

## REPORTS AND INQUIRIES

# The World's Working Population

## Its Industrial Distribution

*An article published in an earlier issue of the Review discussed some of the major features of the world's working population as regards the demographic aspects.<sup>1</sup> The topics considered in that article included the relationship between the total and the working population, the age-sex composition of the labour force and significant trends in participation of women, the young and the aged in the labour force. The present article concentrates especially on aspects of the labour force of primarily economic significance, such as the distribution of the labour force by basic economic sectors, the trends and the current disposition of the industrial labour force in chief manufacturing industries, and the relationship between the distribution of labour force and national product by economic sector.<sup>2</sup>*

International comparisons of the labour force and its distribution by economic characteristics are subject to a number of reservations because definitions, classification and tabulations of statistical material are not uniform from country to country. In particular, the comparability of the data is hampered by differences in concepts and methods as well as in institutional arrangements. Such problems were discussed at length in the first article on the world's working population. Other sources of non-comparability include technical limitations relating to the coverage and degree of reliability of the figures used: differences of this latter type are recalled in the appropriate sections of the present article.

### DISTRIBUTION OF THE LABOUR FORCE BY ECONOMIC SECTORS

The distribution of the working population in the different branches of economic activity in a country throws light on its economic structure and the stage of its industrial development. To facilitate analysis the various branches of economic activity have been classified in this article

<sup>1</sup> "The World's Working Population: Some Demographic Aspects", in *International Labour Review*, Vol. LXXIII, No. 2, Feb. 1956, pp. 152-176.

<sup>2</sup> It is intended to include an article in a subsequent issue of the *Review* which will lay special emphasis on the features of the structure of the working population of primarily social significance, such as the distribution of labour force by occupations (e.g. professional, sales, industrial workers, etc.) and status (e.g. employers, employees, unpaid family workers, etc.).

into three basic sectors and, unless otherwise stated, each of these has the scope indicated below throughout this article (including tables):

1. "Agriculture" comprises agriculture, forestry, hunting and fishing.
2. "Industry" comprises mining and quarrying, manufacturing, construction, and utilities (electricity, gas and water).
3. "Services" comprises commerce, transport, storage and communications, as well as public and private services.

### *World Labour Force by Economic Sectors and Regions*

The distribution of the working population in the different regions of the world by the basic economic sectors for the year 1950 is shown in table I. The figures in this table are intended as only a very broad guide for the distribution of the labour force by the different sectors. The data in a number of regions are based on incomplete statistics; in a few important cases, notably the U.S.S.R., China and South-west Asia, in the absence of recent statistics on the working population the figures represent no more than broad orders of magnitude on the basis of the limited evidence available. In general the figures on percentages shown here are liable to a greater margin of error than the data relating to the total labour force of each region.

Agriculture, the age-old industry of mankind, continues to hold the first place as source of employment for the world's workers; it is estimated that in 1950 there were well over 600 million workers engaged in agriculture out of a total world labour force of over 1,000 million. The service sector held the second place, accounting for somewhat over 200 million workers, while industry came last with a share of a little under 200 million workers.

This is a somewhat surprising picture at first sight. The Industrial Revolution, which began two centuries ago in a few countries of Western Europe, gradually spread to other parts of the world, and the last hundred years before 1950 were a period of vigorous economic growth. On the global scale these developments, however, have failed to dislodge agriculture as the chief source of livelihood for the greater part of mankind.

A glance at table I will show, however, that the explanation for this situation is not far to seek. The regions where industrial progress has been substantial account for only a small fraction of the world's working population. A number of important regions, notably Central and South America and southern Europe, have failed to march in step with north-west central Europe, Oceania and North America, and the more populous regions of Asia have so far remained outside the main stream of the Industrial Revolution. In Asia and Africa agriculture accounts for well over 70 per cent. of the labour force as compared with 13 per cent. in North America and 20 per cent. in north-west central Europe.

The world's industrial labour force shows a relatively strong concentration in north-west central Europe, North America and Oceania. Countries in these regions provide only 15 per cent. of the total labour force but 30 per cent. of the industrial work force of the world. By way of contrast, while half of the world's working population is in Asia, the contribution of this region to the industrial labour force is only a quarter. In respect of most other regions the position is somewhat intermediate.

TABLE I. ESTIMATED WORLD LABOUR FORCE IN 1950, BY ECONOMIC SECTOR <sup>1</sup> AND REGION <sup>2</sup>

Region	Labour force (millions)	Per cent. of labour force in—		
		Agriculture	Industry	Services
Africa :				
North . . . . .	24	73	10	17
Tropical and southern . . .	65	76	11	13
Total . . . . .	89	75	11	14
America :				
North . . . . .	66	13	37	50
Central . . . . .	18	62	16	22
South . . . . .	41	55	18	27
Total . . . . .	125	34	28	38
Asia :				
South-west . . . . .	13	70	10	20
South-central . . . . .	173	74	10	16
South-east . . . . .	65	78	6	16
East . . . . .	277	71	11	18
Total . . . . .	528	73	10	17
Europe :				
North-west-central . . . . .	90	20	42	38
Southern . . . . .	58	58	22	20
Eastern . . . . .	42	47	29	24
Total . . . . .	190	38	33	29
Oceania . . . . .	5	17	37	46
U.S.S.R. . . . .	88	45	30	25
World total . . . . .	1,025	59	18	23

<sup>1</sup> "Agriculture" comprises agriculture, forestry, hunting and fishing.

"Industry" comprises mining and quarrying, manufacturing, construction and utilities (electricity, gas and water).

"Services" comprises commerce, transport, storage and communications, as well as public and private services.

<sup>2</sup> North Africa : African countries on the Mediterranean, Spanish West Africa, Ethiopia, Eritrea, Somalilands, Sudan.

Tropical and southern Africa : rest of Africa.

North America : America North of Mexico.

South America : South American Continent (South of Panama).

Central America : rest of America (including Caribbean and Mexico).

South-west Asia : Asian countries west of Afghanistan and Pakistan.

South-central Asia : Afghanistan, India, Pakistan and Ceylon.

East Asia : China, Korea, Japan, Mongolia.

South-east Asia : rest of Asia.

Southern Europe : Iberian and Apennine Peninsulæ, Yugoslavia, Greece, Turkey.

Eastern Europe : German Democratic Republic, Poland, Hungary, Rumania, Bulgaria, Albania.

North-west central Europe : rest of Europe.

The impact of the Industrial Revolution does not, of course, stop at the introduction of changes in production techniques. It transforms the basic economic structure, involving an extended division of labour complemented by a system of distribution and exchange of goods and services in a developing "money economy". This has stimulated the

growth of commerce, transport, communications, finance and a host of specialised services in the service sector of the industrial countries. In the regions characterised by highly developed economies the workers in the service sector are generally as numerous as industrial workers. Indeed in a few conspicuous cases, namely North America and Oceania, workers in services account for about one-half of the entire labour force.

