

INTERNATIONAL COMPARISON OF THE LEVELS OF INDUSTRIAL PRODUCTION IN 1958

MIYOHEI SHINOHARA

I. MEASUREMENT

IN AN ARTICLE published in the *Weltwirtschaftliches Archiv*, the writer has previously attempted to compute an inter-country index of industrial production in 1956 for the seven countries: the United States, the United Kingdom, West Germany, Italy, France, Sweden, and Japan.¹ It was not an ordinary time-series, but a *cross-section* index of production, indicating the relative levels of industrial production in these countries in the particular year, 1956. However, since the number of countries then considered was limited to seven, it was considered that any future comparisons should have a much wider scope, to include not only other industrial countries (capitalist as well as socialist countries), but also the underdeveloped countries. This is what is being done here. Second, in taking the year 1958 for the new computation, the comprehensive Census of Manufactures is available in the United States for this year as well as corresponding statistics for the United Kingdom, thus making it possible to set up the detailed weight systems in terms of value added in the various industries of three countries: the United States, the United Kingdom, and Japan. Third, as there were some unsatisfactory calculations in the computation of the index numbers in the former attempt, this present effort affords the writer an opportunity to remedy these defects.

Most of the physical volumes of the various commodity items come from the *Statistical Yearbook* of the United Nations, and the individual cross-section indices of the physical volume of production of the various commodity items are combined into the total index, with each individual

¹ Miyoei Shinohara, "Relative Production Levels of Industrial Countries and their Growth Potentials," *Weltwirtschaftliches Archiv*, Band 86, Heft 1, 1961 (incorporated with amendments in the book, *Growth and Cycles in the Japanese Economy*, Tokyo, Kinokuniya Bookstore, 1962).

index being weighted by each value added respectively. In this way, three types of indices arise: (1) the index with the United States=100, using the U. S. value added weight, (2) the index with the United Kingdom=100, using the U. K. value added weight, and (3) the index with Japan=100, using Japan's value added weight. These three indices are then compared with each other, with the United States=100 or with Japan=100. In some cases, the geometric averages of the three or the two indices are computed, and then used for analytical purposes.

The countries covered in this survey number more than eighty, and the commodity items amount to more than seventy, but some commodity items are lacking for some socialist countries and underdeveloped countries. Furthermore, in the less developed countries, the quantity of production for each commodity is apt to be underreported. Therefore, the computations necessarily underestimate the actual situation in these cases.

In computing the cross-section index of production, difficulties are met in producing the figures for machinery production. The mere physical volume, say, of machine tools may neglect differences in quality, size, etc. Therefore, in the international comparison of estimates of machinery production it was necessary to adopt the following very bold procedure. Estimates were made not from the output but from the *input* side. Since the most important input in the machinery industry is its steel consumption, it will be very natural to depend upon this item to produce our data. However, it is very difficult to estimate the machinery industry's proportional share of steel consumption, after excluding that used for the purposes of construction, etc., for every country. Consequently, the scope of the industry has been enlarged to include an estimate of the combined index of "machinery and construction," instead of the machinery industry by itself. In this case, the weighted average of the indices of the volume of following major inputs was used: the apparent domestic consumption of crude steel, cement, and lumber after allowance had been made for exports and imports, in the broader category of industry as defined above. The resulting index thus covered the machinery industry as well as construction activity, as steel, cement, and lumber are the major inputs in the construction and machinery industries.

II. RELATIVE INDUSTRIAL LEVELS OF THE INDUSTRIAL COUNTRIES

Although the processes and results of our computation cannot be explained in detail in the confines of this small paper, they may be summarized here by separating major industrial countries and some of the underdeveloped countries. The major industrial countries are dealt with first (Table 1).

For 1958, the three-type indices of manufacturing production have been computed in accordance with the three weight systems of the three countries: U. S. A., U. K., and Japan. When they have been reduced to U.S.A. = 100, it is surprising to note the occurrence of high divergences among the three indices of some countries (e.g., France, Italy, Finland, Spain, Mexico, Argentina, and New Zealand). For many other countries, however, the differences are not so great. To make this analysis easier, however, the geometric mean of the three indices has been used. Table 1 indicates the industrial levels of the relatively industrialized countries, and also gives the volume of manufacturing production per head (adjusted by population figures).

