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INDUSTRIAL DEVELOPMENT SURVEY

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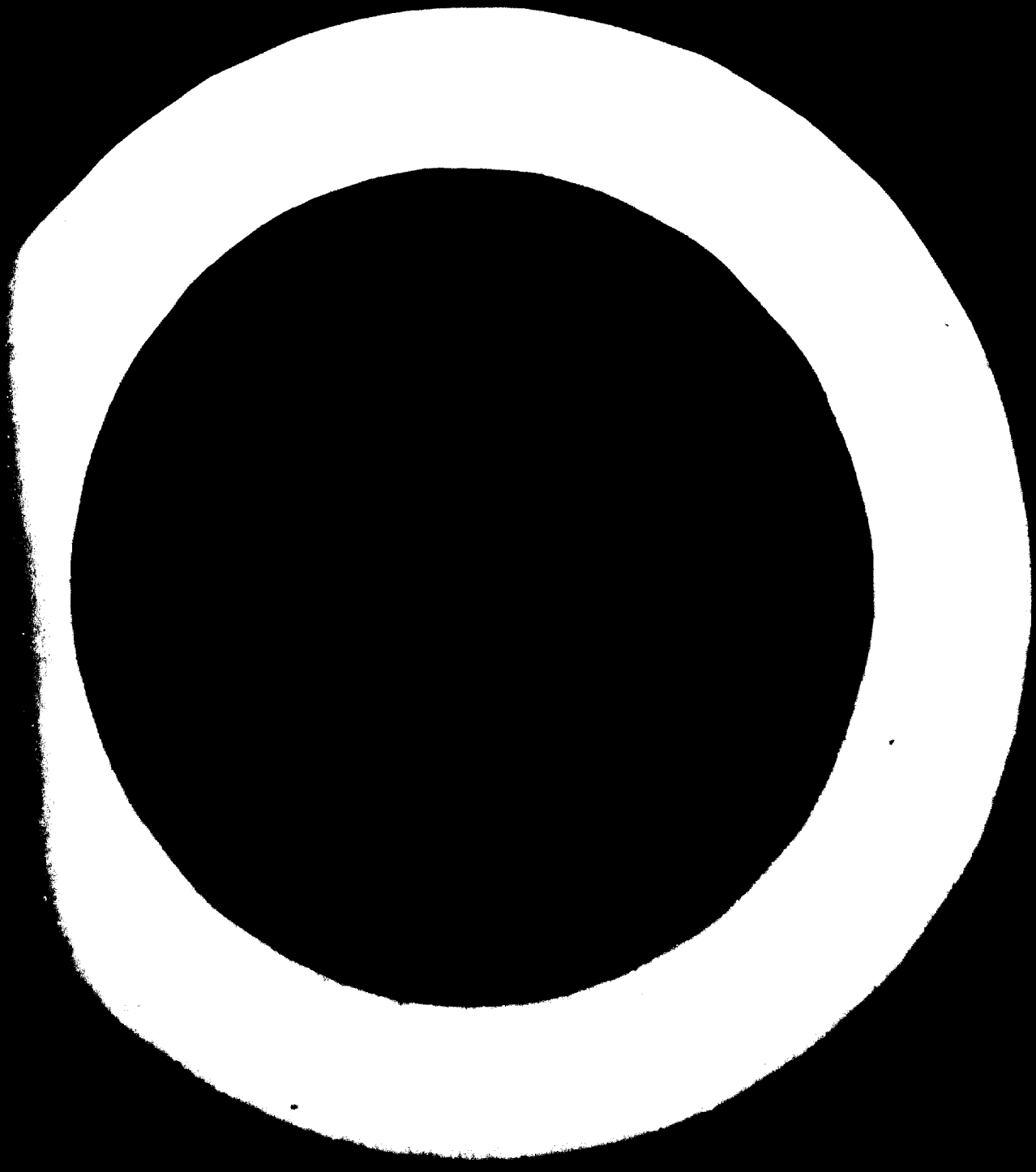
UNITED NATIONS



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VOLUME V

SUMMARY

Corrigendum

Page 8, paragraph 9

The first sentence should read

Thirdly, at the level of the developing countries, however, the present distribution of manufacturing output would point to the possibility of co-operation among these countries in such vital areas as industrial investment and trade, and particularly in the transfer of technology which has already been tested in the leading industrial developing countries.