In the less developed regions of Asia, Africa and Central and South America, where the work force in both the industry and the service sector is small compared to that of agriculture, it is interesting to note that the relative share of services in the labour force is generally higher than that of industry. A part of the explanation of this phenomenon lies in the economic history of these regions over the last 150 years. During this period there was an impressive growth in foreign trade—export of primary products and import of manufactured goods from industrialised Europe. This two-way traffic led to the organisation of elaborate transport networks and distribution circuits. The ports through which foreign trade was channelled grew into great, at first non-industrial, urban centres. In the less developed areas these features underlie the early growth of the service sector. The growth of large-scale industry in these areas, a development of more recent vintage, has itself stimulated a somewhat parallel increase in the service sector. The enlargement of employment in this sector is further helped by another element: human labour, especially unskilled, is plentiful and cheap compared to manufactured goods. This circumstance leads, in the economic framework of the less developed regions, to the employment of a large number of workers in a variety of occupations providing personal services of various types, especially as domestic servants. In contrast, in the industrial countries the importance of such workers in the service sector is relatively small.

### *Current Distribution in Selected Countries*

Table II shows the distribution of the working populations in each of 22 selected countries for the most recent year for which data are available. The broad picture emerging from these data is not dissimilar to that based on regional estimates in table I. However, significant intra-regional differences exist in some important cases. For example Argentina, an industrially advanced country with a 26 per cent. share of agriculture in the labour force, shows a distribution that is appreciably different from the regional pattern. Similarly, although both Italy and Turkey belong to the same region, the overwhelming weight of agriculture in the labour force in Turkey contrasts sharply with that of Italy. However, in general the distribution pattern of the work force of individual countries in a region does not depart essentially from the regional average.

### *Historical Trends*

Trends in the distribution of the working population by major economic sector are illustrated for a number of countries in table III and chart 1. In the case of the United States and some of the European countries shown, the available statistics permit an analysis of trends over the last 80 years. For other countries, in the absence of satisfactory data over an extended period, the comparative study is limited to shorter periods.

TABLE II. LABOUR FORCE BY ECONOMIC SECTOR <sup>1</sup>

Country	Year	Labour force (thousands)				Per cent. of labour force in—		
		Agriculture	Industry	Services	Total	Agri- culture	Indus- try	Ser- vices
Africa :								
Egypt . . . . .	1947	4,398	835	1,495	6,729	65.4	12.4	22.2
Union of South Africa :								
White population	1951	145	314	496	956 <sup>2</sup>	15.2	32.8	52.0
Others . . . .	1946	2,250	785	1,025	4,061 <sup>2</sup>	55.4	19.3	25.3
America :								
Canada . . . . .	1951	1,007	1,877	2,334	5,219 <sup>2</sup>	19.3	36.0	44.7
United States . .	1950	7,331	21,623	29,488	58,442 <sup>2</sup>	12.5	37.0	50.5
Argentina . . . .	1947	1,622	1,827	2,617	6,066 <sup>2</sup>	26.7	30.1	43.2
Brazil . . . . .	1950	10,370 <sup>3</sup>	2,231 <sup>3</sup>	4,470	17,071 <sup>2</sup>	60.7 <sup>3</sup>	13.1 <sup>3</sup>	26.2
Mexico . . . . .	1950	4,829	1,333	1,781	7,943 <sup>2</sup>	60.8	16.8	22.4
Asia :								
India . . . . .	1951	103,014	13,733	22,592	139,339	73.9	9.9	16.2
Japan . . . . .	1954	18,060	8,880 <sup>4</sup>	12,990 <sup>4</sup>	39,930 <sup>2</sup>	45.2	22.3 <sup>4</sup>	32.5 <sup>4</sup>
Pakistan . . . . .	1951	17,125	1,637	2,789	21,551 <sup>2</sup>	79.5	7.6	12.9
Thailand . . . . .	1947	7,624	211	1,047	8,882 <sup>2</sup>	85.8	2.4	11.8
Europe :								
Austria . . . . .	1951	1,080	1,243	985	3,308 <sup>2</sup>	32.6	37.6	29.8
Belgium . . . . .	1947	423	1,698	1,262	3,382 <sup>2</sup>	12.5	50.2	37.3
France . . . . .	1954	5,280	7,154	6,786	19,220	27.5	37.2	35.3
Germany (F.R.) . .	1954	5,076	11,424	8,142	24,643	20.6	46.4	33.0
Italy . . . . .	1954	8,468	6,454	5,615	20,537 <sup>2</sup>	41.2	31.4	27.4
Netherlands . . .	1947	747	1,288	1,731	3,767 <sup>2</sup>	19.8	34.2	46.0
Spain . . . . .	1950	5,271	2,709	2,641	10,621 <sup>2</sup>	49.6	25.5	24.9
Sweden . . . . .	1950	632	1,267	1,183	3,082 <sup>2</sup>	20.5	41.1	38.4
Turkey . . . . .	1950	10,897	944	878	12,718	85.7	7.4	6.9
United Kingdom .	1951	1,214	11,336	10,495	23,045 <sup>2</sup>	5.3	49.2	45.5
Oceania :								
Australia . . . .	1947	498	1,140	1,368	3,006 <sup>2</sup>	16.6	37.9	45.5

<sup>1</sup> For the composition of each economic sector see footnote 1 in table I.

<sup>2</sup> Excluding persons "not adequately described" and/or "unemployed" and "seeking work for the first time"; the total is, therefore, less than that shown in table II of the article on "The World's Working Population: Some Demographic Aspects", op. cit., pp. 160-161.

<sup>3</sup> "Mining and quarrying" is included with "Agriculture".

<sup>4</sup> "Electricity, gas and water" is included with "Services".

A basic element has to be constantly borne in mind in the interpretation of the shifts in labour force distribution over time. Most countries have recorded varying but substantial increases in population in the recent past. This growing population has given rise to a stream of net additions of workers to the labour force. Changes in the distribution of the work force over a given period of time are the resultant of two components—shifts in the distribution of the working population as it

stood at the beginning of the period and the distribution by sector of the net additions to the labour force over the period.

In view of the general tendency for the labour force to grow, trends in its distribution by economic sector can be distinguished under two somewhat related aspects—changes in numbers and shifts in the percentage distribution. As will be seen below, these two trends do not necessarily run parallel.

In all countries shown in table III, with a few exceptions, the percentage share of agriculture in the labour force has shown a downward trend over a long period. In France, Germany, Italy and Sweden, the European countries where a relatively high proportion of the working population was engaged in agriculture at the turn of the century, the percentage share of agriculture has been steadily falling since the latter part of the nineteenth century, and at an accelerated pace since 1920. However, the number of agricultural workers continued to rise, reaching peak levels generally around 1920. Since that date the agricultural work force in these countries has declined both in absolute and in proportionate terms.

The number of workers in the industry sector has increased steadily in nearly all countries shown in table III. The same holds true for the proportionate share of the labour force in this sector. The only exceptions from this general upward trend are Mexico and the Union of South Africa, and, although for totally different reasons, Great Britain. The latter country had attained a high degree of industrialisation as early as 1880; the share of industry in the labour force had reached 50 per cent. by that date. This proportionate level has held steady with minor fluctuations for the last 70 years.

In the case of the service sector nearly all countries considered in table III have recorded impressive increases both in numbers and in proportionate share. In almost all countries the rate of growth of the labour force in the service sector has tended to outpace that in the industry sector. It is interesting to note that in Great Britain the decline in the relative share of agriculture is offset entirely by the increase in the service sector.

The United States has experienced a phenomenal increase in its labour force, from about 13 million in 1870 to about 58 million in 1950. The agricultural working population, while growing from 7 million in 1870 to 12 million in 1910, increased at a considerably lower rate than that of the total labour force, its share thus falling from 53 per cent. in 1870 to 32 per cent. in 1910. Since the latter date there has been a continuous drop in the number of workers in agriculture, which by 1950 had fallen back to its 1870 level representing only 13 per cent. of the total labour force. Over the same period (1870 to 1950) there was a sevenfold increase of the work force in the industry sector and a tenfold expansion in the service sector.

