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EMPLOYMENT VS. PRODUCTIVITY—CHOICE OF A DEVELOPMENT STRATEGY IN SOUTHEAST ASIA

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(1)

"The annual product of the land and labour of any nation can be increased in its value by no other means, but by increasing either the number of its productive labourers or the productive powers of those labourers who had before been employed . . . in consequence either of some addition and improvement to those machines and instruments which facilitate and abridge labour; or if a more proper division and distribution of employment."

ADAM SMITH

("An Inquiry into the Nature and Causes of the Wealth of Nation" New York, Random House, 1937, page 326)

The role of employment and productivity increase in promoting economic development has been recognized from the early days of classical economists. The annual rate of increase in the production of goods and services depends on the annual rate of growth in employment and productivity. One way to increase the output of a firm or the Gross National Product is to hire additional workers, or to increase the number of hours of work. Another way is to raise the productivity of the employee by introducing a new type of machinery, using a superior type of raw materials or educating labourers to improve their industrial skills. One evaluates the cost that is incurred in making these changes in production methods or in hiring additional workers when he decides to increase his output. If he finds that making another investment to increase his output will bring him greater profit than hiring more workers at the existing wage level, he will invest in new capital equipment or vice versa. Thus in an economy where the wage level is relatively low compared to capital cost, increase in output is more likely to be brought about by expansion in employment than by a rise in productivity.

Asian economies in general are characterized by a relatively abundant supply of labor and a shortage of capital. However, the general approach for the realization of industrial expansion and economic growth seems to differ among countries. Some countries seem to stress raising productivity more than solving the problem of unemployment and underemployment. Among the Asian countries that Myrdal[1] cites as having a serious unemployment problem are India, Pakistan, Indonesia and Ceylon. But even in these countries, we find that the problems of productivity increase and industrialzation seem to be given priority, and are

(1) G. Myrdal "Asian Drama" Volume II, page 1153, Pantheon, 1968.

discussed separately from the problem of unemployment and underemployment. In these countries the man/land ratio is already high. As population grows in the rural sector the famous law of diminishing return sets in, unless growing industrial sectors soak up the excess supply of labor or technological progress proceeds at a rapid rate to overcome the effect. Unfortunately in these countries the growing industrial sector does not seem to provide enough employment opportunities to the growing population. Ohshima[2] estimates that full-time equivalent unemployment[3] as percent of the labor force in India was 9% in 1965. In Ceylon and Pakistan, it amounted to 16% and 20% in 1960 and 1964/65, respectively. Other countries in the region where full-time equivalent unemployment was estimated at move than 10% of the labor force were the Philippines, 12% and Singapore, 10% in 1957–1965 and 1966, respectively. China ranked at the bottom with a rate of 5% in 1963–1966.

The purpose of this paper is to measure the level of productivity in manufacturing industries in Southeast Asian countries. Also it will show that excessive stress on productivity rise in some of these countries in order to achieve industrialization may be one of the factors causing piling up of unemployed and underemployed especially in urban areas today. Although the relationship between employment and productivity rise in promoting economic growth has been made clear from the the early days of Adam Smith, it seems to me that both of these are often treated as different subjects in development literature today. At least there has been very little empirical research done in this field in the case of Southeast Asian countries. I hope some finding in this paper will help to through light on the problem of employment vs. productivity in the choice of a development strategy in these countries.

(2)

The simplest way to make international comparisons of industrial productivity is to convert value added produced in respective industries by exchange rate and divide them by man-hour labor input. The exchange rate can be used as such a conversion ratio so long as it represents the purchasing power parity of two currencies. But there are number of cases where the exchange rate cannot be an adequate rate for conversion. There is no assurance that the exchange

(2) H. T. Ohshima "Growth and Unemployment in Postwar Asia" The Structure and Development In Asian Economies," Proceedings of a Conference held by the Japan Economic Research Center, Sept, 1968 page 222.

