other food products (1.1 points). While the value added composition ratio rose for the 17 sectors, the extent of the increases was relatively limited. On the other hand, the value added composition ratio fell significantly for the two sectors of refined petroleum (8.4 points)

composition ratio fell, the six sectors showed the drop in the export ratio, demonstrating, as assumed, the relationship where the decrease in the export ratio brings the fall in the value added composition ratio.

However, given the intensity of the inverse relationship between the rise/fall in the import ratio and the rise/fall in the value added composition ratio, the link between the export ratio and the value added composition ratio during the period under review is not powerful enough to provide any convincing explanation for the changes in the industrial structure.

Still, it is interesting to note that of the seven sectors that saw the export ratio increase, five sectors also registered the expansion of the value added composition ratio. The five sectors are chemical products, transport equipment, paper/paper products/cardboard, machine/electrical machinery/apparatus, and yarn spun. In addition, textiles/apparel/leather and rubber/plastic wares, which lowered the export ratio but raised the export composition ratio during the five-year period, increased the value added composition ratio. In the face of the adverse environment stemming from the rise in the real exchange rate and expanding domestic demand, these seven sectors managed to achieve export-led growth in the period under review.

6. Changes in Industrial Structure through Economic Crisis (1995-1999)

1. Economic Crisis That Followed the Economic Boom

The economic boom, triggered by the drastic easing of restrictions on foreign capital in 1994, extended to benefit a broad range of manufacturing sectors before it was snapped amid the Asian currency crisis that originated in Thailand in July 1997. However, the plunge in the value of Indonesia's currency, the rupiah, caused import inflation and raised costs of operations mainly for companies with the heavy import dependence for raw materials and intermediate goods. These companies responded to the crisis not only by passing higher costs on to prices of their products but also by dismissing redundant workers and temporarily suspending production, gradually deteriorating

employment circumstance. The combination of inflation and job insecurity led to the decline in real income, which in turn resulted in the stagnation of personal consumption that caused a contraction of domestic demand (Ishida [1998:70]). On the other hand, some light industries, including processors of primary products, with the lower import dependence for intermediate goods and easy access to abundant domestic natural resources as well as cheap labor, expanded exports thanks to the stronger international competitiveness brought about by the rupiah's depreciation (Ishida: [1999:108]).

A great portion of funds for investment that expanded amid the business boom from 1994 came in borrowings from foreign financial institutions. Foreign banks for their part regarded Indonesia as one of the emerging markets in Asia, and invested in Indonesian companies by way of securities investment and short-term loans. Once they sensed the brewing uncertainty in the Indonesian economy as a whole, however, they first withdrew securities investment and other short-term funds by exchanging rupiah holdings into dollars, sending the Indonesian currency into a tailspin. Moreover, when short-term borrowings of Indonesian companies expired, foreign lenders refused to roll them over, forcing Indonesian borrowers to purchase dollars to procure repayment funds, further intensifying the downward pressure on the rupiah. The falling rupiah also caused the rupiah-quoted amounts of dollar-quoted borrowings to expand, a mechanism that led to the sharp rise in the private sector's foreign debts (Ishida [1998:72-73]).

Indonesian companies that slipped into financial difficulties in this way became increasingly unable to repay loans to domestic banks, debilitating Indonesia's banking sector with heaves of non-performing loans. The government tried to reorganize the banking sector by shutting down or nationalizing loss-carrying private-sector banks, transferring non-performing loans to the Indonesian Bank Restructuring Agency (IBRA), and infusing capital into operating banks (Sato [2001:325]). In exchange, the government required banks to develop stringent goals to restore their health, including the capital adequacy ratio (CAR), in order to satisfy the conditions spelled out by the International Monetary Fund (IMF) for receiving its

financial support. This prevented Indonesia's banking sector from aggressively lending to domestic firms, and many banks are purchasing central bank certificates (SBI) instead. Thus, domestic banks still remain in a situation where they are not fully capable of performing the financial intermediation function.

Indonesia's input-output table for 2000 has yet to be released, with the latest table available being that for 1995. The 2000 table should be instrumental in examining the structural changes in manufacturing industries that are believed to have taken place around the economic crisis. However, it may as well be more appropriate to use annual large and medium manufacturing statistics in order to examine the volatile process of the economic boom after 1995, the economic crisis and the ensuing recovery. This section attempts to examine the continual structural changes in Indonesia's manufacturing industries by converting industrial codes of the large and medium manufacturing statistics into codes of the input-output table. The large and medium manufacturing statistics is compiled by the Central Agency of Statistics on the basis of questionnaire surveys covering all companies in the industrial sector with a workforce of at least 20²¹. The analysis looks at the value added composition ratio and the growth of value added itself in real terms²².