For India the statistics for the year 1931 relate to the pre-partition area of the country and so are not strictly comparable with the later figures. However, these statistics suggest that the share of agriculture in the labour force moved up between 1931 and 1951, a phenomenon contrary to the experience of all of the other countries considered here. In Japan, where the labour force increased by well over 10 million workers between 1920 and 1954, agricultural employment grew at a lower rate than the other sectors. As a result the share of agriculture in the labour force has diminished while that of industry and, to a greater extent, that of services has gone up.

CHART 1. TRENDS IN DISTRIBUTION OF LABOUR FORCE BY ECONOMIC SECTOR, SELECTED COUNTRIES

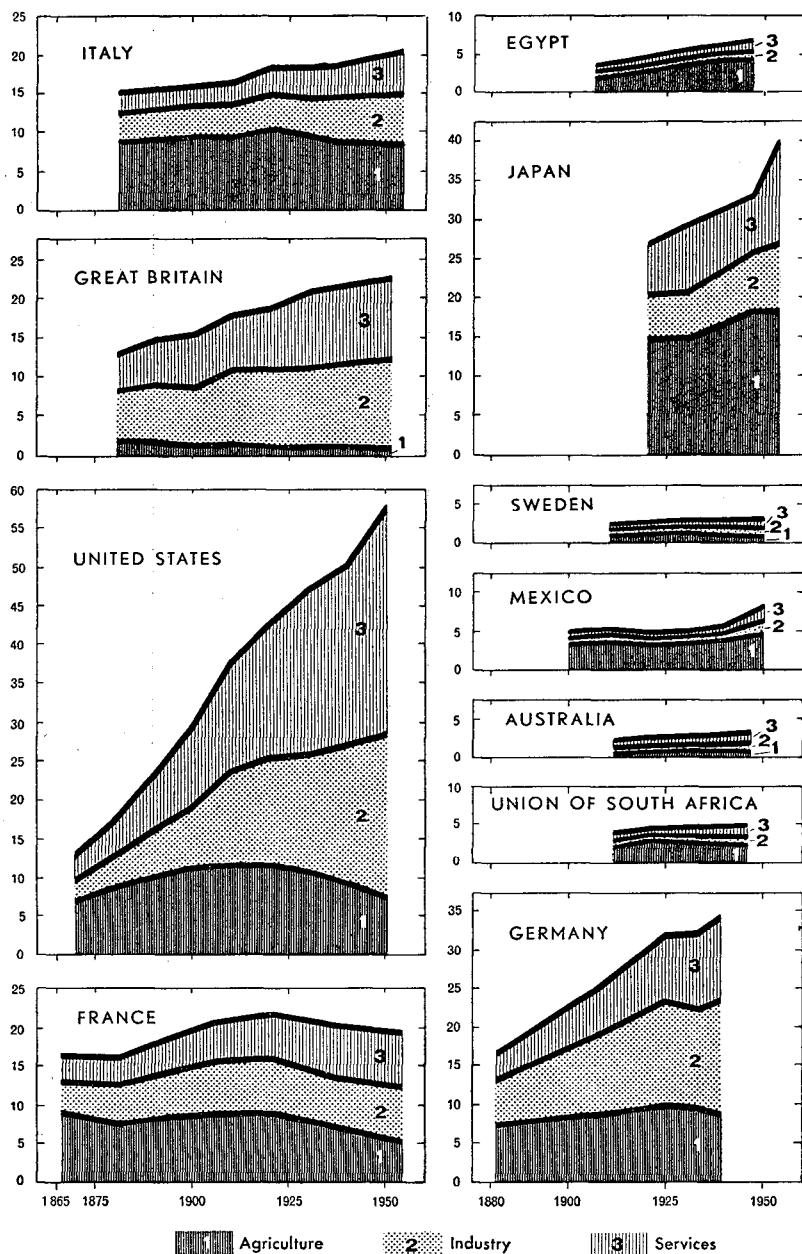
*(Millions of persons)*

TABLE III. TRENDS IN DISTRIBUTION OF LABOUR FORCE BY ECONOMIC SECTOR <sup>1</sup>  
IN TWELVE COUNTRIES

Country	Year	Labour force (thousands)				Per cent. of labour force in—		
		Agriculture	Industry	Services	Total	Agri- culture	Indus- try	Ser- vices
France . . . . .	1866	8,535	4,384	3,724	16,643	51	26	23
	1881	7,890	4,444	4,210	16,544	48	27	25
	1896	8,501	5,660	4,774	18,935	45	30	25
	1906	8,855	6,338	5,528	20,721	43	30	27
	1921	9,024	6,662	6,034	21,720	41	31	28
	1936	7,204	6,379	6,677	20,260	36	31	33
	1954	5,280	7,154	6,786	19,220	28	37	35
Germany <sup>2</sup> . . . . .	1882	7,133	5,990	3,372	16,495	43	37	20
	1907	8,556	9,982	6,099	24,637	35	40	25
	1925	9,762	13,478	8,769	32,009	31	42	27
	1939	8,934	14,418	10,917	34,269	26	42	32
Germany (F.R.)	1929	5,274	7,347	5,256	17,877	30	41	29
	1939	5,399	8,424	6,232	20,065	27	42	31
	1954	5,076	11,424	8,142	24,643	21	46	33
Great Britain . . . . .	1881	1,638	6,372	4,785	12,795	13	50	37
	1891	1,582	7,176	5,888	14,646	11	49	40
	1901	1,385	7,158	6,851	15,394	9	47	44
	1911	1,550	9,023	7,269	17,842 <sup>3</sup>	9	51	40
	1921	1,381	9,142	8,236	18,759 <sup>3</sup>	7	49	44
	1931	1,258	9,717	9,919	20,894 <sup>3</sup>	6	47	47
	1951	1,116	11,086	10,281	22,482 <sup>3</sup>	5	49	46
Italy . . . . .	1881	8,600	3,850	2,600	15,050	57	26	17
	1901	9,443	3,879	2,640	15,962	59	24	17
	1911	9,086	4,387	2,929	16,402	55	27	18
	1921	10,264	4,508	3,659	18,431 <sup>4</sup>	56	24	20
	1931	9,356	4,924	4,001	18,341	51	27	22
	1936	8,843	5,375	4,128	18,346 <sup>3</sup>	48	29	23
	1954	8,468	6,454	5,615	20,537 <sup>3</sup>	41	32	27
United States. . . . .	1870	6,910	2,830	3,185	12,925	53	22	25
	1880	8,682	4,139	4,571	17,392	50	24	26
	1890	10,121	5,973	7,225	23,318	43	26	31
	1900	11,122	7,894	10,058	29,073	38	27	35
	1910	11,834	11,622	13,916	37,371	32	31	37
	1920	11,719	13,951	16,763	42,434	28	33	39
	1930	10,753	15,498	21,242	47,492 <sup>4</sup>	23	33	45
	1940	9,317	17,560	23,197	50,074 <sup>3</sup>	19	35	46
	1950	7,331	21,623	29,488	58,442 <sup>3</sup>	13	37	50
Australia . . . . .	1911	480	668	790	1,939 <sup>3</sup>	25	34	41
	1921	532	790	974	2,296 <sup>3</sup>	23	34	43
	1933	588	935	1,150	2,673 <sup>3</sup>	22	35	43
	1947	498	1,140	1,368	3,006 <sup>3</sup>	17	38	45