Naturally, it must be admitted that Table 1 may involve a margin of error due to the lack of data available for some commodities, and the underreporting in the relatively less developed countries (e.g., Greece, Mexico, etc.), but it does provide a rough picture of the relative industrial levels of industrialized countries. It makes clear the following facts: (1) As the geometric mean of the three indices shows, the level of Soviet Russia was 59.4% that of the United States' level of manufacturing production. This almost confirms the generally held opinion that the Soviet's level of industrial production is about 60% that of the United States. (2) West Germany, France and the United Kingdom followed these two big countries, and Japan was the sixth biggest industrial country in the world in 1958, surpassing both Italy and Canada. (3) The Western European countries combined gave 106%, and the EEC countries together a figure 65.6% that of the United States. The latter percentage was higher than the relative industrial level of the U.S.S.R. (4) When the volume of manufacturing production per head of population of each country was compared, the figures came much closer. Excluding those countries with rather low figures [e.g., Greece (21.4%), Spain (30.1%), and Portugal (27.2%)], the other industrial countries in Western Europe ranged from the 96.7% of

Sweden to the 47.1% of Switzerland. The United Kingdom, Austria, Denmark, and Finland were on the 60% level. (5) The industrial levels per head of population for Italy, Switzerland, and Soviet Union are almost the same (48.8%, 47.1%, and 49.4%). Japan remained at 30% that of the United States. (6) It is to be noted that in such countries as New Zealand and Canada, the manufacturing production per head exceeded that of the United States. (7) In the Eastern Europe the levels for East Germany (34.4%), Hungary (38.9%), and Poland (46.8%) lagged behind the industrial countries of Western Europe, except for Czechoslovakia (72.7%).

These are the observations on the computations relating to 1958. However, several years have since elapsed and it is interesting to contrast these with the similar figures for 1963, for during this period the manufacturing production of Japan has more than doubled. This may be roughly approximated by combining the cross-section indices of production with the time-series indices of production constructed for each country and collected by the United Nations. By multiplying the former by the latter and by reducing them to U. S. A. = 100, relative levels of industrial production for the year 1963 may be derived. Figures for the per head of population may also be obtained.

The major changes for 1958-1963 period occurred in relation to Japan. Japan, which ranked sixth in her level of industry, now moved up to the third place, following the United States and the Soviet Union. This dramatic change arose as a result of her phenomenal growth of industrial production during the past five years (more than a twofold increase !!). Thus, Japanese relative production increased from 15.7% in 1958 to 26.2% in 1963 when compared with the United States, and it surpassed even West Germany (23.5%), France (20.5%), and the United Kingdom (17.5%). In terms of per head manufacturing production, Japan had risen from 30% to 51.7% that of the United States during the same period. This is again surprising, because it is very close to the Soviet Union (59.5%), the United Kingdom (61.6%), Italy (65.3%), Netherlands (60.1%), Poland (54.3%), etc. Japan will decidedly attain the Western European industrial level within the next few years, even in terms of per head manufacturing production.

Of course, the national income of Japan in dollar terms is still 10.6% of the United States' level in 1963, and it is considerably lower than the same ratios: 19.8% for West Germany, 15.4% of the United Kingdom, and 12.7% for France. Moreover, the national income (\$) per head of population for the same year in Japan was only 20.9%

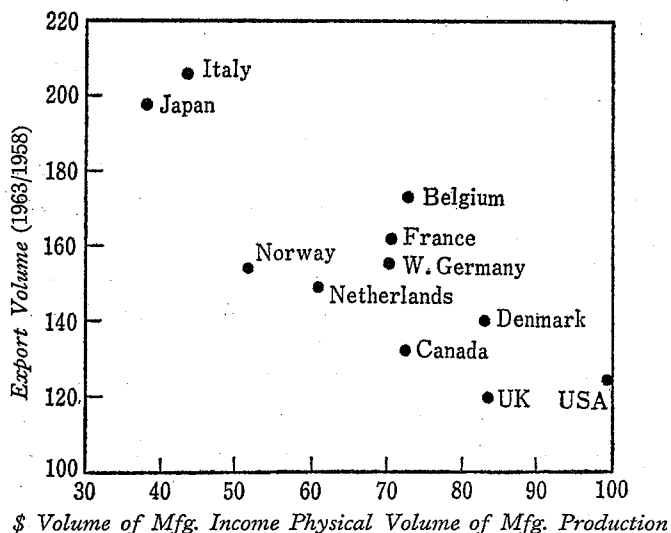
compared with the United States, despite the fact that West Germany was 64.8%, the United Kingdom 54.3%, France 50.3%, and Italy 26.2% of the United States. However, as has been referred to in another article,¹ this may be, to a great extent, due to the undervaluation of Japan's exchange rate from the viewpoint of its purchasing power parity when compared with the United States. This divergence between output in terms of physical volume and income in dollar terms must have been one of the secrets why the Japanese export growth rate has been higher than that of any other advanced country.

This may be demonstrated as follows: From U.N., *Yearbook of National Accounts Statistics*, 1962, the incomes originating in manufacturing and construction sectors are taken up in 1958, and adjusted to the same concept (gross domestic product at factor cost) if in some countries different concepts (gross domestic product at market price or net domestic product at factor cost) are adopted. When they are converted to dollar values and reduced to the relative numbers; U.S.A. =100, it is surprising to note that the Japanese dollar income index in the manufacturing and construction sectors was only 6% of U.S.A., while the index of physical volume of manufacturing production (inclusive of the construction industry) was 15.7% in 1958. There is a really big difference between the two. Naturally, this gap may be partly due to the undervaluation of the Japanese national income statistics (probably by about 10%), but it will not fill this gap. One of the major factors for this gap will be in the undervaluation of Japanese yen in international exchange rates.