²¹ But the industrial statistics of large and medium companies do not cover small businesses, and also incorporates survey results for industries with two or more products and for companies straddling two or more sectors into a single industry code. So, when these industry codes are converted into codes of the input-output table, differences would inevitably emerge from the input-output table concerning a variety of indicators such as the industrial structure even for data for the same year. The sector of refined petroleum in the industrial statistics of large and medium companies does not cover state oil firm Pertamina, the sector's composition ratio is remarkably small in comparison with that in the input-output table. Therefore, the analysis in this section intentionally avoids reference to the sector of refined petroleum.

²² While paying heed to both the codes of the input-output table and *KLUI (Klasifikasi Lapangan Usaha Indonesia)* codes of the industrial statistics of large and medium companies, the real value added is obtained by multiplying real value by respective wholesale price indexes for manufactured products as released in the monthly report of the Central Statistical Office (*Indikator Ekonomi*). The relationships among the codes of the input-output table, *KLUI* codes and the price index are shown in Table A-5 in Appendix.

It is possible to calculate the export ratio, but the industrial statistics of large and medium

2. From High Economic Growth to the Economic Crisis

Table 12 shows the value added composition ratio and the real growth rate of value added from 1995 to 1999 on the basis of data provided by the annual large and medium manufacturing statistics. In the year from 1995 to 1996, a total of 20 sectors posted the growth of value added, with the combined value added for the manufacturing sector also showing an increase of 21.8%. The four sectors where value added in real terms contracted are milled rice (20.4%), fertilizers/pesticide (12.0%), cigarettes (12.0%), and yarn spun (0.1%). In particular, the remarkable growth of value added was seen for heavy industry sectors, led by basic iron/steel (87.4%), machine/electrical machinery/apparatus (53.0%), non-metallic mineral products (44.5%), chemical products (42.1%), fabricated metal products (39.9%), and non-ferrous basic metal (25.5%). The two-digit increase in real value added was also posted by such light industry sectors as flour/flour products (40.6%), paper/paper products/cardboard (26.3%), textiles/apparel/leather (23.2%), and oil and fat (17.5%), attesting to the broad-based high growth during this period. At the same time, the increase in the value added composition ratio was recognized for all of the above-cited sectors other than oil and fat and non-ferrous basic metal, and other manufacturing products (24.7%). Meanwhile, in the period from 1996 to 1997, the number of sectors with the growing value added in real terms decreased to 17 sectors from the 24 sectors in the preceding period, but a majority of the sectors subject to the analysis still registered the growth of value added. But the growth of combined value added for the manufacturing sector all together sharply decelerated to 0.5% from the previous year's 21.8%. Noteworthy was the declining growth for some of heavy industry sectors that showed the remarkable

companies in 1998 had too many blank columns for exports. A possibility cannot be entirely ruled out of some industries actually having no exports, while a possibility cannot be totally excluded of data on the value of exports being simply unavailable. So, the export ratio and the export composition ratio are not shown here. Meanwhile, the industrial statistics of large and medium companies do not provide data necessary for the calculation of the import ratio or the import composition ratio.

Table 12 . Composition of Value-added and its Growth Before and After the Economic Crisis