<sup>1</sup> For the composition of each economic sector see footnote 1 in table I.<sup>2</sup> Frontiers of 1934.<sup>3</sup> Excluding "persons not adequately described" and/or "unemployed" and "seeking work for the first time"; the total is, therefore, less than that shown in table III of the article on "The World's Working Population: Some Demographic Aspects", op cit., pp. 160-161.<sup>4</sup> Not adjusted to agree with the corresponding total as shown in table III of the article mentioned in footnote 3 above



TABLE III. TRENDS IN DISTRIBUTION OF LABOUR FORCE BY ECONOMIC SECTOR IN TWELVE COUNTRIES (*concl.*)

Country	Year	Labour force (thousands)				Per cent. of labour force in—		
		Agriculture	Industry	Services	Total	Agriculture	Industry	Services
Egypt . . . . .	1907	2,440	380	605	3,425 <sup>3</sup>	71	11	18
	1917	2,626	429	949	4,003 <sup>3</sup>	65	11	24
	1927	3,525	556	1,169	5,250 <sup>3</sup>	67	11	22
	1937	4,308	610	1,177	6,095 <sup>3</sup>	71	10	19
	1947	4,398	835	1,495	6,729	65	13	22
India . . . . .	1931 <sup>5</sup>	100,037	15,352	25,300	141,035 <sup>3</sup>	71	11	18
	1951	103,014	13,733	22,592	139,339 <sup>6</sup>	74	10	16
Japan . . . . .	1920	14,661	5,721	6,350	26,733 <sup>3</sup>	55	21	24
	1930	14,687	5,951	8,411	29,049 <sup>3</sup>	51	20	29
	1954	18,060	8,880	12,990	39,930 <sup>3</sup>	45	22	33
Mexico . . . . .	1900	3,177	934	401	4,512 <sup>3</sup>	70	21	9
	1910	3,596	1,106	436	5,138 <sup>3</sup>	70	22	8
	1921	3,488	561	454	4,504 <sup>3</sup>	77	13	10
	1930	3,626	743	587	4,957 <sup>3</sup>	73	15	12
	1940	3,831	746	1,117	5,694 <sup>3</sup>	67	13	20
	1950	4,824	1,319	1,774	7,917 <sup>3</sup>	61	17	22
Sweden . . . . .	1910	1,016	565	535	2,116 <sup>3</sup>	48	27	25
	1920	1,058	808	699	2,565 <sup>3</sup>	41	32	27
	1930	1,041	927	904	2,872 <sup>3</sup>	36	32	32
	1940	864	1,070	1,032	2,966 <sup>3</sup>	29	36	35
	1950	632	1,267	1,183	3,082 <sup>3</sup>	21	41	38
Union of South Africa . . . . .	1911	2,186	577	935	3,698 <sup>3</sup>	59	16	25
	1921	3,018	547	666	4,231 <sup>3</sup>	71	13	16
	1946	2,418	1,026	1,466	4,910 <sup>3</sup>	49	21	30

<sup>3</sup> See footnote 3 opposite.<sup>5</sup> Pre-partition India.<sup>6</sup> Including earning dependants.

The drift away from agriculture, which appears to be almost a universal phenomenon, has become a movement of considerable amplitude in the industrial nations of the world. The broadening of employment in the non-agricultural sectors of these countries not only accounts for all fresh increases in the labour force, which in a few cases—as in the United States—are sizable, but in addition involves transfers from agriculture to the other sectors.

In the economically less developed countries, where the rates of increase of the labour force are generally greater than in the industrial countries, the proportion of additional workers who go to agriculture is generally smaller than the share of agriculture in the existing work force. In consequence, although there is no net transfer of workers from agriculture and the number of workers in agriculture continues its

upward trend, the proportion of agricultural workers in the labour force declines. This is the case, for example, in Mexico and Egypt. Japan, as a somewhat exceptional case, belongs to the same group in this respect, although the process of industrialisation has had a longer start and been of a more far-reaching character in that country than in most other countries in this category.

*Analysis of Recent Increases in Labour Force by Economic Sector*

A closer study of the distribution of the changes in the labour force in recent years by economic sector helps to explain the modifications in the structure of the economically active population. Table IV gives for each of ten selected countries the changes in the labour force over a recent period and their distribution by economic sector.

All the countries shown, with the exception of France, have recorded an increase in the working population in recent years. The decrease in France is largely explained by the peculiarities of her demographic features.

TABLE IV. RECENT CHANGES IN THE LABOUR FORCE BY ECONOMIC SECTOR<sup>1</sup> IN TEN COUNTRIES

Country	Period	Changes (thousands)			
		Agriculture	Industry	Services	Total
Egypt . . . . .	1937-47	+ 90	+ 225	+ 318	+ 634
France . . . . .	1936-54	- 1,924	+ 890	- 7	- 1,041
Germany (F. R.) . . .	1939-54	- 323	+ 3,000	+ 1,910	+ 4,578
Great Britain . . . . .	1931-51	- 143	+ 1,369	+ 361	+ 1,587
India . . . . .	1941-51	+ 14,200	+ 300	+ 5,700	+ 20,200
Italy . . . . .	1936-54	- 375	+ 1,079	+ 1,487	+ 2,191
Japan . . . . .	1947-54	+ 248	+ 1,171	+ 5,626	+ 7,045
Mexico . . . . .	1940-50	+ 998	+ 587	+ 664	+ 2,249
Sweden . . . . .	1940-50	- 232	+ 197	+ 151	+ 116
United States . . . . .	1940-50	- 1,986	+ 4,063	+ 6,291	+ 8,368

<sup>1</sup> For the composition of each economic sector see footnote 1 in table I.

Six of the ten countries shown, the United States and the five European countries, have had a net outflow of workers from agriculture with the result that the sum of increases in the industry and service sectors is greater than the total labour force increase. In France, the only country with a net decrease in total labour force, there was a drop of 2 million workers in agriculture from 1936 to 1954. In the context of the size of her labour force this decline appears among the most important. The United States recorded a decline of 2 million workers in the agricultural labour force from 1940 to 1950. Comparison with figures for earlier dates shows that the shrinkage of the agricultural labour force in the United States was accelerated over this period. In the other European countries the outward flow of labour from agriculture was less substantial, although in Sweden, relative to the size of her agricultural labour force, this outflow was the highest of all countries.

In all European countries, with the exception of Italy, the additions to the labour force in the industry sector are larger than in the service

sector, pointing to the vigorous industrial expansion in these countries in the post-war period.

In the other countries shown in table IV the increases in the service sector are relatively the more important. This group comprises countries with economic conditions differing as widely as those of the United States and India, and the fact that the service sector absorbs a greater proportion of the additions to the labour force than industry stems from different causes for the various countries. For example, in the United States rising productivity in agriculture and industry, already at a very high level compared to that in most other countries, may underly the continuing growth of the service sector and thus be indicative of healthy economic progress. On the other hand, in the case of India between 1941 and 1951 the bulk of the additions to the labour force continued to go to agriculture; of the part of the additions which went to the non-agricultural sectors, the share of industry is insignificant compared to that of the service sector. The failure of industry to expand to create additional employment in this sector may be at the root of this phenomenon and if interpreted in conjunction with other relevant facts it may point to the lack of a balanced economic growth over this period.