(3) Full-time equivalent unemployment as a percent of the labor force is computed as follows. Who worked less than 40 hours (42 for Taiwan) and wanted to work are regarded as underemployed and those who did not work at all during the reference week and desired work are designated as openly unemployed irrespective of whether or not they were actively seeking jobs. The underemployed who were converted to full-time equivalent unemployed plus the openly unemployed give the total full-time equivalent unemployed for the reference week. The rate of full time equivalent is computed as its proportion to total labor force. --- for the details see H. Ohshima op. cit.

rate can be applied in the case of domestic goods which are not traded. Relative prices of maid service, barbers or government service tend to be cheaper in low income countries than in high income countries, and these services are typical domestic goods that cannot be traded. Use of the exchange rate for comparing production in two countries including domestic goods will tend to underestimate the production in low income countries.

Another difficulty involved in applying an official exchange rate for international comparison of production is the problem of inflation. Under the present international monetary arrangements, revision of the official exchange rate is not carried out instantaneously to reflect internal price rise. We often find in some countries, an actual or black market rate is far different from the official exchange rate. Also the rate of price increase differs among commodities. When we are making an international comparison of production or productivity by using the official exchange rate, we must be aware that we are making the following assumptions. 1. Exchange rate shows purchasing power parity of two different currencies. 2. Rates of price increase in two countries are identical or negligibly small in both. 3. There is no difference in the rate of price increase by commodity groups.

None of these conditions seem to hold in the case of underdeveloped countres. A study made by Balassa[1] shows that the difference between exchange rate and purchasing power parity increases when difference in the productivity measured by per capita GNP increases between two countries. Not only per capita GNP between developed and underdeveloped countries differs but also between underdeveloped countries in the case of Southeast Asia. The expense for industrialization very often causes deficits in the government budget and puts inflationary pressure on the underdeveloped economy. Industrialization does not proceed at the same pace in different sectors, thus a difference in rate of price increase by commodity groups is common in underdeveloped countries. These reasons make it difficult to use the official exchange rate in making an international comparison of industrial productivity in underdeveloped countries.

Indeed our first attempt to use the exchange rate for an international comparison of productivity failed in the case of countries where recent rise in prices were substantial. For instance, it gave evident overestimation of manufacturing productivity in the case of the Philippines compared to Japan. Thus we had to resort to other method for comparison. We have tried to construct an index of production by comparing the physical amount of output for respective industries and then aggregating the results. As a first step we took various product measured in terms of physical units such as tons of wheat flour or steel, yards of cloth and etc for each country, using Japan as a base country.[2] Items included in the index of production for each industry are listed in the appendix table. By aggregating items using the weights listed in the table, we estimated an index of industrial production taking Japan as 100. Table 1 gives the index of industrial production for thirteen countries in the region.

TABLE I. INDEX OF PRODUCTION, (1963, JAPAN = 100)

	Burma	Ceylon	China	Hong-Kong	India	Iran	Japan	Korea	Malay-sia	Pakis-tan	Philip-pines	Thai-land	Viet-Num
Tabacco	0.6	1.1	8.3	5.9	26.2	7.3	100.0	18.9	10.2	10.6	16.6	6.7	n.a.
Textiles	0.3	0.1	4.8	9.6	89.1	n.a.	100.0	5.8	n.a.	16.2	1.4	1.5	0.7
Lumber	1.0	0.1	1.1	n.a.	4.7	n.a.	100.0	2.3	6.4(4)	n.a.	3.8	3.3	0.8
Pulp & paper	n.a.	n.a.	2.9	n.a.	9.8	n.a.	100.0	2.0	n.a.	1.6	n.a.	n.a.	n.a.
Chemical products	n.a.	n.a.	5.3	n.a.	20.6	n.a.	100.0	1.1	n.a.	2.1	0.5	n.a.	n.a.
Rubber products	n.a.	n.a.	n.a.	n.a.	7.7	n.a.	100.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Petroleum products	1.3	n.a.	3.1	n.a.	15.7	38.7	100.0	1.5(5)	4.6(3)	4.2	7.9	n.a.	n.a.
Coke	n.a.	n.a.	2.1	n.a.	64.7	n.a.	100.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Cement	0.4	0.3	7.5	0.7	31.2	2.5	100.0	2.6	1.2	5.0	3.2	3.3	n.a.
Metals	0.3	n.a.	0.8	n.a.	20.4	n.a.	100.0	0.4	1.7	n.a.	n.a.	n.a.	n.a.
Machinery and Construction(1)	0.2(2)	0.3	4.8	1.4	30.4	2.2	100.0	1.4	1.1	4.1	2.8	2.5	n.a.
Total manufacturing	0.28	0.29	4.33	3.16	33.33	3.25	100.0	2.39	1.80	5.77	2.83	2.52	0.71

Source: United Nations, Statistical Yearbook 1965.