The relation between the export growth rates and the dollar income-physical output ratios in the industrial countries depicted in Figure 1 will demonstrate how the degree of undervaluation in exchange rate is positively correlated with the export growth rate in the industrial countries. In this case, it is understood that the lower the dollar income-physical output ratio, the higher the degree of undervaluation in the exchange rate. This is due to a kind of the purchasing power parity criterion, but our definition is not based upon the ordinary definition of purchasing power parity compared with the *particular past year*, but upon that of purchasing parity compared with the *particular country's* situation. In Figure 1, this correlation may not appear to hold good. It is partly due to the fact that the export growth rates were computed only from the comparison of the two years 1958 and 1963, and the intermediate years were neglected. However, it is of

¹ M. Shinohara, *op. cit.*

Figure 1. \$ INCOME-PHYSICAL OUTPUT RATIOS AND EXPORT GROWTH RATES IN INDUSTRIAL COUNTRIES



some interest to see that most of the EEC countries included here scatter upwards (Italy, Belgium, France, and West Germany), reflecting the accelerating influence of regional integration upon their intra-EEC trade.

III. RELATIVE INDUSTRIAL LEVELS OF THE LESS ADVANCED COUNTRIES

In the less developed countries the reliability of production statistics may decrease, with the result that the computations may be subject to a wide margin of statistical error. Particularly, the difference in the systems of weighting may produce extremely large differences in the computed indices for many countries. Moreover, the application of the value added weights in advanced economies to the underdeveloped economies may entail tremendous biases. Therefore, these computations were rather experimental, and there was no strong insistence on statistical validity. In order to produce convincing results, a much more detailed examination of the statistical data of each country would be necessary.

With these limitations in mind, the following observations are made in relation to Table 4:

- (1) In the Asiatic countries, relatively higher per head manufacturing

production indices may be noted for the following countries, with the exception of Japan: Malaya (45.1%), Taiwan (51.1%), Hongkong (35.3%), Israel (82.6%), and Lebanon (58.5%) with Japan=100, but the computation indicates that Mainland China (6.9%), India (5.7%), South Korea (8.3%), Burma (0.9%), Thailand (7.4%), Philippine (15.8%), Indonesia (4.4%), etc. are in extremely lower positions.

(2) In Africa, Algeria (76.7%), Congo (30.1%), Morocco (25.0%), South West Africa (109.1%), Tunisia (36.2%), and the United Arab Republic (21.9%) are placed in higher positions, but Angola (4.0%), Kenya (13.4%), Madagascar (3.6%), Nigeria (0.5%), Tanganyika (3.1%), Uganda (8.7%), and Ethiopia (0.4%) are in lower order.

(3) Yugoslavia (80.2%), Rumania (71.1%), and Bulgaria (88.9%) in Europe occupy the higher positions, and seem to have established themselves as relatively industrialized countries. However, Albania (6.1%) is extremely low.

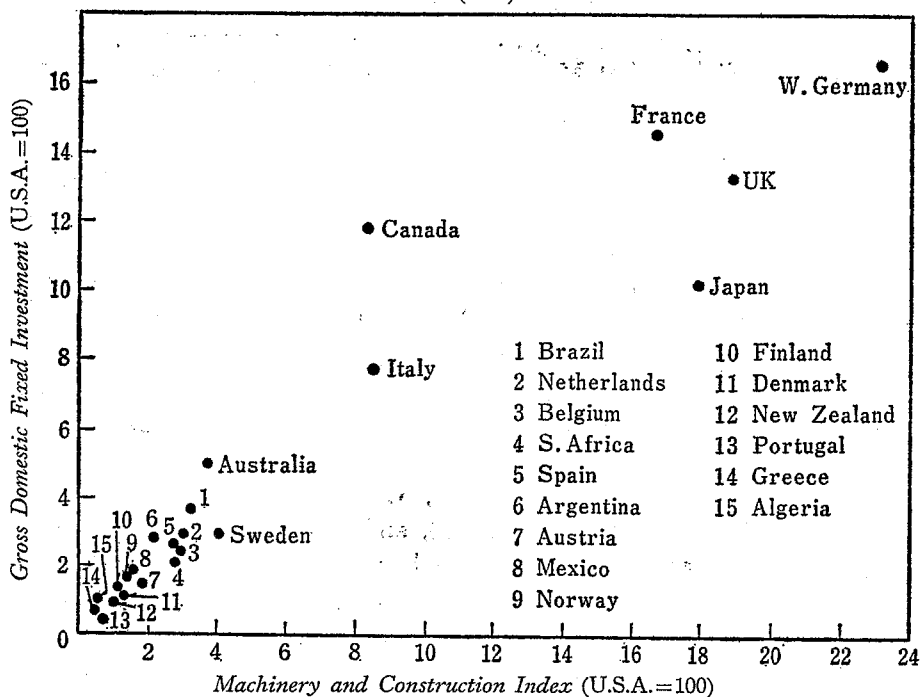
(4) In Middle and South America, Cuba (96.8%), Chile (84.1%), Puerto Rico (63.8%), Uruguay (86.4%), and Venezuela (74.6%) are in the higher range, and Dominican Republic (49.0%), Jamaica (33.7%), Honduras (26.5%), Peru (22.4%), Colombia (18.3%), Panama (17.9%), and Guatemala (12.9%) were in intermediate positions, and Ecuador (11.3%), Paraguay (10.9%), Bolivia (8.2%), El Salvador (7.5%), and Nicaragua (6.6%) were in a lower group.