#### CHANGING PATTERNS IN MANUFACTURING EMPLOYMENT

##### *Differences in the Composition of the Economic Sectors*

In the preceding part of the present article all types of economic activities have been grouped in three broad sectors to facilitate analysis. Even within a given sector, the underlying techniques of production and the types of organisation, as well as the relative importance of the constituent elements of economic activities, vary greatly from one country to another. This is not surprising in view of the widely differing economic conditions and levels of development in the various parts of the world. For example, in the United States agriculture is extensive and mechanised, while in Japan it is intensive and largely dependent on human labour and animal traction. In the industry sector of the leading industrial countries production is organised mainly through factory-type enterprises, while in the case of India handicrafts and village industries predominate, at least as measured in terms of employment.

In addition there may be differences in the structure of an economic sector arising from the varying importance of the constituent elements of economic activities. For example, while in a number of less developed countries agricultural activities are almost exclusively related to cereal production or to plantations, in some countries with more developed economies, notably Denmark and New Zealand, the contribution of dairying and animal husbandry to total agricultural employment is considerable. In the less developed countries personal and domestic servants form an important part of the service sector, while in the industrial countries the corresponding contribution of such workers is comparatively small. The contribution of specific manufacturing industries, such as textiles or engineering, to the industrial sector also shows important variations among the different countries.

Finally, the composition of the economic sectors in a given country changes over time. With economic development, technological progress and rising real income per head, there is generally a tendency for a switch in production from the basic necessities of life to the less essential

goods and services. This tendency has important implications for the distribution of the labour force by economic activity. It entails shifts in the relative proportions of the labour force distributed in each of the three basic economic sectors as brought out in the earlier part of this article. Further, within each sector the distribution of employment undergoes important changes.

### *Chief Industry Groups in Manufacturing*

It is proposed to illustrate here inter-country differences in the composition, as well as the changing patterns, of employment within a given economic sector by reference to the group of manufacturing industries. This group accounts for the major part of the total employment in the industrial sector, and its structure provides a particularly sensitive indicator of differences and changes in economic conditions.

Important characteristics of employment in manufacturing industries are brought out by considering the relative employment shares of two chief industry groups, namely "food and textiles" and "metals and engineering".<sup>1</sup> The first, particularly the textiles, may be regarded as a "classical" industry of the Industrial Revolution. The growth of the metals and engineering group is of later development. Food and textile industries produce articles that are mainly the prime necessities of life, while the products of metals and engineering industries contribute to a more varied material existence. The two industry groups taken together account for two-thirds or more of total manufacturing employment in most countries.

### *Nature of the Data*

Table V shows for a number of countries and at various dates for each country the percentage shares of each of the two industry groups specified above in total manufacturing employment. These data are illustrated in chart 2. For four countries, namely France, Great Britain, Switzerland and the United States, satisfactory statistics are available to afford comparisons over a period of 45 to 75 years. For the other countries shown the data cover shorter periods not going back beyond 1937. To bring out the trends more clearly for each country, employment in food and textiles is also expressed as a ratio of employment in the metals and engineering industry group.

In drawing conclusions from table V certain important reservations to which the data are subject should be noted. In some cases the data are based on the labour force in each group, while in others the statistics are derived from data on employment in establishments and thus exclude unpaid family workers, own-account and small establishment workers, the unemployed, and in many cases also salaried employees. The distortions from this source are, however, probably unimportant as the figures are in the form of percentages. A more serious discrepancy is introduced by the differences in the scope of the two industry groups, arising from the inclusion or exclusion of certain related industries. A typical example is the manufacture of nylon fibres, which is included

<sup>1</sup> The "food and textiles" industry group as taken here generally comprises food processing, beverages, tobacco, textiles, footwear, other wearing apparel and made-up textile goods. The "metals and engineering" industry group comprises basic metal industries, manufacture of metal products (including electrical and non-electrical machinery), and transport equipment.