	Share of Value-added (%)					(Changes)		Growth of Real Value Added (%)			
	1995	1996	1997	1998	1999	1997	1995	1995	1996	1997	1998
						~ 1998	~ 1999	~ 1996	~ 1997	~ 1998	~ 1999
Processed/Preserved Food	1.5	1.5	1.7	2.6	2.6	0.9	1.1	12.8	3.0	47.4	-10.8
Oil/Fat	2.3	2.2	3.6	3.2	3.2	-0.3	1.0	17.5	51.8	-20.0	19.8
Milled Rice	0.1	0.1	0.1	0.1	0.1	0.0	0.0	-20.4	23.5	-7.4	-30.2
Flour/Flour Products	1.4	1.6	2.3	2.6	1.4	0.4	0.0	40.6	37.2	-5.9	-50.6
Sugar/Sugar Products	1.1	1.0	0.9	0.9	1.0	0.0	-0.2	7.3	-1.3	-7.8	20.2
Other Food Products	2.5	2.1	3.1	3.7	3.6	0.6	1.1	3.7	61.6	7.3	-4.9
Beverages	1.1	1.0	1.0	0.5	0.7	-0.5	-0.4	8.1	-2.6	-44.5	52.4
Cigarettes	12.3	9.5	9.8	9.3	11.3	-0.5	-1.0	-12.0	5.8	-4.9	8.4
Yarn Spun	5.1	4.2	3.0	4.2	4.0	1.2	-1.1	-0.1	-30.0	31.0	-3.4
Textiles/Apparel/Leather	12.8	12.9	13.6	15.5	14.5	1.8	1.7	23.2	3.6	11.7	-7.7
Bamboo/Wood/Rattan Products	8.2	7.3	7.5	9.1	7.7	1.6	-0.5	5.8	1.7	20.3	-13.2
Paper/Paper Products/Cardboard	4.8	5.2	5.6	6.5	6.3	0.9	1.5	26.3	7.2	15.4	-0.1
Fertilizer/Pesticide	2.3	1.7	1.9	1.6	1.2	-0.3	-1.0	-12.0	3.0	-8.0	-37.5
Chemicals	6.3	7.3	8.0	9.3	9.8	1.3	3.4	42.1	25.5	13.6	11.9
Refined Petroleum	0.1	0.2	0.5	0.2	0.1	-0.3	0.0	77.1	194.6	-57.2	-10.6
Rubber/Plastic Wares	4.4	3.8	3.9	3.7	5.0	-0.2	0.6	10.4	13.3	-10.2	56.0
Non-metallic Mineral Products	2.3	2.8	2.6	2.3	2.0	-0.3	-0.3	44.5	-7.6	1.1	-11.9
Cement	1.3	1.2	1.8	0.9	1.1	-0.9	-0.2	6.2	46.3	-45.2	32.0
Basic Iron/Steel	6.3	9.3	4.5	2.6	2.1	-1.9	-4.2	87.4	-55.5	-46.5	-12.5
Non-ferrous Basic Metal	1.2	1.2	1.1	1.1	1.1	0.0	-0.1	25.5	-13.1	-52.6	53.4
Fabricated Metal Products	3.7	4.2	3.5	3.3	3.6	-0.3	-0.2	39.9	-12.1	2.8	9.4
Machine/Electrical Machinery/Apparatus	7.1	8.7	8.6	7.7	8.0	-0.9	0.9	53.0	1.6	-18.7	-2.1
Transport Equipment	10.8	10.0	10.2	7.8	8.2	-2.4	-2.6	13.5	10.8	-30.2	16.6
Other Manufactured Products	1.0	1.0	1.3	1.5	1.4	0.2	0.4	24.7	3.9	30.8	5.0
Total Manufacturing Industries	100.0	100.0	100.0	100.0	100.0			21.8	0.5	-3.9	1.7

(1) The data of value added is the summarized from large and medium manufacturing statistics into input output codes in accordance with BPS[1995].

(2) The values of the refined petroleum sector dose not include those refined by the state owned oil firm (Pertamina).

(3) Value added are transformed into real terms by being multiplied by the wholesale price indices of manufacturing industries.

(Source) processed in accordance with the data of Central Agency of Statistics (BPS).

increase in the period between 1995 and 1996, while food-related sectors showed the noticeable growth. Heavy industry sectors with the fall in real value added included basic iron/steel (55.5%), non-ferrous basic metal (13.1%), and fabricated metal products (12.1%). On the other hand, among food-related sectors with the growth of value added are other food products (61.6%), oil and fat (51.8%), flour/flour products

(37.2%), milled rice (23.5%), and processed/preserved food (3.0%), with only two food-related sectors, beverages (2.6%) and sugar/sugar products (1.3%), registering the declines. Among the sectors with the higher value added, the growth for processed/preserved food, oil and fat and other food products is likely to have stemmed from the export drive, with the rising rupiah-based sales prices for exported manufactured goods due to the weaker rupiah. In particular, the export drive for palm oil resulted in a shortfall in the supply to the domestic market. The situation turned serious when cooking oil disappeared from the shelves of supermarkets and traditional markets between January and February 1998 (Ishida [1998:71-72]).

3. Situation under the Economic Crisis

In 1998, domestic demand contracted, as previously pointed out, while increases in exports were registered mainly by industries with the low import dependence for intermediate goods, including sectors that process primary products. But only 10 sectors managed to increase real value added over 1997. The combined real value added for manufactured goods as a whole declined 3.9%, showing the bigger impact of the fall-off in domestic demand.