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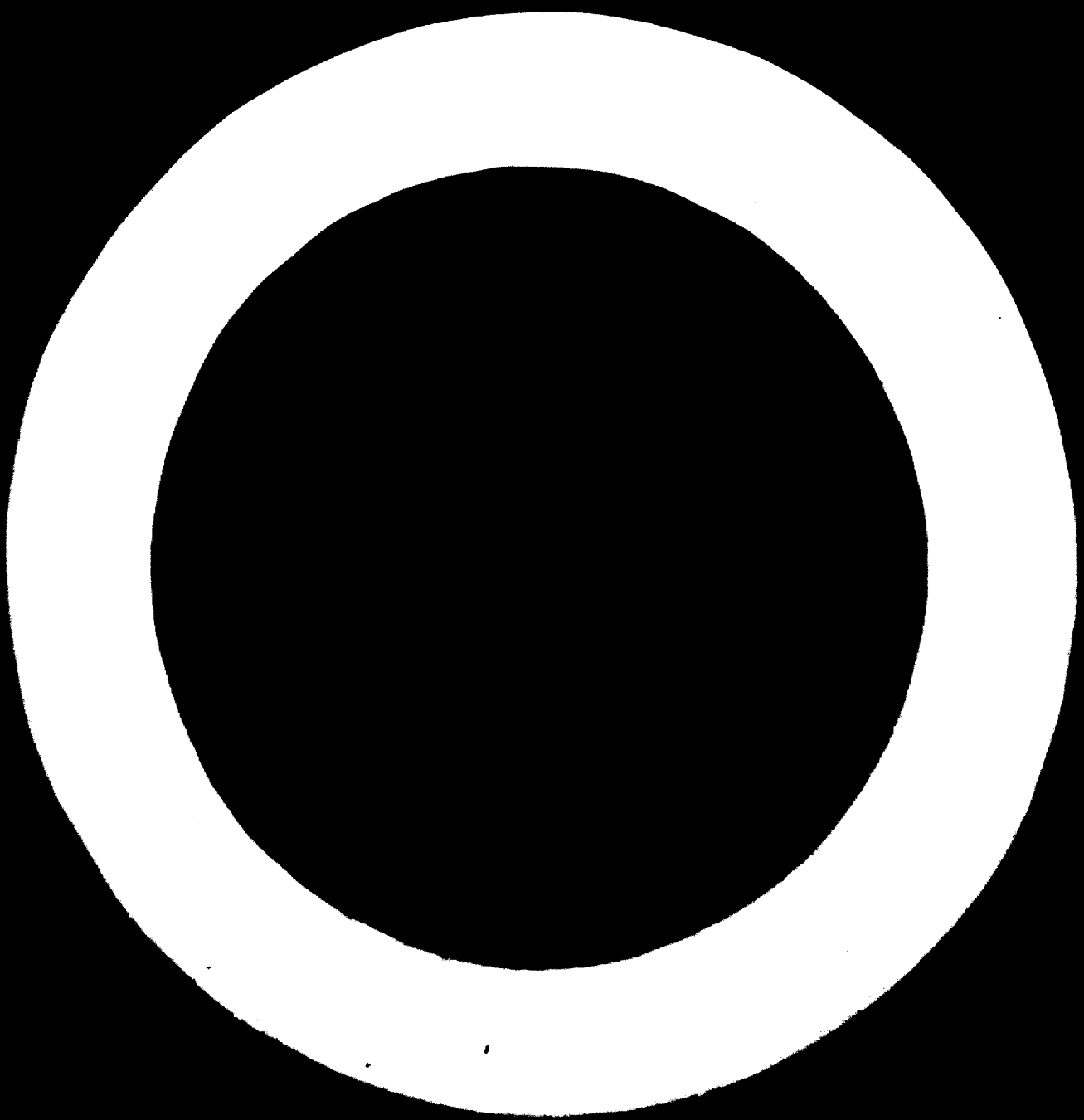
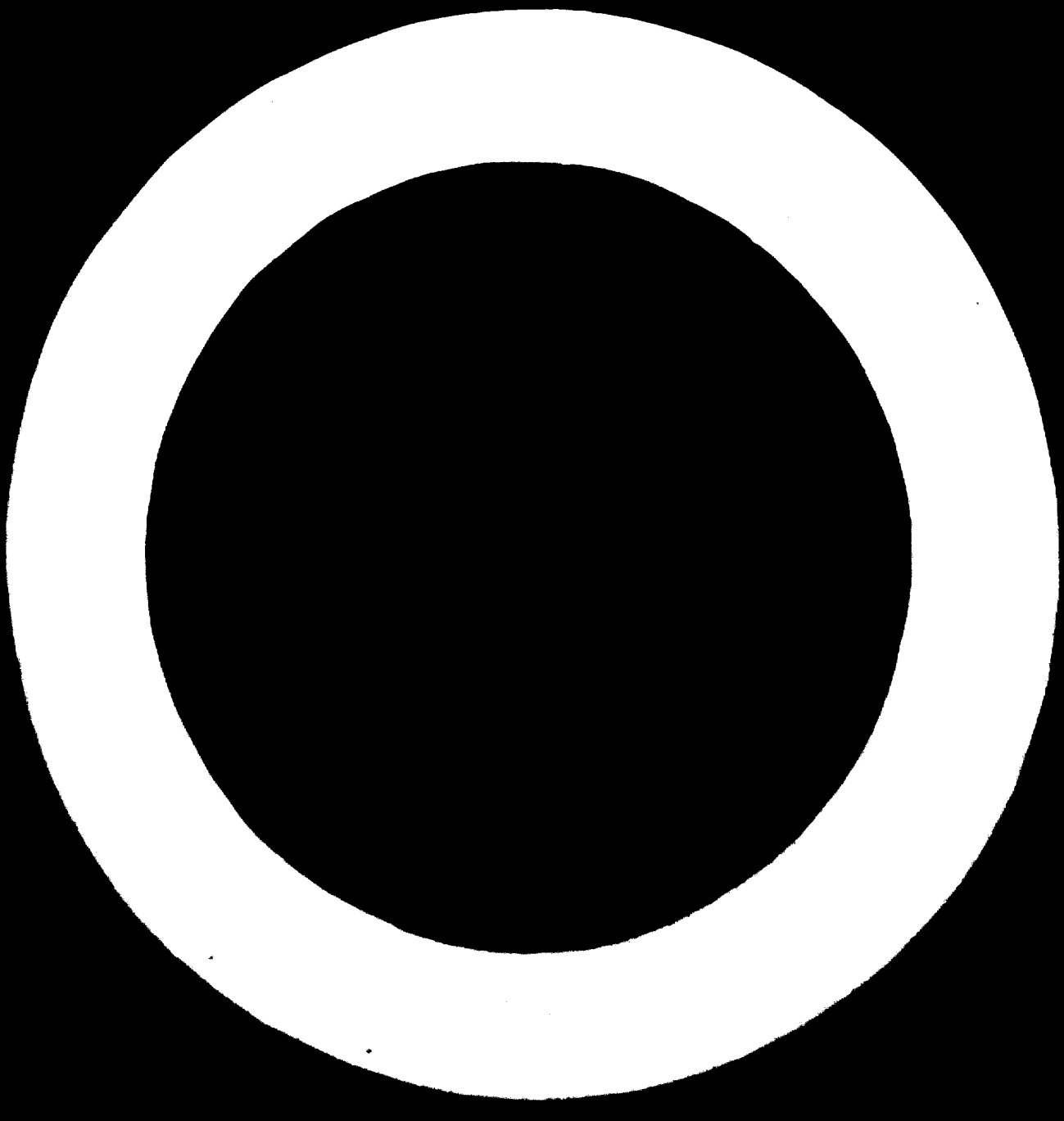