CHART 2. TRENDS IN PERCENTAGE SHARES OF CHIEF INDUSTRY GROUPS  
IN TOTAL MANUFACTURING EMPLOYMENT

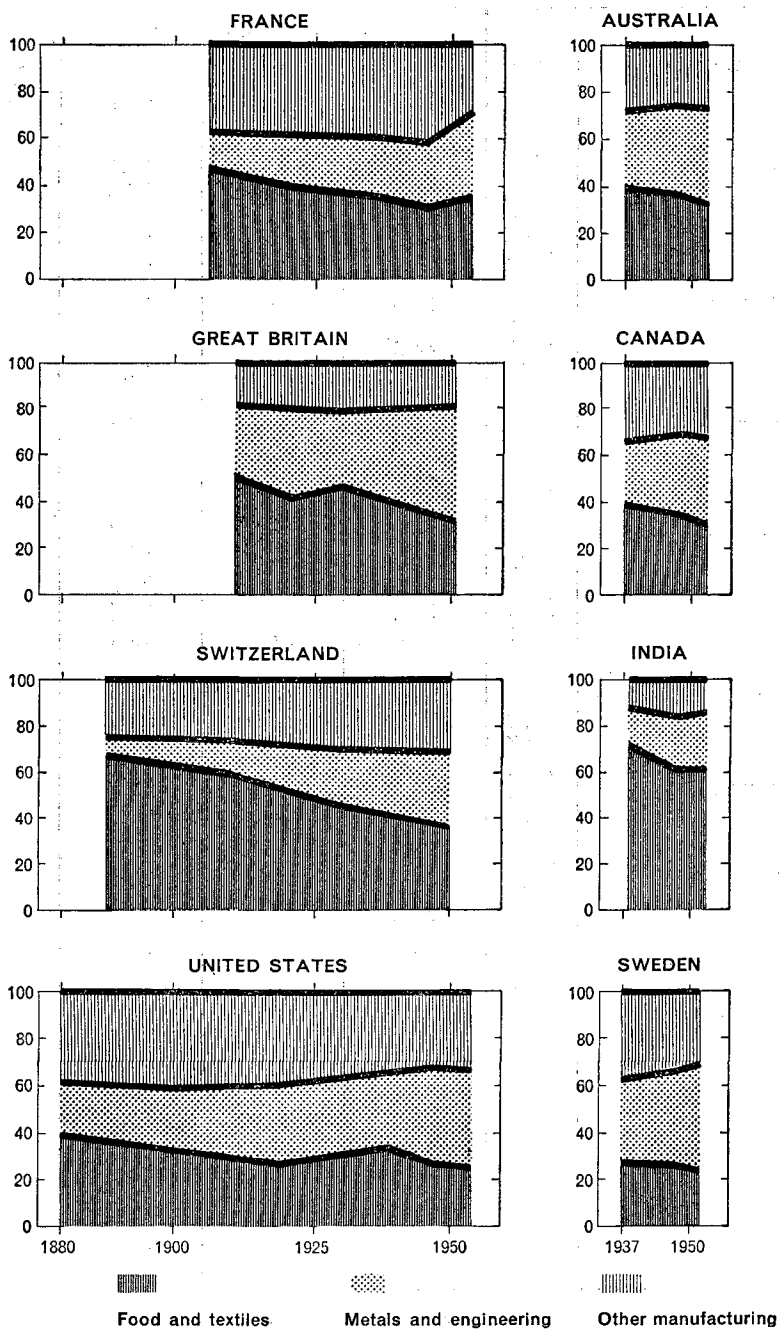


TABLE V. TRENDS IN THE STRUCTURE OF EMPLOYMENT IN MANUFACTURING INDUSTRIES<sup>1</sup>, SELECTED COUNTRIES

Country	Year	Percentage distribution of total manufacturing employment			Employment in "food and textiles" as a ratio of employment in "metals and engineering"
		Food and textiles	Metals and engineering	Other	
France . . . . .	1906	47.9	15.0	37.1	3.2
	1921	38.8	24.0	37.2	1.6
	1936	35.8	25.9	38.3	1.4
	1946	30.9	27.7	41.4	1.1
	1954	33.9	37.1	29.0	0.9
Great Britain . . . . .	1911	50.3	30.2	19.5	1.7
	1921	41.7	38.2	20.1	1.1
	1931	44.5	35.2	20.3	1.3
	1951	30.7	49.4	19.9	0.6
Switzerland . . . . .	1888	66.7	7.9	25.4	8.4
	1910	59.0	14.9	26.1	4.0
	1930	45.1	24.6	30.3	1.8
	1950	35.7	33.1	31.2	1.1
United States . . . . .	1880	39.6	21.7	38.7	1.8
	1900	32.6	27.1	40.3	1.2
	1919	27.6	32.3	40.1	0.9
	1939	34.0	30.7	35.3	1.1
	1947	27.0	38.8	34.2	0.7
	1954	24.2	41.4	34.4	0.6
Argentina . . . . .	1937	46.0	22.6	31.4	2.0
	1948	42.6	23.2	34.2	1.8
	1954	43.0	24.8	32.2	1.7
Australia . . . . .	1937	39.4	31.3	29.3	1.3
	1947	34.8	37.9	27.3	0.9
	1953	31.2	41.0	27.8	0.8
Canada . . . . .	1937	39.5	25.7	34.8	1.5
	1948	33.9	31.7	34.4	1.1
	1953	30.2	35.2	34.6	0.9
Czechoslovakia . . . . .	1937	34.7	31.7	33.6	1.1
	1949	30.2	38.0	31.8	0.8
Germany (F.R.) . . . . .	1938	31.0	44.7	24.3	0.7
	1949	31.8	41.8	26.4	0.8
	1954	30.5	45.3	24.2	0.7
India . . . . .	1938	71.7	16.5	11.8	4.4
	1947	61.2	22.9	15.9	2.7
	1953	61.2	24.2	14.6	2.5
Sweden . . . . .	1937	27.5	34.9	37.6	0.8
	1947	25.4	39.9	34.7	0.6
	1952	24.0	43.2	32.8	0.6

<sup>1</sup> For the composition of each industry group see footnote 1 on p. 512.

TABLE V. TRENDS IN THE STRUCTURE OF EMPLOYMENT IN MANUFACTURING INDUSTRIES, SELECTED COUNTRIES (*concl.*)

Country	Year	Percentage distribution of total manufacturing employment			Employment in "food and textiles" as a ratio of employment in "metals and engineering"
		Food and textiles	Metals and engineering	Other	
Belgium . . . . .	1947	39.0	32.8	28.2	1.2
	1954	37.1	35.5	27.4	1.1
Italy . . . . .	1947	39.9	38.3	21.8	1.0
	1954	36.1	39.3	24.6	0.9
Netherlands . . . . .	1948	39.2	33.3	27.5	1.2
	1953	37.7	35.8	26.5	1.1

in some countries under textiles and in others under chemicals. National classification practices also undergo revisions in the course of time and it is not always possible to regroup the national data at various dates on uniform lines. Hence, in making inter-country comparisons, and to a lesser extent inter-temporal comparisons, the figures in table V should be taken to represent no more than approximate relationships.

#### *Present Situation*

Among the industrial countries the food and textile industries account for a share of total manufacturing employment varying from about 25 per cent. in the United States and Sweden to about 37 per cent. in Belgium and the Netherlands, with a strong concentration around 30 per cent. In Argentina this share is 43 per cent., while in India, where the process of industrialisation is still at a relatively early stage, it is as high as 61 per cent. The share of metal and engineering industries varies from about 35 per cent. to 50 per cent. of total manufacturing employment for all countries with the exception of Argentina and India, where it is only 25 per cent. The employment share of this industry group is generally higher than that of food and textiles. In Great Britain and the United States, two of the leading industrial nations of the world, employment in the metal and engineering industries exceeds that in food and textiles by more than 50 per cent. Apart from the influence of features peculiar to a country's economy, the importance of the metal and engineering industries in relation to food and textiles rises in general with the level of economic development.

#### *Long Term Trends*

In the first decade of the present century the food and textile industries absorbed about half of the total manufacturing work force in Great Britain and France. In Switzerland this share was nearer 60 per cent., having declined to that level from a peak of 67 per cent. around 1890. In contrast, in the United States the corresponding share was already as low as 40 per cent. in 1880 and had further declined to a level of about 30 per cent. in the first decade of this century. At that time the employment share of metal and engineering industries was near 30 per cent.

in Great Britain and the United States, while it was close to 15 per cent. in France and Switzerland.

The percentage share of food and textiles in total manufacturing employment has regularly been on the decline except for a temporary reversal during the 1930s. In contrast, employment in the metal and engineering industries has steadily grown since the turn of the century, except for a temporary set-back during the 1930s, due to the low level of activity and the fall in real income per head due to the economic depression.

Employment in metals and engineering first reached parity with that in food and textiles between 1900 and 1919 in the United States, between 1931 and 1951 in Great Britain, and some time after 1947 in France, while in Switzerland the former was still a little below the latter as late as 1950.

It is particularly striking to note the steadiness, in all countries for which data are shown in table V, of the total share of employment represented by the food and textile industries and the metals and engineering industries taken together. When viewed in the light of the constant decline in the relative importance of the food and textile industry group, this steadiness, which is particularly clear in chart 2, confirms the gradual shift of employment from this group to the metals and engineering industries.

The shifts in the industrial composition of manufacturing employment considered above are in proportionate terms only. In the United States, for example, the number of workers in the food and textile industry group moved up from 1 million in 1880 to a peak of a little over 4 million in 1947. Over the same period employment in manufacturing increased at a somewhat faster rate, from 2.5 million to 15 million, with a resultant decline in the employment share of food and textile industries. But employment in the metals and engineering industry group rose at a much faster rate than that of manufacturing as a whole: the number of workers in metals and engineering industries rose from a little above 0.5 million in 1880 to about 6 million in 1947.

Moreover, declines in actual numbers employed are less striking than declines in percentages; for example, while the number of workers in the food and textile industry group showed only a modest decline in Great Britain from 2.60 million in 1931 to 2.45 million in 1951, the share of this group in the total employment in manufacturing fell steeply from 45 to 30 per cent.

Among the countries shown in table V, those which have recorded the most striking advances in the employment share of the metals and engineering industries in the last 20 years are Australia, Canada, France and Great Britain. Most of these countries have concurrently recorded important declines in the share of food and textile industries. India, the country with the level of economic development the least advanced of all countries shown in table V, also shares in this widespread shift towards greater relative employment in the metals and engineering industries at the expense of food and textile industries. The data for India, however, are somewhat restricted in scope as they refer only to factory-type establishments, thus excluding the very substantial handicraft sector.