Note: (1) Estimates are based on apparent consumption of steel and production of cement.
(2) Excludes apparent consumption of steel
(3) Sarawak only
(4) Includes Malaya, Sabh and Sarawak
(5) 1964
(6) 1962
(7) n.a. shows data not avaliable

The countries are Burma, Ceylon, Taiwan, Hong-kong, India, Iran, Korea, Malaysia, Pakistan, the Philippines, Thailand and Veit-Nam. Industries included in the study are tobacco, textiles, lumber, pulp and paper, chemical products, rubber products, petroleum products, coke, cement, metal, machinery and construction. Food had to be ommitted from the study because the items included differed considerably among countries.

We chose 1963 for the year of comparing the level of production. It is the latest year that data on production and employment by industries for most of the countries in Southeast Asia is available from U. N. Statistics.[3] Also as an index of industrial production many countries use 1963 as a base year. A major source of data for estimating the volume index was the Statistical Yearbook of the United Nations. The total number of commodities listed in the Yearbook was about 70, including mining, electricity and gas. However, data for Southeast Asian countries was limited, partly due to the fact that for a number of manufactured goods these countries produce only small amount. The countries for which we were able to find enough data to construct a comprehensive index for the total manufacturing as well as for most of the industrial sectors were China (Taiwan), India, Korea and Japan.

The industries which we found it most difficult to construct index of production were food and machinery. Food items listed in the Statistical Yearbook of the United Nations are meat, butter, cheese, canned fish, salted fish, wheat flour, sugar margerin, olive oil, wine and beer. A limited number of items seem plausible in representing food production industry in Southeast Asia. The major staple food in Asia is rice, but in some regions wheat is also an important item. In the case of the Philippines, edible oil and sugar are the two important products. In China the processing of fruits and sugar is important. But these products are not appropriate to evaluate the industrial activity in Thailand or Burma. Also in Japan sugar and edible oils are minor items in the food industry. Therefore we had the difficulty of finding a common item that will represent the industrial activity of the food industry besides the difficulty in finding data.

A major difficulty in estimating the index of production in the machinery industry was the heterogeneity of their products. Products of the machinery industry include the construction of huge earth-moving equipment as well as sawing machines used by housewives. Also international statistics that cover these various items are very scarce. Thus we had to give up the idea of comparing machinery output directly. However we know that most machinery industries use steel as their major input. If the apparent consumption of steel in country A is larger than in country *B*, we may assume that machinery production in country *A* is greater than in country *B*. One difficulty in making such an inference is that the construction industry also uses a lots of steel. To avoid this complication we decided to combine the industrial activity of these two industries. We added the consumption of cement and lumber as an additional item for estimating the index of production for machinery and construction. We took "apparent con-

sumption of curde steel" in the Statistical Yearbook as an indicator of steel consumption.

According to the estimates of the index of production in table I, the level of industrial production in India is one third of Japan. This is higher than the esimate given in Shinohara's study on the level of production in 1958. In his study the level of production in India is one fourth of Japan. The levels of industrial production in other countries in Southeast Asia such as China (Taiwan), Hong-Kong Pakistan and the Philippines are 4.33, 3.16, 5.77 and 2.83, respectively. The index of textile production is lerge in most of the countries in the region. It is particularly high in India which is followed by Pakistan and Hong-Kong. India's production was 89% of Japanese production, while Pakistan and Hong-Kong produced 16.2 and 9.6% respectively. Reflecting the difficulties in developing heavy industry, the index of production of mechinery and construction was lower than the total manufacturing in all the countries in the region. Except for India's machinery and construction industry which produced 30% of production in Japan, production in other countries was less than 10%.

(1) Bela Balassa, "The Purchasing-Power Parity Doctrine: A Reappraisal," Journal of Political Economy Vol. LXXII, No. 6, December 1964.