Prefatory note

1. The series of industrial development surveys is prepared in response to Economic and Social Council resolution 1030 (XXXVII), in which the Secretary-General is requested to arrange for the preparation of periodic industrial development surveys, and in response to General Assembly resolution 2152 (XXI) and resolution 1(I) of the Industrial Development Board.

2. Unlike previous issues, the present Survey consists of two parts. Part one reviews the course of industrial development and related changes in manufacturing output, trade, employment and investment. Part two deals, as a specific feature, with structural change in the process of industrial development. The publication of this volume coincides with the biennial review and appraisal of progress required in accordance with paragraph 83 of General Assembly resolution 2626 (XXV). It should be noted that the Industrial Development Survey, especially volume V, represents the contribution of the United Nations Industrial Development Organization (UNIDO) to the review and appraisal of progress within the industrial sector.

3. The time lag characteristic of most of the statistical information, except for manufacturing output for which data for 1971 and provisional data for the first half of 1972 are available, has made it difficult to anticipate that the first over-all review and appraisal could be based on actual data for the first two years of the Second United Nations Development Decade. This lag, which is recognized by other United Nations agencies, has dictated the nature of the analysis contained in volume V of the Survey. The data are comprehensive enough, however, to pin-point the major obstacles to industrialization during the Second Development Decade, and it is felt that the analysis made on this basis is of considerable significance, perhaps more significant than actual measurements of manufacturing output, employment etc. over the first two years of the Decade. It is thought, therefore, that presented in such a context the Industrial Development Survey and perhaps the whole review and appraisal could fulfil their assigned tasks.