It is significant to note that in countries where the manufacturing labour force has grown rapidly in recent years, notably Argentina, Australia, Canada and the Federal Republic of Germany, although the proportionate share of food and textiles in total manufacturing employ-



ment has fallen markedly, the number of workers in this industry group has risen when compared to pre-war figures.

#### RELATIONSHIP BETWEEN THE DISTRIBUTION OF LABOUR FORCE AND NATIONAL PRODUCT BY ECONOMIC SECTOR

Analysis of the labour force by economic sector becomes more meaningful when account is taken of other relevant economic elements. The comparative value of production in each sector is a particularly suitable element for this purpose. In this section it is intended to indicate in general terms the relationship between the share of each of the three economic sectors in the labour force and the corresponding contribution of these sectors to the net national product.<sup>1</sup> The disparities in the net value of output per worker are indicative of certain basic features of the economy.

#### *Nature of the Data*

Table VI shows the percentage distribution of both the labour force and the net domestic product by economic sector, namely "agriculture", "industry" and "services", for a group of selected countries in a

<sup>1</sup> The net national product represents that part of a nation's total output of goods and services which has become available for final consumption and capital formation. It is derived from the combined efforts of the factors of production employed (labour, enterprise and capital), and thus corresponds to the sum of their remunerations (factor cost) and, for the nation as a whole, is identical with the national income.

For any sector of the economy this double aspect of its net product is equally significant. For convenience, however, a sector's net product or "net value added" is commonly related to its factor cost, i.e. the sum of the wages, salaries, interest and profits originating therein; the sum of the "net value added" for each of the various sectors or branches of the economy yields the net domestic product at factor cost, which is in fact the concept used in the following analysis. It differs from the net national income in that it includes incomes accruing to factors of production owned by foreigners while it excludes incomes receivable by national residents from abroad. In most cases, however, this difference is practically negligible.

While a country's net domestic product is generally about equal to its national income, and therefore provides a good indicator of the level of living of its population, conclusions of this type should not be inferred when relating a sector's net product to the work force it employs. First, a distribution of the labour force between sectors or branches of activity can only be made in terms of the main occupation performed—leaving aside part-time jobs which also yield income but may be carried on outside the sector concerned. For example, it is well known that a great number of agricultural workers follow non-agricultural occupations during part of the year, but the income deriving from such subsidiary activities—which in terms of pay may well be more profitable than the main occupation—is included in the "net value added" of "industry" or "services", while the receivers are often classified as belonging to "agriculture".

Secondly, and even more important, the sector's "net value added" consists to a substantial extent of interest and profits that wholly or in part represent remuneration of the capital operative in that sector. The income of the sector's work force, however, comprises property returns from such capital as it owns. Obviously, even with an industrial classification much more detailed than the three-sector classification used in the present study, there would hardly be one industry in respect of which the capital employed would approximate the capital owned by its work force. In addition, capital operative somewhere in the economic system may belong to persons who themselves are economically inactive and thus excluded from the labour force altogether.

In interpreting the analysis set out below the following points should therefore be borne in mind:

(1) A sector's net product tends to differ substantially from the income earned by that sector's work force. It should, therefore, not be taken in any way as being indicative of the level of income of the workers concerned.

(2) The net product is defined in terms of values or cost of the factors of production. It may vary, therefore, whether over time or between sectors or countries, either by variations in the quantitative input of factor services, or by variations in the rates of factor returns.

recent year. From these percentages index numbers have been derived showing the net output per worker in industry and services relative to that in agriculture. The data in table VI are illustrated in chart 3. The index numbers should not be regarded as more than rough approximations because of the lack of precise correspondence between the net domestic product and the labour force figures. The basic data have been drawn from a variety of sources with certain differences in the scope of activities covered by a given sector. More important, the net domestic product figures do not fully reflect the total amount of subsistence production (or production for own use) because of the difficulties involved in evaluating it in monetary terms. This shortfall is especially important in the case of the less developed countries where production for own use of workers in agriculture accounts for a substantial part of total production, including not only agricultural commodities but also

TABLE VI. PERCENTAGE DISTRIBUTION OF LABOUR FORCE AND NET DOMESTIC PRODUCT BY ECONOMIC SECTOR, SELECTED COUNTRIES

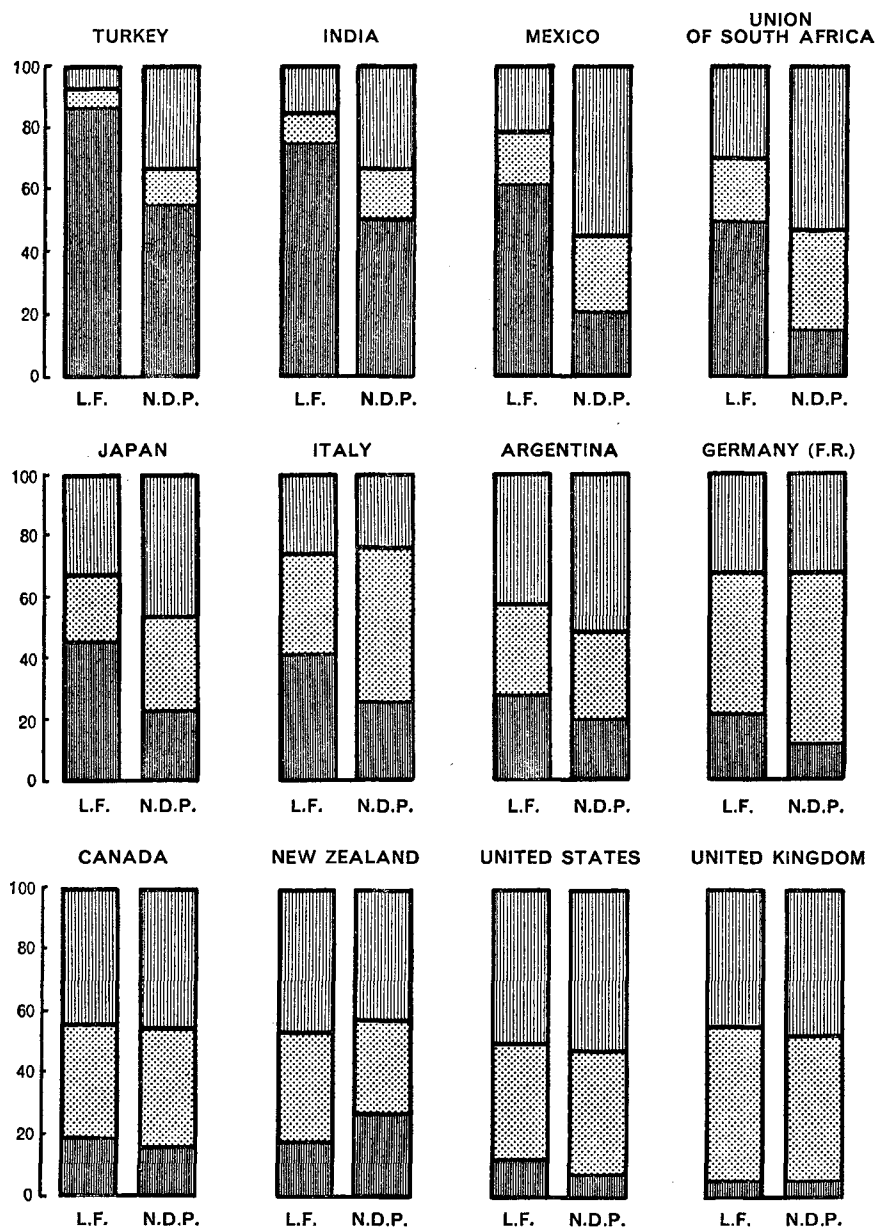
Country	Year	Agriculture : percentage share of—		Industry 1 : percentage share of—		Services 1 : percentage share of—		Comparative net output per worker by sector (agriculture=100)	
		Labour force	Net domestic product	Labour force	Net domestic product	Labour force	Net domestic product	Indus- try	Ser- vices
Africa :									
Union of South Africa . . . . .	1946	49	14	21	33	30	53	570	650
America :									
Canada . . . . .	1951	19	16	36	38	45	46	130	130
United States . . .	1950	13	7	37	40	50	53	190	180
Argentina . . . . .	1947	27	19	30	29	43	52	130	170
Brazil . . . . .	1950	61 <sup>2</sup>	35	13 <sup>2</sup>	18	26	47 <sup>3</sup>	240	310
Mexico . . . . .	1950	61	20	17	24	22	56	450	770
Asia :									
India . . . . .	1951	74	50	10	17	16	33	260	300
Japan . . . . .	1954	45	22	22	31	33	47	280	300
Pakistan . . . . .	1951	79	61	8	6	13	33	110	330
Thailand . . . . .	1947	86	60	2	11	12	29	620	350
Europe :									
Austria . . . . .	1951	33	15	37	50	30	35	300	260
Germany (F.R.) . .	1954	21	11	46	56	33	33	230	190
Italy . . . . .	1954	41	25	32	40	27	35	210	230
Netherlands . . . .	1947	20	12	34	36	46	52	180	190
Turkey . . . . .	1950	86	54	7	13	7	33	280	780
United Kingdom . .	1951	5	5	49	47	46	48	90	100
Oceania :									
New Zealand . . . .	1951	18	27	35	30	47	43	60	65