(2) Miyohei Shinohara has also made a similar study. For the details see Miyohei Shinohara: "International Comparision of Industry Levels" Institute of Asian Economic Affairs, paper 121, 1965.

(3) Particularly we depend heavity on the United Nations "The Growth of World Industry 1953–65" for source of data.

(4) Miyohei Shinahara, op. cit. page 90.

(3)

Next, we estimated the index of employment. We took the number or "persons engaged" in manuffacturing industries in South East Asian countries and compared them with the number of "person engaged" in corresponding Japanese industries. The number of persons engaged" includes employees, working proprietors, active business partners, unpaid family workers and also homeworkers. It is a broader concept than "employees" often used in employment statistics. The term, "employees," only included persons who work in a statistical unit with pay. Family workers and homoworkers play a crucial role in developing countries where business activity in traditional sectors is important because traditional production in small units is often carried out by family workers. Thus we prefered "persons engaged" to "number of employees."

As for the number of construction workers, neither "The Yearbook of Labor Statistics" by ILO nor "The Growth of World Industry" by the U.N. gave enough information, so we had to resort to the Census data of individual countries. Census data gives the industrial breakdown of an economically active population. How-

ever its coverage differ from "persons engaged" in U. N. statistics. Economically active population consists of the total employed persons, including employers, persons working on their own account, salaried employees and wage earners, and so long as data is available unpayed workers plus unemployed persons at the time of the census servey are also included. Therefore the index of employment estimated using the "persons engaged" concept differs from that using economically active population when there is a great difference in the ratio of unemployment between two countries. Also the year of the census survey is not the same in most of the Southeast Asian countries. It is 1965 in Thailand, 1964 in Japan and Korea, 1962 in the Philippines, 1961 in Hong-Kong, Indonesia, India and Pakistan, 1960 in Sarawak, 1957 in Malaysia, 1956 in China (Taiwan) and 1953 in Ceylon. There is more than ten years difference between the census years of Caylon and of Thailand.

These differences in the two concepts and in the census years among countries of the region will cause bias in the estimates of the index of employment. Employment data for Hong-Kong and Thailand is missing in both U.N. statistics and ILO statistics. As for Tabocco, we could not get employment data for the base country, Japan. Japanese employment in tobacco manufacturing is aggretated together with salt production which are both produced by the Japan Monopoly Coporation. We also could not distinguish workers in coke from others who engage in the production of other coal products. Therefore the index of employment for tobacco and coke had to be ommited. As for machinery and construction, some reservations must be born in mind when we evaluate the results. Hong-Kong and Thailand had to be ommited from the table.

The Index of employment for the Indian textile industry was only 5% less than of Japan. Pakistan and Korea where the index of production of textiles was high, the index of employment was 21.9 and 9.8% respectively. Also in other industries, the Indian index of employment was higher than those of other countries. This partly reflects her huge population but also her relatively advanced level of industries. The Indian index of employment in cement, metals and machinery and construction industries was 41.3, 47.0 and 48.8.

In contrast to India and Pakistan where the index of employment of the txtile industry was high compared to other industries, in China and in the Philippines the index of employment for food industries was relatively high. This probably reflected the importance of cotton, jute and mesta production in India and Pakistan and the processing of such primary products drew large employment from the textile industry. In contrast to these two countries, the processing of sugar, fruits and oilseeds provided employment opportunities in China and the Philippines. Also following the food industry, the lumber industry in the Philippines showed a relatively high index of employment, reflecting the importance of hard wood production in the country.

From the limited information in Table II, we can conclude that the structure of employment in Southeast Asian countries is closely related to the production

TABLE II. INDEX OF EMPLOYMENT (1963, JAPAN = 100)