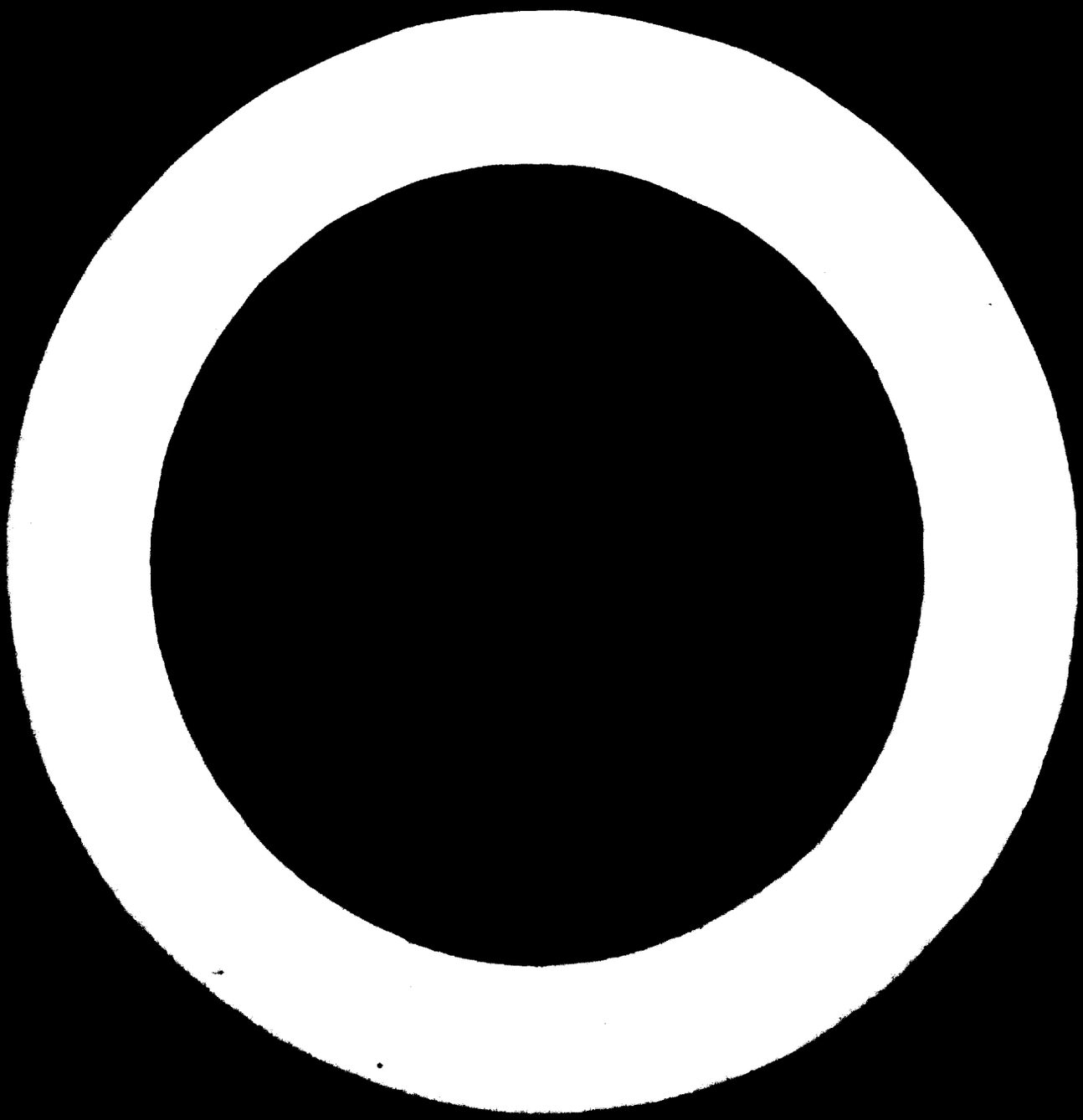
CONTENTS

Part one

TRENDS AND ISSUES IN THE FIRST AND SECOND UNITED NATIONS DEVELOPMENT DECADES

Part two

STRUCTURAL CHANGE IN THE PROCESS OF INDUSTRIALIZATION



Part one

TRENDS AND ISSUES IN THE FIRST AND SECOND UNITED NATIONS DEVELOPMENT DECADES

I. THE GROWTH OF MANUFACTURING AND RELATED ISSUES

A. Manufacturing growth in the First United Nations Development Decade and in the early 1970s

4. While the International Development Strategy[1/] makes few explicit references to the role of industrialization in the achievement of its goals - a feature that could have been amplified further - this role is implicit all the way through the Strategy. In setting a quantitative target against which the performance of the manufacturing sector may be measured, the Strategy explicitly states that the target growth for the gross product of the developing countries as a whole should be at least 6 per cent per annum, which implies an average annual expansion of 8 per cent of manufacturing output. Further, the hope is expressed that both these targets may be exceeded in the second half of the Second Development Decade. While such targets set at an aggregate level may be useful, the analysis of growth trends on this basis is only one approach to the review-and-appraisal exercise. For this reason, the Survey includes a discussion of the major problems confronting industrialization in the developing countries.

5. Before an examination is made of the growth trends of manufacturing output, however, an important factor, which has so far received scant or no attention, should be considered, since it not only has a significant effect on the interpretation of the achievements of the goals set by the Strategy for the manufacturing sector, but it also has far-reaching economic and political importance. It involves the figures showing the geographical distribution of manufacturing output in the world, which indicate that this distribution is lopsided with an extreme concentration of that output in the developed countries, both the developed market and the centrally planned economies. The former's share in total world manufacturing output ranged from 72 per cent in 1955 to 61 per cent in 1970, and the latter's share ranged from 21 per cent to 32 per cent over the same period. The two economic groupings together maintained a share of over 92 per cent of total world manufacturing output

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1/ General Assembly resolution 2626 (XXV).

during the 15 years indicated. The share of the developing countries of total world manufacturing output, by contrast, remained stationary over this period, ranging from 6.28 per cent in 1955 to 6.73 per cent in 1970. This pattern was also true at the sectoral level; only two industry groups had a larger share in the developing countries than in the developed countries (the food, beverages and tobacco industry and the textile, wearing apparel and foot-wear industry).