<sup>1</sup> The labour force and net domestic product series differ slightly in scope ; utilities are included with " industry " in the former, but with " services " in the latter—except for Germany, Japan, New Zealand, Turkey and the United States, where utilities are treated identically in both series.

<sup>2</sup> " Mining and quarrying " is included with " Agriculture ".

<sup>3</sup> Includes supplements to wages and salaries in all industries.

CHART 3. PERCENTAGE DISTRIBUTION OF LABOUR FORCE AND NET DOMESTIC PRODUCT BY ECONOMIC SECTOR AROUND 1950



Agriculture
  Industry
  Services

L.F. = Labour Force

N.D.P. = Net Domestic Product

home-made handicraft products as well as a number of services such as trading, and transportation of own produce. Consequently, the differences from one sector of the economy to the other in net output per worker shown for less developed countries tend to exaggerate the real disproportion between output per worker in agriculture and in the other sectors. Subject to these reservations some general observations may be made from the data in table VI.

### *Inter-sectoral Differences*

A feature common to nearly all the countries shown in table VI is that the share of agriculture in the net domestic product falls notably short of its share of the labour force. This shortfall appears to be particularly marked in the less developed countries.

The share of industry and service sectors combined in the net domestic product exceeds that in the labour force for nearly all the countries shown. This also holds true for each of the two sectors separately, although to varying extents. The extent to which the percentage share of the net domestic product exceeds that of the labour force is generally much higher in the service than in the industry sector. This implies that in most of the countries under consideration the net output per worker is highest in the service sector; the disparity is more pronounced in the less developed countries.

In the industry sector also, for the great majority of the countries shown in table VI, the percentage share in the net domestic product exceeds that in the labour force, but the extent of this divergence is small compared to that in the service sector. Moreover, the magnitude of this excess is not correlated with the level of economic development in the various countries.

The trend analysis attempted in table VII covers only the last 25 years and is restricted to five selected countries.

In every case the gap between net output per worker in agriculture and that in the other sectors has narrowed over the last 20 years or so. In general the disparities between the industry and the service sectors have also diminished. These developments indicate a general trend towards a more balanced economic structure in the countries considered, although the existing disproportions in the output per worker in the three sectors still remain great. However, the reservations applying to these data are the same as in the case of table VI, and in addition the significance of the trends is somewhat impaired by the fact that the percentages of the net domestic product are based on the current prices at the various dates rather than on constant prices; in consequence, changes in inter-sectoral price relationships affect comparisons over time. These objections are serious enough to limit the drawing of broad conclusions to those presented above.

### *Significance of Inter-sectoral Differences*

Inter-sectoral disparities in net product per worker may arise from either of two causes, namely differences in the quantitative input of factors of production, i.e. labour, enterprise and capital, and differences in the rates of factor returns.

Differences between sectors in the quantitative input of factors of production are particularly great in less developed countries. Above all, the amount (and quality) of capital employed per person in indus-

TABLE VII. TRENDS IN PERCENTAGE DISTRIBUTION OF LABOUR FORCE AND NET DOMESTIC PRODUCT BY ECONOMIC SECTOR, SELECTED COUNTRIES

Country	Year	Agriculture : percentage share of—		Industry : percentage share of—		Services : percentage share of—		Comparative net output per worker by sector (agriculture=100)	
		Labour force	Net domestic product	Labour force	Net domestic product	Labour force	Net domestic product	Indus- try	Ser- vices
Germany (F.R.) . . .	1936	27 <sup>1</sup>	13	42 <sup>1</sup>	50	31 <sup>1</sup>	37	240	240
	1954	21	11	46	56	33	33	230	190
Japan . . . . .	1930	51	17	20	27	29	56	400	580
	1954	45	22	22	31	33	47	280	300
Mexico . . . . .	1939	67 <sup>2</sup>	20	13 <sup>2</sup>	24	20 <sup>2</sup>	56	610	940
	1950	61	20	17	24 <sup>3</sup>	22	56 <sup>3</sup>	450	770
Netherlands . . . . .	1930	21	10	39	36	40	54	180	270
	1947	20	12	34	36 <sup>3</sup>	46	52 <sup>3</sup>	180	190
United States . . . . .	1930	22	8	33	33	45	59	270	360
	1940	19	8	35	35	46	57	240	300
	1950	13	7	37	40	50	53	190	180

<sup>1</sup> Figure for 1939.<sup>2</sup> Shares of labour force relate to 1940.<sup>3</sup> Utilities are included with "services".

try and services in general substantially exceeds that available to agriculture, where it covers only little more than the land. Moreover, annual average hours of work per person are definitely higher in industry and services than in agriculture owing to the seasonal nature of agricultural work and the large number of part-time family workers. These factors, which—although to a smaller extent—are also present in the more developed countries, explain part of the inter-sectoral disparities in net product per worker. The remaining part is due to differences in the rates of factor returns. For example wage rates are higher in the non-agricultural sectors than in agriculture, even after allowance for the higher cost of living in urban areas has been made. More important, the actual rates of return on capital employed in industry and services outweigh by far the return on capital operative in agriculture.

Whichever of the two causes for differences prevails, the inter-sectoral disparities in the net product per worker shown above reflect the productivity of labour in the different sectors of the countries concerned. They are broadly indicative of the levels of economic development attained and point moreover to the potentialities, from a national point of view, for more rational organisation and mechanisation in agriculture, as well as for further capital investments to increase the over-all productivity of the economy.