	Burma	Ceylon	China	India	Iran	Japan	Korea	Malaysia[1]	Pakistan	Philippines	Viet-Num
Food	6.1	1.5	12.6	52.8	10.4	100	6.9	3.2	6.5	7.8	4.0
Textiles	2.6	1.0	7.2	94.9	14.1	100	9.8	0.3	21.9	3.6	1.0
Lumber	3.8	0.4	7.1	4.8	8.7	100	3.2	4.8[3]	0.6	6.0	0.6
Pulp & paper	0.1	0.5	5.2	19.5	0.5	100	4.3	0.3	2.7	2.1	0.1
Chemical products	1.3	1.9	7.8	26.9	1.9	100	5.4	n.a.	6.5	2.9	0.8
Rubber products	3.9	1.4	4.3	23.4	3.2	100	12.3	n.a.	4.5	3.8	0
Petroleum products	8.3	n.a.	12.6	20.9	0.2	100	34.0	5.3[2]	3.7	2.8	0.7
Cement	0.8	0.9	10.0	41.3	6.9	100	6.1	1.5	4.1	2.2	1.7
Metal	0.2	n.a.	1.8	47.0	0.9	100	2.2	0.1	3.5	0.7	0.2
Machinery & construction plus cement	0.2	1.2	2.9	48.8	1.4	100	4.8	1.7	7.6	5.0	0

Source: ILO; Yearbook of Labor Statistics, 1965 and 1967
Institute of Asian Economic Affairs; Asian Statistics 1
U.N.; The Growth of World Industry 1953–65

Notes: (1) Includes Malaya, Sava and Salawak, Burnei
(2) Includes Malaysia, East Sarawak
(3) Includes Malaysia East and West Sarawak

of primary commodities. The processing of primary commodities provides important employment opportunities to the workers in these countries.

(4)

Based on the information obtained in the previous section, we estimated productivity in Southeast Asian countries relative to the level in Japan. However, due to the lack of information and inconsistancy in the results obtained, we had to drop number of industries from the table.

U.N. data on the production of pulp & paper, chemical products, rubber products, and metals were missing in a number of countries in Southeast Asia. Perhaps these countries have just started to industrialize and production lines are not so differentiated between various industries and the amount of production may be negligibly small or nil. As for machinery and construction, though we are able to construct an index of production from input data, the difference between the employment concept used in U.N. and Census data prevents us from getting a satisfactory employment index. So we have given up the idea of estimating a productivity index for machinery and construction though it should have been useful in evaluating industrialization in various countries.

Lack of employment statistics in Thailand and Hong Kong and some of the industries in Malaysia prevented us from getting a productivity index for these countries. It was a great pity that these countries had to be excluded from the analysis because these countries have been showing a relatively high rate of economic growth in recent years. The future of their industrialization is mentioned by many economists as a bright one. It would have been very fruitful to evaluate their achievement in light of the Japanese experience.

Due to the above mentioned limitations, we have decided to construct two types of tables showing an international comparison of productivity levels. Table III-A shows the productivity comparison of China (Taiwan), India, Japan and Korea. These countries are the forerunners of industrialization in the region

TABLE III-A. INTERNATIONAL COMPARISON OF PRODUCTIVITY IN CHINA (TAIWAN), INDIA, JAPAN AND KOREA 1963 JAPAN = 100

	China	India	Japan	Korea
Textile	66.7	93.9	100	59.2
Lumber	15.5	97.9	100	71.9
Pulp & paper	55.8	50.3	100	46.5
Chemical product	67.9	76.6	100	20.4
Rubber products	n.a.	32.9	100	n.a.
Petroleum products	24.6	75.1	100	4.4
Cement	75.0	75.5	100	42.6
Metal	44.4	43.3	100	18.2

Sourse: See Table I and II.

TABLE III-B. INTERNATIONAL COMPARISON OF PRODUCTIVITY (IN TEXTILE LUMBER, PULP & PAPER, CHEMICAL PRODUCTS, CEMENT AND METAL)

	Textiles	Lumber	Pulp & paper	Chemical products	Cement	Metal
Burma	11.5	26.3	n.a.	n.a.	50.0	n.a.
Ceylon	10.0	25.0	n.a.	n.a.	33.3	n.a.
China	66.7	15.5	55.8	67.9	75.0	44.4
India	93.9	97.9	50.3	76.6	75.5	43.4
Japan	100	100	100	100	100	100
Korea	59.2	71.9	46.5	20.4	42.6	18.2
Pakistan	74.0	n.a.	59.3	32.3	n.a.	n.a.
Philippines	38.9	63.3	n.a.	17.2	n.a.	n.a.