The impact of the decline in domestic demand became noticeable in heavy industry sectors, where production fell in 1997, as well as sectors for articles of taste. In the former group, real value added dropped in non-ferrous basic metal (52.6%), basic iron/steel (46.5%), cement (45.2%), transport equipment (30.2%), and machine/electrical machinery/apparatus (18.7%), while beverages (44.5%), granulated sugar and other sugar/sugar products (7.8%), and cigarettes (4.9%) represent the latter. The sharp 20.0% drop seen by oil and fat may be traced to the government's policy to curb exports as a means of eliminating the domestic supply shortage ascribable to the export drive.

Meanwhile, real value added rose 47.4% for processed/preserved food, including frozen shrimps, and 7.3% for other food products, including coffee beans and tea, with these two primary products processing sectors apparently taking advantage of

the strengthened export competitiveness in the wake of the rupiah's decline. The relatively high growth was also registered by labor-intensive yarn spun (31.0%) and textiles/apparel/leather (11.7%), as well as natural resources-based sectors such as bamboo/wood/rattan products (20.3%) and paper/paper products/cardboard (15.4%). Among heavy industry sectors, chemical products showed an increase of 13.6%, apparently due to the export drive mounted by the petrochemical sector that began operating in 1995 onward.

The sharp contrast between the growth of light industries that took advantage of cheap labor and domestic natural resources and the retreat of heavy industries due to the high import dependence for intermediate goods becomes even clearer with an examination of the rise/fall in the value added composition ratio from 1997 to 1998. First, the overall manufacturing sector is divided into light industry sectors covering from processed/preserved food to paper/paper products/cardboard, and into heavy industry sectors from fertilizers/pesticide to transport equipment. Among light industry sectors, only three sectors reduced the value added composition ratio: oil and fat on which the export tax was imposed, and beverages and cigarettes regarded as articles of taste. Nine other sectors saw the value added composition ratio increase. On the other hand, only the two sectors of chemical products and non-ferrous basic metal raised the value added composition ratio among heavy industry sectors, with nine other sectors posting the drop in the value added composition ratio. Thus, light industry sectors and heavy industry sectors are clearly different in terms of how they were affected by the economic crisis.

4. Process of Recovery from the Economic Crisis

If Indonesia was at the trough of the economic crisis in 1998, the period from 1998 to 1999 can be called the process of recovery. The number of sectors that showed the positive growth of real value added increased to 11, though by just one from 1998, and the combined real value added of manufactured goods as a whole also got back to the positive growth, with a rise of 1.7%.

The growth of real value added from 1998 to 1999 had characteristics that are quite a contrast to the situation in 1998. First, sectors that showed an uptrend in 1998 began to show a downtrend, while sectors that showed a downtrend in 1998 followed an upward path. The number of sectors that switched between negative and positive territory came to 15, out of a total of 24 sectors.

Specifically, processed/preserved food, other food products, bamboo/wood/rattan products and paper/paper products/cardboard, all of which are primary products processing sectors that showed the increase in real total value in 1998, turned down with the negative growth of 10.8%, 4.9%, 13.2% and 0.1%, respectively. Yarn spun and textiles/apparel/leather, all of which are labor-intensive sectors with access to relatively cheap labor, also turned down with a margin of 3.4% and 7.7%, respectively. Meanwhile, heavy industry sectors that showed the downtrend in 1998 due to the relative high import dependence for intermediate goods, including rubber/plastic wares, cement, non-ferrous basic metal and transport equipment, turned up with the two-digit increase of 56.0%, 32.0%, 53.4% and 16.6%, respectively. Also, beverages, sugar/sugar products and cigarettes, which tend to be treated as articles of taste, gained 52.4%, 20.2% and 8.4%, respectively, in production.

The rupiah fell as low as 16,900 rupiahs to the U.S. dollar in mid-1998, immediately after the resignation of President Soeharto, but got back on a path of recovery by the fourth quarter of 1998, and rose to 6,500 to 10,000 rupiahs in 1999. The above-described developments involving both light and heavy industry sectors are believed to have been caused by a combination of the decline in export competitiveness for sectors that make use of domestic natural resources and the reduced burden on sectors that heavily depend on imports for intermediate goods.

5. Changes in Industrial Structure Straddling the Economic Crisis

As we reviewed above, the economic crisis brought about the change in Indonesia's industrial structure where the value added composition ratio for heavy industry sectors declined temporarily while the ratio went up for light industry sectors. However, in the

process of recovery from the economic crisis, the country's manufacturing sectors behaved as if they were going back to the pre-crisis situation. The year 1999 was still at the very early stage of Indonesia's recovery from the economic crisis, and it would be a reasonable proposition that an analysis of the period should wait until more information and data become available for that particular period. In the meantime, however, an examination of changes in the value added composition ratio between 1995 and 1999 might suggest something.