These relations must be tested in detail by each country, particularly because a substantial amount of production in cottage industries might have been omitted in the production statistics of the less developed countries. Postponing this test to the future, we must be satisfied here with only a presentation of our results.

IV. A TEST OF THE MACHINERY AND CONSTRUCTION INDEX

In the computation, machinery output was combined with construction activity in a rather unusual manner; and since the approach was from the input side, such a procedure was inevitable. However, there is an urgent necessity to check and test the results obtained for estimating machinery and construction output by some other device. Gross domestic fixed capital formation in dollar terms can be used to provide a reference series. Of course, in the estimate of the gross fixed investment, exported capital goods are deducted and imported capital goods are added. Therefore, on the one hand, both indices differ from each other by the amount of excess exports or imports of capital goods.

Figure 2. MACHINERY AND CONSTRUCTION INDEX AND GROSS FIXED INVESTMENT (1958)



On the other hand, the consumer durables are included in the machinery and construction index, but, in computing the gross fixed investment, these have to be deducted. Therefore, both indices are not logically identical, although it may be expected that the figures of the two may be similar to each other. Tables 5 and 6 indicate the index of machinery and construction output and how it varies with the gross fixed investment of various countries. Figure 2 is a chart in which twenty-three major countries were selected for comparison of both indices. It may be seen from this that Canada and Japan are rather exceptional; in the case of Canada, the fixed investment index is higher than the machinery and construction index, but in the case of Japan the opposite holds true in the relative size of the index numbers. This is unexpected, for compared with the United States, in which the proportion of consumer durables and exported capital goods is relatively larger, Japan's machinery and construction index is higher than her gross fixed investment index. This may be partly due to the upward bias of the Japanese machinery and construction index entailed by the neglect of the quality aspect of capital goods. However, it is believed

that this is much more due to the previously mentioned undervaluation of Japan's exchange rate.

V. CONCLUSIONS

There will be other problems to be explained and analysed in relation to these computations, particularly with reference to each category of individual indices of production in manufacturing, as well as the mining index and the public utilities index. Furthermore, the manufacturing index should be checked with the energy consumption index of various countries. However, these expositions and analyses should be the subject of a much larger paper.

Although our results may be subject to a wide margin of error, they provide a very rough indication of the industrial levels of the various countries.

(1) In terms of the dollar value of income per head of population, a great divergence of the levels, even in industrial countries, may still be seen, but the index of the physical volume of manufacturing production per head of population does not indicate such wide differences. This suggests that the exchange rate is not a good conversion rate for the purpose of computing real income or output.

(2) The most phenomenal advance may be seen particularly with respect to Japan, where, in a brief five-year period she has moved up from sixth to third place, and follows the United States and the Soviet Union in terms of aggregate volume of manufacturing production.

(3) Export growth rates in industrial countries seem to be positively correlated with their dollar income-physical output ratios in manufacturing.

(4) The less the industrialization of a country, the more the tendency for the physical output of manufacturing per head of population to be low, partly reflecting the probable fact that in the less developed countries the production in household industry is naturally omitted, and that less important commodity items are not reported on the statistics.

Table 1. CROSS-SECTION INDEX OF MANUFACTURING PRODUCTION IN MORE INDUSTRIALIZED COUNTRIES (1958)