Sourse: See Table I and II.

and their products appear in most of the industrial sectors listed in table I and II. We were able to get comprehensive and satisfactory results for textiles, lumber, pulp & paper, chemical products, rubber products, petroleum products, cement and metal in these four countries.

Table III-B shows the international comparison of industries where data for most of the countries in the region was available. These are textiles, lumber, pulp & paper, and cement. We dropped the productivity index of cement in the Philippines and Pakistan because the coverage of employment statistics differed from that of production and this difference gave an awkward result to the estimates in these countries. Also for Burma, employment data for metals seems inconsistant. It was 0.1 thousand in 1952/53 and 1.9 thousand in 1958/59, but it declined to 1.1 thousand in 1960/61. It seems unreasonable to imagine that employment in one industry can expand and contact in such short period of time.

Table III-A gives an interesting picture on different approaches taken in India compared to Korea and China for industrialization and economic development. In the case of textiles, the level of productivity in India is 93.9% of the Japanese level followed by 66.7% and 59.2% in China and Koraea. The Indian lumber industry neared the level of Japanese productivity and its productivity index marked 97.9. The productivity index of Indian chemical, petroleum and cement was two thirds of Japan, and Chinese cement was two thirds of the Japanese level. Industries where productivity was less than half of the corresponding Japanese industries were lumber, petroleum and metal in case of China, rubber and metal in the case of India, chemical, petroleum, cement and metal in case of Korea.

As we have noted earlier, we were unable to construct an aggregate productivity index for the total manufacuting industry in these countries. However, in India productivity in most of the industries studied were higher than in China and Korea. Particularly this seems to be true in case of textiles, lumber and petroleum.

The difference in importance of the manufacturing industry in those countries

in terms of national income (output) and employment supports such findings.

TABLE IV

Country	Output from manufacturing National income (%)	Employment in manufacturing total employment (%)
China (Taiwan)	18.7	17.9 (1966)
India	19.8	9.5 (1961)
Japan	27.5	24.4
Korea	17.2	11.7
Pakistan	11.3	...
Burma	15.0 (1964)	...
Thailand	12.4	3.4 (1960)
Philippines	17.8	11.4 (1967)
Ceylon	6.4	...

Note: Year = 1965 other than indicated.
Source: Bank of Japan, *Kokusai Hikaku Tokei*, (April 1969)

If we assume that the proportion of the manufacturing output in the national income is an indicator that shows the process of industrialization, India was the most industrialized country in the region in 1965 besides Japan according to table IV. The Indian manufacturing industry produced 19.8% of the national income while in China the ratio was 18.7% followed by around17% in Korea and the Philippines. However when we look at the importance of the manufacutring industry in providing employment to total workers, in China it attracted 17.9% of the total and its importance in the employment structure neared that in production. But in India, the manufacturing industry provided employment to less than 10% of total labor force. In other words, 10% of the total workers who worked in the manufacturing industry produced nearly 20% of the national income. The contribution of each manufacturing worker to national income in India was about twice as much as that in China. Although productivity in the Chinese manufacturing industry may be lower than that in India it gave more employment. Even in case of Korea and the Philippines where the proportion of manufacturing production in national income was about 17%, it provided more than 11% of the total employment.

Table III-B shows the international productivity comparison in most of the countries in Southeast Asia relative to Japan. The industry where productivity was relatively high compared to others was textiles, except for Burma and Ceylon. The productivity level of textiles in these two countries was about 10% that of Japan. In the case of lumber, India and Korea produced more than two thirds of Japan's production and the index of the Philippine lumber industry was 63.3. The productivity index of pulp and paper was 59.3 in Pakistan, 55.8 in China, 50.3 in India and 46.5 in Korea. Thus we may be able to say that the level of productivity in the pulp and paper industry in most of the Southeast Asian

countries was about half that of the Japanese paper and pulp industry. We were able to add Pakistan and the Philippines besides China, India and Korea in the case of the chemical industry. The level of productivity was 76.6% that of Japan in the case of India and it was 67.9% for China. But in other countries listed in the table, the level was rather low; 32.3% in Pakistan, 20.4% in Korea, 17.2% in the Philippines.