According to Krugman, while industrial development involves the principle of comparative advantage including factor endowment, it also displays the path dependence indicating an industry develops itself by following a path similar to those followed by preceding industries (Krugman [1994: 254-270]). So, Table 13 was prepared to compare the rise/fall in the value added composition ratio from 1990 to 1995 and with the rise/fall in the ratio between 1995 and 1999. The first thing the comparison brings out is that the manufacturing sectors that raised the value added composition ratio in 1995-1999 also had displayed the increases in the ratio in 1990-1995 except for one sector. This alone suggests the path dependence was at work between these two periods.

A detailed examination of the table reveals that some food-related sectors, including processed/preserved food and other food products, which realized import

Table 13. Rise/Fall in Value Added Composition Ratio between 1990-95 and 1995-99

		CHANGE IN 1990 -95	
		UP	DOWN
C H A N G E I N 1995 1999	U P	Processed/Preserved Food, Flour/Flour Products, Other Food Products, Textiles/Apparel/Leather, Paper/Paper Products/Cardboard, Chemicals, Rubber/Plastic Wares, Cement, Machine, Electrical Machinery & Apparatus, Other Manufactured Products 10 Sectors	Oil/Fat 1 Sector
	D O W N	Sugar/Sugar Products, Beverages, Yarn Spun, Non-metallic Mineral Products, Basic Iron/Steel, Transport Equipment 6 Sectors	Milled Rice, Cigarettes, Bamboo/Wood/Rattan Products, Fertilizer/Pesticide, Non-ferrous Basic Metal, Fabricated Metal Products 6 Sectors

(1) Except Refined Petroleum.

(Source) classified based on Table 8 and Table 12.

substitution from 1990 to 1995, increased the value added composition ratio. These sectors presumably continued to increase production during the period of the economic crisis on the strength of booming exports. Conversely, in the same category of food-related sectors, beverages and sugar/sugar products decreased the value added composition ratio during the economic crisis, apparently because of their relatively strong features as articles of taste as well as the low export ratio of less than 2% in 1995.

Meanwhile, paper/paper products/cardboard and chemical products, which increased the export ratio and the value added composition ratio from 1990 to 1995, and textiles/apparel/leather and rubber/plastic wares, which raised the export composition ratio and the value added composition ratio in the same period, boosted production in the midst of or after the economic crisis and consequently raised the value added composition ratio. On the other hand, transport equipment and yarn spun, which increased both the export ratio and the value added composition ratio from 1990 to 1995, saw the value added composition ratio decline in the period from 1995 to 1999. Machine/electrical machinery/apparatus, meanwhile, did raise the value added composition ratio but the sector's real value added actually fell from 1997 to 1999. The import dependence of these three sectors in 1995 was quite high, at 50.9% for transport equipment, 40.8% for yarn spun, and 51.4% for machine/electrical machinery/apparatus. So, even among the sectors that expanded exports and the value added composition ratio in the period from 1990 to 1995 when the real exchange rate of the rupiah rose and domestic demand increased, whether they successfully weathered the economic crisis appears to have been decided by the degree of their import dependence for intermediate goods in 1995.

On the other hand, the import dependence in 1995 was indeed low for textiles/apparel/leather at 18.0%, for paper/paper products/cardboard at 21.0%, and for rubber/plastic wares at 21.4%, compared with the previously cited three manufacturing sectors. However, chemical products' import dependence in 1995 stood at 37.2%, a level that cannot be considered as low, raising the question why then the sector was able to expand production around the economic crisis. In the case of chemical products,

production may have been lifted by the successive startup of large-scale petrochemical projects around 1995. Since massive investment was made into these projects, with some costing more than one billion dollars apiece, it is possible that operators of these projects had no choice but to continue production and mount the export drive in order to recover massive investments. Besides, several foreign companies had no small stakes in the petrochemical projects, making it more likely that their parent companies were more than willing to help them raise production.