	Japan's Weight (Japan=100) (U.S.A.=100)	U.K. Weight (U.K.=100) (U.S.A.=100)	U.S.A. Weight (U.S.A.=100)	Geom. Mean of the Three Indices (U.S.A.=100)	Population (U.S.A.=100)	Mfg. Production per Head
U.S.A.	734.1 (100.0)	578.1 (100.0)	100.0	100.0	100.00	100.0
U.S.S.R.	412.2 (56.1)	384.3 (66.5)	56.2	59.4	120.36*	49.4
West Germany	177.1 (24.1)	119.7 (20.7)	24.3	23.0	29.77	77.3
U.K.	145.5 (19.8)	100.0 (17.3)	21.8	19.6	29.64	66.1
France	196.0 (26.7)	99.7 (17.2)	20.6	21.2	25.49	83.2
Italy	148.6 (20.2)	56.6 (9.8)	12.7	13.6	27.87	48.8
Japan	100.0 (13.6)	105.0 (18.2)	15.5	15.7	52.34	30.0
Austria	20.2 (2.8)	14.7 (2.5)	2.6	2.6	4.01	64.8
Belgium	32.3 (4.4)	19.3 (3.3)	4.8	4.1	5.18	79.2
Denmark	20.1 (2.7)	8.4 (1.5)	1.5	1.8	2.58	69.8
Finland	11.7 (1.6)	13.4 (2.3)	1.3	1.7	2.49	68.3
Netherlands	31.2 (4.3)	18.4 (3.2)	3.8	3.7	6.40	57.8
Ireland	6.3 (0.9)	2.3 (0.4)	0.5	0.6	1.63	36.8
Sweden	28.8 (3.9)	27.4 (4.7)	3.8	4.1	4.24	96.7
Switzerland	12.0 (1.6)	7.7 (1.3)	1.4	1.4	2.97	47.1
Norway	12.3 (1.7)	9.7 (1.7)	1.7	1.7	2.01	84.2
Greece	10.3 (1.4)	4.1 (0.7)	0.9	1.0	4.67	21.4
Spain	51.1 (7.0)	21.8 (3.8)	4.9	5.1	16.96	30.1
Portugal	15.9 (2.2)	5.6 (1.0)	1.3	1.4	5.14	27.2
Czechoslovakia	39.7 (5.4)	31.5 (5.4)	6.0	5.6	7.70	72.7
East Germany	32.3 (4.4)	12.9 (2.2)	3.3	3.2	9.29	34.4
Hungary	19.9 (2.7)	10.0 (1.7)	2.2	2.2	5.65	38.9
Poland	60.8 (8.3)	43.4 (7.5)	7.4	7.7	16.45	46.8
Canada	75.8 (10.3)	63.0 (10.9)	9.7	10.3	9.79	105.2
Mexico	19.7 (2.7)	9.4 (1.6)	2.4	2.2	18.81	11.7
Argentina	68.5 (9.3)	20.9 (3.6)	4.7	5.4	11.47	47.1
Brazil	50.0 (6.8)	26.3 (4.5)	4.6	5.2	18.87	27.6
Australia	49.6 (6.8)	26.7 (4.6)	5.1	5.4	5.63	95.9
New Zealand	18.7 (2.5)	8.4 (1.5)	1.2	1.6	1.30	123.1
South Africa	24.7 (3.4)	13.4 (2.3)	2.9	2.8	8.60	32.6

* Population in 1959.

Table 2. RELATIVE INDUSTRIAL LEVELS (1963)

	Industrial Production, 1963/1958	Industrial Production in 1958 (U.S.A.=100)	Industrial Production 1958 × $\frac{1963}{1958}$	(U.S.A.=100)	Population in 1963 (U.S.A.=100)	Mfg. Production per Head in 1963
U.S.A.	133	100.0	133.0	(100.0)	100.00	100.0
U.S.S.R.	158	59.4	93.9	(70.6)	118.69	59.5
West Germany	136	23.0	31.3	(23.5)	29.27	80.3
U.K.	119	19.6	23.3	(17.5)	28.42	61.6
France	129	21.2	27.3	(20.5)	25.27	81.1
Italy	170	13.6	23.1	(17.4)	26.64	65.3
Japan	222	15.7	34.9	(26.2)	50.64	51.7
Austria	131	2.6	3.4	(2.6)	3.79	68.6
Belgium	130	4.1	5.3	(4.0)	4.91	81.5
Finland	149	1.7	2.5	(1.9)	2.40	79.2
Netherlands	139	3.7	5.1	(3.8)	6.32	60.1
Ireland	145	0.6	0.9	(0.7)	1.50	46.7
Sweden	128	4.1	5.2	(3.9)	4.02	97.0
Norway	133	1.7	2.3	(1.7)	1.94	87.6
Greece	139	1.0	1.4	(1.1)	4.48	23.4
Portugal	146	1.4	2.0	(1.5)	4.77	31.5
East Germany	142	3.2	4.5	(3.4)	8.47	40.1
Czechoslovakia	142	5.6	8.0	(6.0)	7.37	81.4
Hungary	139	2.2	3.5	(2.6)	5.33	48.8
Poland	152	7.7	11.7	(8.8)	16.21	54.3
Canada	127	10.3	13.1	(9.8)	9.99	98.1
Mexico	139	2.2	3.1	(2.3)	20.29	11.3
Argentina	87	5.4	4.7	(3.5)	11.47	30.5
South Africa	138	2.8	3.9	(2.9)	9.01	32.2

Source: Concerning the rate of increase in industrial production for 1958-1960, and the midyear population of 1963, the United Nations, *Monthly Bulletin of Statistics*, October, 1964, was used.