Cement and metal are both important items for producing investment goods. Particularly in the early stages of industrialization it is necessary to construct roads, bridges, harbors, railroads and etc.—so-called social overhead capital—and for this purpose cement and metals are the key industries. In the case of cement, the level of productivity in China and India was about three forths that of Japan, but in other countries it was less than a half. Information on the productivity level of metals was only available in China, India and Korea, but the index was the lowest of all the industries listed in the table in these three countries.

(5)

From the limited amount of information in the previous sections, we have tried to draw some conclusions on productivity and employment in Southeast Asian countries.

Industrialization in most of the countries in the region has just started and both the level of employment and of productivity in manufacturing industries are generally quite low compared to Japanese industries. Among the few industries where the level of productivity neared that in Japan were the Indian textile and lumber industries. The proportion of manufacturing output in national income was the highest in India, 19.8% in 1965 followed by China, 18.7% in the same year, but there were marked differences in the productivity level of these two countries. Such differences are reflected in the fact that though employment in the manufacturing industry accounted for 17.9% of the total employment in China, it took only 9.5% of the total in India. The importance of the manufacturing industry in terms of both national income and employment was about the same in Korea and in the Philippines in 1965. Manufacturing productivity seems to lag in Burma and Ceylon compared to other countries in the region. Productivity differences between Japan and the other countries become larger in the metal industry. In the case of textiles and lumber, productivity differences were much smaller.

Productivity differences between India and China may be one of the reasons which explains the high unemployment rate in the former. In the Chinese manufacturing industry, production seems to be more widely spread among workers. Large productivity differences between Japan in case of metals as compared to textiles or lumber may indicate the difficulty in developing heavy industry.

Productivity increase in the manufacturing industries is undoubtedly a prime engine of economic growth and industrialization. However, one of the difficulties

in promoting the economic development of Southeast Asian countries is that they are poorly endowed with natural resources including land. Thus the manufacturing sector has to provide enough employment opportunities as industrialization proceeds. Of course when economic growth and industrialization take place at a rapid rate, it can attain both goals at the same time, the manufacturing sector absorbing enough labor from agriculture and raising its productivity. But in view of the seriousness of the unemployment and underemployment problem in the region, one has to evaluate employment generating effect of industrialization together with the rise in productivity.

APPENDIX; ITEMS INCLUDED IN INDEX OF PRODUCTION AND SYSTEM OF WEIGHTS

		weights	weights for individual industry
1.	Manufacturing industry	100	
2.	Food	10.29	
3.	Tabacco	2.52	
4.	Textiles	11.54	100
	cotton yarn		25.1
	cotton fabries		20.7
	wool yarn		12.9
	wool fabries		11.1
	rayon and acetate yarn		4.5
	rayon and acetate fabries		8.9
	non-cellulosie fabric		6.9
	rayon and acetate filaments		9.9
5.	Lumber	1.88	
6.	Pulp and paper	4.14	100
	machinery pulp		2.0
	chemical pulp		12.0
	newspaper		20.1
	papers other than newspaper		65.9
7.	Chemical Products (textiles ex. chemical)	10.61	100
	sulfuric acid		22.3
	hydrochloric acid		0.7
	nitric acid		2.2
	caustric soda		17.3
	soda ash		15.3
	nitrogenous manure		30.9
	superphosphate		11.1
8.	Rubber products	2.00	100

	natural rubber (amount of consumption)		83.4
	synthetic rubber (amount of consumption)		16.6
9.	Petroleum products	1.06	100
	fluid petroleum gas		2.9
	gasoline for motors		42.4
	others		54.7
10.	Coke	0.20	
11.	Cement	0.91	
12.	Metals	10.11	100
	pig-iron and ferro-alloys		35.4
	crude steel		34.4
	others		30.2
13.	Machinery and construction	44.74	100
	curde steel (apparent consumption)		47.9
	wood (")		40.6
	cement (")		11.5

Source: United Nations; Statistical Yearbook, 1965.
Economic Planning Agency, Government of Japan; White Paper on National Income, 1965.
Shinohara, Miyohei; International Comparison of Industry Levels, Institute of Asian Economic Affairs, paper 121, Japan 1965.