The patterns described above are also applicable to those sectors that saw the value added composition ratio decline in both periods of 1990 to 1995 and 1995 to 1999. Cigarettes are in the category of articles of taste, while fertilizers/pesticide, fabricated metal products and non-ferrous basic metal had the relatively high import dependence of 58.1%, 37.9% and 24.1%, respectively in 1995. Thus, it is clear that the sectors that lowered the value added composition ratio from 1995 to 1999 are either those in the category of articles of taste or those with the high import dependence for intermediate goods. It is highly likely that those sectors were not able to sustain expanded production because of the rise in costs caused by the depreciation of the rupiah.

7. Summary and Prospects

1. Summary

The salient points of the results of the analysis made in Section 2 through Section 6 can be summarized as follows:

- (1) The ratio of manufactured goods to total imports stayed high at between some 70% and 90% throughout the whole period from 1971 to 1995, but was on the downward trend over the medium and long term due to progress in import substitution. On the other hand, manufactured goods accounted for only around 10% of the total value added and total exports in 1971, but their share began to

increase around 1985 when the oil boom came to an end, and by 1995 expanded to account for some 25% in terms of the valued added composition ratio and over 50% in terms of the export composition ratio.

- (2) During the period from 1971 to 1985, many manufacturing sectors registered the two-digit declines in the import ratio, validating the close relationship between the considerable progress in import substitution and the changes in Indonesia's industrial structure. In particular, the noticeable progress in import substitution was observed in sectors where state-run enterprises aggressively established new production facilities such as fertilizers/pesticide, cement, basic iron/steel, non-ferrous basic metal and refined petroleum, private-sector-led sectors such as yarn spun and machine/electrical machinery/apparatus, and sectors like milled rice supported by the government's program for self-sufficiency in rice.
- (3) During the same period from 1971 to 1985, the analysis in this paper has found, a broader range of sectors than those with progressing import substitution increased the export ratio. But the extent of the advances in the export ratio was not of large scale except for refined petroleum, textiles/apparel/leather and bamboo/wood/rattan products. In addition, textiles/apparel/leather actually decreased the value added composition ratio. What this development suggests is that export orientation during this period was not so extensive as to alter the country's industrial structure.
- (4) During the period from 1985 to 1990, most sectors managed to increase the export ratio, partly under the influence of the devalued rupiah. Textiles/apparel/leather, processed/preserved food, bamboo/wood/rattan products and some other sectors that substantially increased exports also expanded the value added composition ratio significantly. Because most sectors increased the export ratio, the rise/fall in the export ratio was not adopted as a variable to explain the rise/fall in the value added composition ratio. Yet, by examining the extent to which the export ratio was raised, it became clear that export orientation did change the industrial structure. In contrast, the decline in the value added composition ratio was observed in manufacturing sectors that raised the same value added composition

ratio through import substitution in the period from 1971 to 1985, including fertilizers/pesticide, refined petroleum, cement and non-ferrous basic metal.

- (5) Not a few manufacturing sectors saw the pullback or deceleration of import substitution during the period from 1985 to 1990. But import substitution advanced in some materials industries, such as fabricated metal products, paper/paper products/cardboard and basic iron/steel, where the rates of import tariffs and import sales taxes were raised selectively. The tax rates for the three sectors declined in the period from 1990 to 1995, showing that the protective policies in favor of the three sectors were only temporary and timed.
- (6) It was confirmed that during the period from 1990 to 1995, export orientation failed to make much of headway due to the rise in the real exchange rate and the expansion of domestic demand, while import substitution advanced smoothly. Generally, this period, along with the period from 1985 to 1990, has been recognized as the period during which export orientation stepped up. In that sense, this “discovery” was also the fruit of the analysis in this paper. In particular, as the ratio of import tariffs and import sales taxes were raised for food-related sectors, including processed/preserved food and beverages, as well as for some materials sectors, such as chemical products and non-ferrous basic metal, import substitution was accelerated in these sectors, not a few of which also increased the value added composition ratio.
- (7) During the same period from 1990 to 1995, there were few sectors that made progress in export orientation. But yarn spun, paper/paper products/cardboard, chemical products, machine/electrical machinery/apparatus, transport equipment, textiles/apparel/leather, and rubber/plastic wares expanded exports despite the adverse conditions brought about by the rise in the rupiah’s real exchange rate and expansion of domestic demand, proving themselves to be the sectors where genuine export-oriented industrialization advanced.
- (8) Looking at the real growth rate of value added and the rise/fall in the value added composition ratio for the period from 1995 to 1999 during which the economic crisis visited Indonesia, of the above-cited sectors that increased both exports and

the value added composition ratio in the period from 1990 to 1995, those with the relatively high import dependence for intermediate goods failed to increase production around the economic crisis, with the only exception being the sector of chemical products. However, production was increased even amid the economic crisis in sectors that have the relatively low import dependence for intermediate goods and process natural resources, like paper/paper products/cardboard, and in labor-intensive sectors that can make good use of cheap labor, such as textiles/apparel/leather.