Table 3. DOLLAR INCOME-PHYSICAL OUTPUT RATIOS AND EXPORT GROWTH RATES

	Incomes originating in Mfg. and Construction Industries (A)	Exchange Rate (per \$)		Concept of Incomes (A)		Adjusted Incomes (E)	Phys. Vol. of Mfg. Production (U.S.A.=100) (F)	$\frac{E}{F}$ (G)	Vol. of Exports, (1963/1958) (H)
		(B)	(C)	(A) (B)	(D)				
Japan	2,799 (billion yen)	360	7,776 mil. \$	NF	8,732 mil. \$ (6.0)	15.7	38.2	198	
U.S.A.	129,122 (million \$)	—	129,122	NF	145,004 (100.0)	100.0	100.0	126	
Canada	10,878 (million \$)	.971	11,203	GF	11,203 (7.7)	10.3	74.8	133	
U.K.	8,869 (million £)	.357	24,843	GF	24,843 (17.1)	19.6	87.2	120	
France	109.8 (billion new francs)	4.20	26,143	GM	22,039 (15.2)	21.2	71.7	162	
W. Germany	115,920 (million DM)	4.20	27,600	GM	23,819 (16.4)	23.0	71.3	156	
Norway	8,921 (million kroner)	7.14	1,249	GF	1,249 (0.9)	1.7	52.9	155	
Netherlands	12,753 (million guilders)	3.80	3,356	GF	3,356 (2.3)	3.7	62.2	149	
Belgium	226.0 (billion francs)	50.0	4,520	GF	4,520 (3.1)	4.1	75.6	173	
Italy	5,858 (billion lire)	625	9,373	GF	9,373 (6.5)	13.6	47.8	206	
Denmark	11,892 (million kroner)	6.91	1,721	GF	1,721 (1.2)	1.8	86.7	141	

Source: U.N., *Yearbook of National Accounts Statistics*, 1962 [(A) and (B)] and *Monthly Bulletin of Statistics*, October, 1964 [(H)].

Notes: (1) NF (net domestic product at factor cost); GF (gross domestic product at factor cost), GM (gross domestic product at market price).

(2) In the column (E), NF and GM are adjusted to GF. Our rough adjustments are as follows: U.S.A. $[NF \times 1.105 = GF]$, Japan $[NF \times 1.123 = GF]$, West Germany $[GM \times 0.863 = GF]$, and France $[GM \times 0.843 = GF]$. In the estimates of the NF·GF and the GF·GM ratios, it is assumed that they are the same both in manufacturing sector and in national economy as a whole.

(3) Austria, Finland, Switzerland, Ireland, and Sweden are omitted here due to the fact that incomes originating in manufacturing and construction industries cannot be separated or incomes by industrial origin are not available.

(4) (F) are the geometrical means of the three indices; U.S., U.K., and Japan's weights.

**Table 4. CROSS-SECTION INDEX OF MANUFACTURING PRODUCTION
IN LESS DEVELOPED COUNTRIES (1958)**

	Japan's Weight (Japan=100)	U.K. Weight (U.K. =100)	U.K. Weight (Japan =100)	Geom. Mean of Both (Japan=100)	Population (Japan=100)	Mfg. Production per Head of Population (Japan=100)
Japan	100.0	105.0	(100.0)	100.0	100.00	100.00
China (Mainland)	50.5	42.7	(40.7)	48.7	706.27	6.90
India	31.3	22.7	(21.6)	25.8	451.53	5.71
Republic of Korea	2.8	1.7	(1.6)	2.1	25.46	8.25
Burma	0.3	0.2	(0.2)	0.2	22.13	0.90
Thailand	1.8	2.4	(2.3)	2.0	27.20	7.35
Pakistan	6.6	3.5	(3.3)	4.7	96.96	4.85
Philippine	6.9	3.2	(3.0)	4.5	28.51	15.78
Ceylon	0.3	0.3	(0.3)	0.3	10.26	2.92
Federation of Malaya	3.2	3.3	(3.1)	3.2	7.10	45.07
China (Taiwan)	4.9	6.5	(6.2)	5.5	10.76	51.12
Hong Kong	1.1	1.0	(1.0)	1.1	3.12	35.26
Indonesia	6.2	3.2	(3.0)	4.3	97.71	4.40
Turkey	6.0	4.1	(3.9)	4.8	28.67	16.74
Syria	1.1	1.0	(1.0)	1.1	4.68	23.50
Iran	3.3	4.4	(4.2)	3.7	97.71	3.77
Iraq	0.9	0.9	(0.9)	0.9	21.50	4.20
Israel	2.1	1.6	(1.5)	1.8	2.18	82.57
Lebanon	1.0	0.9	(0.9)	1.0	1.71	58.48
Afghanistan	0.1	0.2	(0.2)	0.2	14.20	1.41
Algeria	19.7	4.0	(3.8)	8.7	11.35	76.65
Congo	3.6	7.2	(6.9)	5.0	16.60	30.12
Angola	0.5	0.1	(0.1)	0.2	4.96	4.03
Kenya	1.3	0.8	(0.8)	1.0	7.45	13.42
Madagascar	0.3	0.1	(0.1)	0.2	5.61	3.57
Morocco	5.0	1.7	(1.6)	3.0	12.00	25.00
Nigeria	0.3	0.1	(0.1)	0.2	36.93	0.54
Southern Rhodesia	1.0	0.5	(0.5)	0.7	3.19	22.26
South West Africa	1.0	0.4	(0.4)	0.6	0.55	109.09
Tanganyika	0.4	0.2	(0.2)	0.3	9.74	3.08
Uganda	0.9	0.4	(0.4)	0.6	6.94	8.65
United Arab Republic	9.5	3.9	(3.7)	5.9	26.95	21.89
Tunisia	2.7	1.0	(1.0)	1.6	4.42	36.20
Ethiopia	0.7	0.4	(0.4)	0.6	23.60	0.42
Yugoslavia	22.0	12.0	(11.4)	15.8	19.7	80.20
Rumania	14.7	14.1	(13.4)	14.0	19.7	71.07
Albania	0.1	0.1	(0.1)	0.1	1.65	6.06
Bulgaria	8.8	6.7	(6.4)	7.5	8.44	88.86
Cuba	18.2	2.7	(2.6)	6.9	7.13	96.77
Nicaragua	0.2	0.1	(0.1)	0.1	1.51	6.62
Chile	9.7	4.8	(4.6)	6.7	7.97	84.07
Colombia	4.2	1.8	(1.7)	2.7	14.77	18.28