6. It is also significant that a similar type of concentration exists within the developing world itself, where 18 developing countries maintained a share of about 80 per cent of total manufacturing output during the First Development Decade. Six of these countries, two in Asia and four in Latin America, had a share ranging from 59.3 per cent in 1960 to 56.5 per cent in 1970. Each developing region, where the phenomenon of concentration is most extreme, has one or a few dominant countries.

7. The implications of such a situation are clear. First, the developing countries in the circumstances have little or no competitive power vis à vis the developed countries. Their competitive power is shown in fact to be considerably less if, instead of the aggregate data, the figures for countries are examined individually. Only two of the so-called leading developing countries had a share in total world manufacturing of about 1 per cent, and the greater number of the rest had shares below 0.2 per cent. Only through the collective efforts of these countries could their competitive position be improved.

8. Secondly, the existing pattern of distribution of manufacturing output in the world indicates that the majority of the developing countries are likely to continue their dependence on the developed countries for the supply of manufactures, especially those used for investment purposes. This strongly suggests the inability of these countries to develop their own technologies or even to adapt them to their own factor endowments.

9. Thirdly, at the level of the developing countries, however, the present distribution of manufacturing output would point to the possibility of co-operation among these countries, which has already been tested in the leading industrial developing countries in such vital areas as industrial investment and trade and the transfer of technology. Such co-operation might be hindered by the possible political ramifications, but it is an approach that should be pursued vigorously by the developing countries.

10. Finally, for the reasons stated above, from the standpoint of the International Development Strategy it is not advisable to consider the aggregate target growth rate set for the manufacturing output of all the developing countries more than an indicative target, which may have been the intention of the Strategy, nor is it possible to limit the review and appraisal to that level of aggregation which lumps together countries as far apart as a developed and a developing country. This observation may, and perhaps should, lead to a recognition of the importance of sectoral reviews and appraisals by country, and to more emphasis being placed on the role of the various United Nations agencies in assisting the developing countries in undertaking such reviews.2/

11. A review of the figures for the growth of manufacturing output of the developing countries over the last two decades reveals that while their performance during the 1950s was quite impressive on the average (a 10 per cent average annual growth rate), during the First Development Decade the rates (6.4 per cent) fell far below that of the 1950s and appreciably below the target set for that Decade. In terms of the growth of per capita manufacturing output, the performance of the developing countries over the First Development Decade compares very unfavourably with that of the developed market and the centrally planned economies. The annual rates were 3.6 per cent for the developing countries, 5.2 per cent for the developed market economies and 7.3 per cent for the centrally planned economies.

12. If the period 1955-1970 is examined, the data show a definite long-term trend towards a slow-down in the manufacturing output of the developing countries, a trend towards increasing growth in the developed market economies, and a consistently high growth rate in the centrally planned economies. In the later years of the 1960s and early years of the 1970s, however, the developing countries as a whole, although still short of achieving the target rates for the Second Development Decade, have recorded rates of growth of manufacturing output appreciably higher than those recorded for 1962, 1963 and 1967, which were 4 per cent, 5 per cent and 4 per cent respectively. After 1967, prospects for an accelerated growth in the manufacturing output of the developing countries as a whole seemed brighter when rates of 7, 8.6, 6.7 and 7.5 per cent

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2/ In its annual review of industrial development, UNIDO has endeavoured to show the growth trends of manufacturing output as well as other variables, such as manufacturing employment, exports, imports and investment, not only at the level of all the developing countries, but also at the regional level and at the level of individual countries, whenever data are available.

were recorded for the years 1968 to 1971 respectively. The provisional data for the first half of 1972 indicate a growth rate of manufacturing output for the developing countries as a whole of 6.6 per cent.