- (9) In primary product processing industries with the relatively low import dependence for raw materials, sectors that can make an easy shift of emphasis between the export and domestic markets, such as processed/preserved food and other food products, managed to increase amid the economic crisis, fueled chiefly by exports. Palm oil perhaps would have followed the same pattern if restrictive measures such as export curbs and the export tax had not been invoked. On the other hand, in the same category of food-related sectors, those sectors with the strong feature of articles of taste and the not-so-high export ratio were forced to cut back production amid the economic crisis.
- (10) The analysis of the input-output tables from 1971 to 1995 revealed that while import substitution and export orientation went ahead side by side in the period from 1971 to 1985, either import substitution or export orientation clearly took an upper hand for the period from 1985 to 1990 and the period from 1990 to 1995. Since the second round of import substitution involving raw materials and parts and components is generally said to take place at the expense of export competitiveness in downstream sectors, it is not so hard to understand that the disproportionate weight was given to import substitution while export orientation made little progress during the period from 1990 to 1995. Similarly, it is not so hard to understand that during the period from 1985 to 1990, the disproportionate emphasis was placed on export orientation, with little progress in import substitution because the economic environment then called for the promotion of structural adjustment policies, leaving little room for non-tariff barriers and other

industry protection measures. However, no clear answer has been found to the question why both import substitution and export orientation could go ahead side by side, with the inclusion of materials sectors. This should be left to further research going forward.

2. Outstanding Challenges by Sector

On the basis of the above summary, outstanding challenges are studied below.

As Indonesia shifted to the floating exchange rate system after the Asian currency crisis in 1997, the exchange rate of the rupiah remains unstable even after the economic crisis was all but brought under control in 1998. One important way to know whether an manufacturing sector can achieve sustained growth even in an environment with the unstable rupiah is to examine whether the sector under review was able to expand value added or not amid the economic crisis. The first import task in line with this method is to consider what should be done by manufacturing sectors that could not successfully tide over the economic crisis. Specifically, for such sectors as machine/electrical machinery/apparatus and transport equipment that saw the declines in the value added composition ratio around the economic crisis, it appears important to lower the import dependence for intermediate goods. In that sense, it is deemed necessary to foster supporting industries and seek further import substitution. But such measures need to be implemented within the scope of arrangements under the World Trade Organization (WTO) and the ASEAN Free Trade Area (AFTA). In the sector of paper/paper products/cardboard, protection measures designed for import substitution consequently turned out to be the timed steps, which later helped the gradual progress in both import substitution and export orientation. As demonstrated by this example, it is desirable to design import substitution policies as timed measures applicable for a limited period of time.

Secondly, as sectors for articles of taste, such as beverages and cigarettes, are vulnerable to fluctuations of domestic demand, it is desirable to raise the export ratio to a certain extent so that they can make a shift of emphasis between the domestic and

export markets as necessary in a relatively easy manner. This kind of switchover is being already undertaken relatively easily in such sectors as processed/preserved food, oil and fat and other food products. In exporting what has been supplied to the domestic market previously, however, it is important to seek the greater sophistication of products in terms of quality as well as the degree of processing.

Thirdly, of the sectors that made progress in import substitution from 1971 to 1985, fertilizers/pesticide, cement, refined petroleum, non-ferrous basic metal and basic iron/steel, or the sectors mainly operated by state-owned enterprises, should be privatized. As discussed earlier, import substitution during this period also contributed to lowering the import dependence for intermediate goods of downstream industries. Also, when the financial markets were still in an undeveloped stage, the strategy to step up import substitution in heavy industry sectors through the establishment of new plants or additional facilities by state-owned enterprises cannot be entirely ruled out as a wrong path to follow. However, the value added composition ratio declined in 1985 onward for all these sectors, other than the cement sector that raised the value added composition ratio slightly in 1995 and the basic iron/steel sector that increased the value added composition ratio through import substitution until 1995. Given this, at some appropriate timing after 1985, it appears, these sectors should have been privatized to introduce more efficient management. In the sectors of non-ferrous basic metal and refined petroleum in particular, the import ratio did not decline, although the ratio of import tariffs and import sales taxes were allowed to rise from 1990 to 1995. It is conceivable that behind that development lie the inefficient operations of state-owned enterprises. Privatization of state-owned enterprises is no easy task. In fact, the proposed privatization of Pt Krakatau Steel fell through, and the planned sale of cement maker PT Semen Gresik and its subsidiaries, PT Semen Tonasa and PT Semen Padang, to Cemex of Mexico has also run aground. However, the Indonesian government cannot get by with avoiding the question of the privatization of state-owned enterprises, given the pressing need to revitalize stagnant production activities and rebuilt battered state finances.