Dominican Republic	3.0	0.6	(0.6)	1.5	3.06	49.02
El Salvador	0.3	0.1	(0.1)	0.2	2.66	7.52
Bolivia	1.1	0.1	(0.1)	0.3	3.67	8.17
Guatemala	0.7	0.3	(0.3)	0.5	3.87	12.92
Jamaica	1.4	0.3	(0.3)	0.6	1.78	33.71
Panama	0.4	0.1	(0.1)	0.2	1.12	17.86
Honduras	0.5	0.4	(0.4)	0.4	1.89	26.46
Peru	5.2	1.3	(1.2)	2.5	11.16	22.40
Paraguay	0.6	0.1	(0.1)	0.2	1.84	10.87
Puerto Rico	3.4	0.8	(0.8)	1.6	2.51	63.75
Uruguay	4.7	1.5	(1.4)	2.6	3.01	86.38
Venezuela	7.2	4.5	(4.3)	5.6	7.51	74.57
Ecuador	0.7	0.4	(0.4)	0.5	4.42	11.31

Table 5. CROSS-SECTION INDICES OF MACHINERY AND CONSTRUCTION OUTPUT IN RELATIVELY ADVANCED COUNTRIES (1958)

	Machinery and Construction Index			Gross Domestic Fixed Investment (\$)	
	Japan's Weight	U.K. Weight	Geom. Mean (Japan=100)	(U.S.A.=100)	
U.S.A.	555.9	526.3 (561.6)	558.8 (100.00)	977.7	100.00
U.S.S.R.	430.8	405.8 (433.0)	431.9 (77.29)	—	—
West Germany	127.8	122.2 (130.4)	129.1 (23.11)	161.8	16.55
U.K.	104.5	100.0 (106.7)	105.6 (18.90)	130.0	13.30
France	92.1	88.0 (93.9)	93.0 (16.65)	141.9	14.51
Italy	47.1	44.9 (47.9)	47.5 (8.50)	75.5	7.72
Japan	100.0	93.7 (100.0)	100.0 (17.90)	100.0	10.23
Austria	9.9	9.5 (10.1)	10.0 (1.79)	15.0	1.53
Belgium	15.6	14.9 (15.9)	15.8 (2.83)	24.2	2.48
Denmark	6.9	6.5 (6.9)	6.9 (1.24)	11.6	1.18
Finland	5.8	5.4 (5.8)	5.8 (1.04)	12.8	1.30
Netherlands	16.2	15.4 (16.4)	16.3 (2.92)	28.7	2.93
Ireland	1.3	1.3 (1.4)	1.4 (0.27)	3.0	0.30
Sweden	22.3	21.0 (22.4)	22.4 (4.01)	29.1	2.98
Switzerland	8.5	8.0 (8.5)	8.5 (1.52)	—	—
Norway	7.6	7.2 (7.7)	7.7 (1.38)	16.1	1.65
Greece	2.5	2.4 (2.6)	2.6 (0.47)	7.3	0.74
Spain	15.2	14.4 (15.4)	15.3 (2.74)	25.7	2.63
Portugal	3.0	2.8 (3.0)	3.0 (0.54)	4.0	0.47
Czechoslovakia	34.5	32.8 (35.0)	34.8 (6.23)	—	—
East Germany	3.0	2.8 (3.0)	3.0 (0.54)	—	—
Hungary	9.9	9.4 (10.0)	10.0 (1.79)	—	—
Poland	41.3	39.1 (41.7)	41.5 (7.43)	—	—
Canada	46.6	43.8 (46.7)	46.7 (8.36)	115.4	11.80
Mexico	8.4	8.1 (8.6)	8.5 (1.52)	18.1	1.85
Argentina	11.6	11.2 (12.0)	11.8 (2.11)	27.5	2.81
Brazil	17.9	16.9 (18.0)	18.0 (3.22)	36.2	3.70
Australia	20.5	19.3 (20.6)	20.6 (3.69)	48.9	4.98
New Zealand	5.3	4.9 (5.2)	5.3 (0.95)	9.4	0.96
South Africa	15.0	14.3 (15.3)	15.2 (2.72)	20.2	2.07