Fourthly, measures should be taken to further strengthen the competitiveness

of sectors that could increase the real value added around the economic crisis, such as textile/leather goods, paper/paper products/cardboard, rubber/plastic wares and chemical products, as well as machine/electrical machinery/apparatus that boosted production sharply in 2000 on the strength of exports, and processed/preserved food and other food products. In order to achieve that goal, it is important to reinforce the system that helps these relatively competitive sectors to lower the import dependence for intermediate goods and further expand exports.

3. Prospects for the Future

It has already been four years since the outbreak of the Asian currency crisis. Yet, not a few manufacturing sectors in Indonesia have yet to restore production to the pre-crisis levels. Moreover, there has been a significant deterioration of the business environment in the post-Soeharto era, including, but not limited to, the intensification of labor movements and the successive raising of minimum wages, sort of a by-product of the democratization, the imposition of unfair surcharges on corporations by local governments amid decentralization, security deterioration and power shortages. Coupled with erratic fluctuations of the rupiah's exchange rate, trade and investment risks have definitely increased in comparison with the pre-economic crisis years. Under these circumstances, it is pretty difficult to picture a bright future for Indonesia's manufacturing sectors.

However, the income level of the Indonesian people, that may do down temporarily, should increase over the medium and long term. The country's per-capita gross domestic product (GDP) was some 700 dollars in 2001, showing that wage levels still remain low in Indonesia relative to neighboring Asian countries. At the same time, the current level of per-capita GDP indicates an imminent advent of the era of motorization. The population of over 200 million is one of the advantages Indonesia has over Singapore or Malaysia, which have to export a great proportion of products they make because of a relative small size of their domestic markets. Considering all these factors, the changing structure of demand in Indonesia should not fail to steadily

increase demand for electric appliances, automobiles, motorcycles and the like. In line with that development, demand for chemical products and other products from raw materials sectors are expected to increase. Thus, it is still possible for the manufacturing sector to serve as the engine of Indonesia's economic development.

However, that scenario requires Indonesia to deal with a host of difficult problems. The export drive by China in recent years poses the risk of Indonesian manufactured products being driven out of both domestic and overseas markets. In fact, there are reports that exports of Indonesian textile products to the Middle East are declining in the face of fierce competition from Chinese products. In 2000, though only briefly, Chinese-made motorcycles captured about 25% of Indonesia's domestic market. Wages in major Chinese cities like Beijing and Shanghai are about 1.5 times as high as Indonesian wages (Japan External Trade Organization [2001:54-59]), but China has well-developed supporting industries and appears to have far surpassed Indonesia in productivity²³.

Under these conditions, individual Indonesian companies need to redouble their efforts toward import substitution and export orientation in order to minimize the effects of the unstable rupiah on Indonesia's real economy and industries and also to cope with competition from Chinese products going forward. Thus, it is necessary for manufacturing sectors with the high import dependence for intermediate goods, which were unable to increase production amid the economic crisis, to continue efforts to foster supporting industries and step up import substitution. Indonesia has an abundance of natural resources, from mineral products and logs to palm oil and natural rubber, and in this area, Indonesia does have a comparative advantage over China. Instead of exporting them as natural resources, Indonesia needs to develop products with strong export competitiveness by increasing the degree of processing of these natural resources and adding higher value added.

²³ According to the International Institute for Management Development's April 2001 composite index concerning business efficiency, based on such indicators as productivity, labor market, financial markets, business practices and the impact of internationalization, Indonesia was ranked 48th of 49 countries with the index of 9.84, while China had the index of 23.07 to place in 40th.

In the future, it is necessary for Indonesia to meet domestic demand, which is likely to expand over the medium and long term, with domestic products instead of satisfying rising domestic demand with imported products, and also strengthen export orientation. In order to realize these goals, what Indonesia has to do is to find potentially competitive manufacturing sectors, reduce the import dependence for intermediate goods in downstream sectors, increase the degree of processing in upstream sectors, and strive to strengthen the input-output. It is about time that the Indonesian government should consider a wide array of policies to take in order to boost the input-output.