Table 6. CROSS-SECTION INDEX OF MACHINERY AND CONSTRUCTION OUTPUT IN LESS DEVELOPED COUNTRIES (1958)

	Machinery and Construction Index					Gross Domestic Fixed Investment (\$)	
	Japan's Weight (Japan =100)	U.K. Weight (U.K. =100)	U.K. Weight (Japan =100)	Geom. Mean (Japan =100)	Geom. Mean (U.S.A. =100)	(Japan =100)	(U.S.A. =100)
Japan	100.0	93.7	(100.0)	100.0	17.90	100.0	10.23
China (Mainland)	46.2	44.5	(47.5)	46.9	8.40	—	—
India	22.3	21.5	(22.9)	22.6	4.05	—	—
Republic of Korea	1.1	1.1	(1.2)	1.2	0.21	4.6	0.47
Burma	0.1	0.1	(0.1)	0.1	0.02	3.2	0.33
Thailand	2.8	2.6	(2.8)	2.8	0.50	4.5	0.46
Pakistan	2.7	2.6	(2.8)	2.8	0.50	—	—
Philippine	2.2	2.1	(2.2)	2.2	0.39	5.9	0.60
Ceylon	0.5	0.4	(0.4)	0.5	0.09	1.9	0.20
Federation of Malaya	3.1	2.9	(3.1)	3.1	0.55	2.0	0.21
Hong Kong	1.4	1.3	(1.4)	1.4	0.25	—	—
Indonesia	1.5	1.5	(1.6)	1.6	0.29	—	—
Turkey	2.5	2.3	(2.5)	2.5	0.45	9.8	1.00
Syria	1.1	1.1	(1.2)	1.2	0.21	1.2	0.12
Iran	2.6	2.5	(2.7)	2.7	0.48	—	—
Iraq	1.5	1.5	(1.6)	1.6	0.29	—	—
Israel	1.7	1.7	(1.8)	1.8	0.32	4.6	0.47
Lebanon	1.4	1.3	(1.4)	1.4	0.25	—	—
Algeria	2.6	2.6	(2.8)	2.7	0.48	9.7	0.99
Congo	1.1	1.0	(1.1)	1.1	0.20	—	—
Kenya	0.5	0.4	(0.4)	0.5	0.09	—	—
Morocco	1.2	1.1	(1.2)	1.2	0.21	—	—
Southern Rhodesia	0.6	0.5	(0.5)	0.6	0.11	—	—
Uganda	0.2	0.2	(0.2)	0.2	0.04	0.7	0.08
United Arab Republic	2.9	2.7	(2.9)	2.9	0.52	—	—
Tunisia	0.4	0.3	(0.3)	0.4	0.07	—	—
Yugoslavia	9.7	9.2	(9.8)	9.8	1.75	—	—
Rumania	14.5	13.7	(14.6)	14.6	2.61	—	—
Bulgaria	4.6	4.3	(4.6)	4.6	0.82	—	—
Cuba	1.6	1.5	(1.6)	1.6	0.29	—	—
Chile	2.9	2.8	(3.0)	2.9	0.52	3.9	0.04
Colombia	1.6	1.6	(1.7)	1.7	0.30	9.5	0.97
Dominican Republic	0.4	0.3	(0.3)	0.4	0.07	—	—
Guatemala	0.2	0.2	(0.2)	0.2	0.04	—	—
Jamaica	0.3	0.2	(0.2)	0.3	0.05	1.8	0.18
Honduras	0.2	0.2	(0.2)	0.2	0.04	0.6	0.06
Peru	0.9	0.4	(0.4)	0.7	0.13	5.0	0.51
Puerto Rico	0.7	0.7	(0.7)	0.7	0.13	4.0	0.41
Uruguay	1.1	1.0	(1.1)	1.1	0.20	—	—
Venezuela	5.8	5.5	(5.9)	5.9	1.06	17.6	1.80
Ecuador	0.3	0.3	(0.3)	0.3	0.05	1.3	0.14