13. It is too early to say whether these growth trends in the manufacturing output of the developing countries will continue. If they do, the target set for the first half of the Second Development Decade may be reached, but certainly with greater effort. An examination may be more meaningful at the regional level. The data indicate that the Latin American region, where output has been consistently increasing since 1967 at annual rates of about 8 per cent, which were appreciably higher than those reached in the 1960s, could reach the target set by the International Development Strategy. This has not been the case in the two other developing regions, where the rates of growth of manufacturing output have fluctuated rather widely below the level of 8 per cent. In Africa, the most recent figures are for 1965-1969, which indicate an average annual growth rate of only 5.2 per cent, which was considerably below the annual average of 9.1 per cent for the period 1955-1960.

14. Country data from the various developing regions are included in table 13 of the Survey, volume V, part one. A conclusion is that the developing countries, particularly those that had a measure of success in their efforts to industrialize, should constantly seek to develop other manufacturing sectors than those that have taken the lead in the past and that may have reached a level of decreasing growth potential, if these countries hope for the sustained growth of manufacturing output.

B. Important issues relating to the industrial development of the developing countries

Industrialization and the environment

15. The increasing concern over the effect of industrialization on the environment is one of the major issues relating to the industrial development of the developing countries. A great deal of effort will have to be exerted not only to assess fully its total impact on industrialization but also to devise forms of action that are mutually beneficial to the developed as well as to the developing countries. Concern over environmental hazards is primarily based on the experience of the developed countries. The developing countries have a long way to go before encountering the problem, which

is symptomatic of over-development. These countries suffer rather from lack of development. They are preoccupied not merely with the quality of life but with sustaining life itself.

16. None the less, the developing countries have great interest in the discussion of the problem of the environment. They recognize that it could have a substantial effect on their own development. Aside from the broader aspects, of immediate concern to these countries, however, are the effects on their exports, both positive and negative, of the adoption of stringent environmental standards in the developed countries. Such standards may take the form of tariff and/or non-tariff barriers against products considered by the developed countries to be dangerous to the environment. Although the application of these standards would most probably be non-discriminatory, this would not make them less hard on the developing countries. They are equally concerned over the effects that the increased tendency to recycle materials and products may have on their exports. Although recycling has been prompted primarily by such environmental considerations as the elimination of industrial wastes, it is feared that it could lead to a reduction in the flow of exports from the developing countries. Furthermore, these countries are increasingly concerned that the developed countries, because of environmental considerations, may adopt criteria governing their foreign aid that would lead to an increasing proportion of such aid being directed to solving environmental problems, as well as to a distortion in the criteria for project appraisal. Although the developing countries do not need and are not likely to adopt the same environmental standards as those applied in the developed countries, they fear that new technologies in the developed countries will be designed to mitigate pollution and may be more expensive, making industrialization for them even more costly than at present. That, indirectly, the developed countries may enforce their environmental standards on the developing countries is a prime concern. Developing countries would no doubt like to have more options open to them and not be faced with a situation whereby they would be forced to invest in new and perhaps more expensive technologies that satisfy the pollution requirements of the developed countries.

17. On the other hand, there are some positive aspects to the question of the environment for the developing countries. Because of environmental considerations, a shift is likely to occur from the use of synthetics to

natural products. An increasing trend in this direction may prove quite beneficial to the exports of the developing countries. Further, owing to an accelerated use of non-renewable resources (another type of environmental hazard), deposits of an increasingly lower grade are being brought into production through improvements in mining and beneficiation techniques. Many developing countries, if this trend continues, will find themselves in possession of certain natural resources that were previously uneconomical. Still more important, the developing countries possess many of the known reserves of such non-renewable resources, and this may alter the bargaining position of these countries and also lead to the location of processing industries where these resources are. Equally important, the developing countries may acquire certain comparative advantages in some industries either because they require less stringent environmental standards or because the age of existing industrial plants and equipment in the developed countries coupled with high environmental standards may make them uneconomical. The developed and the developing countries may then find it mutually beneficial to examine the possibilities of the transfer of such industries from the former to the latter developing countries. This is not to imply that only "dirty industries" are transferable to the developing countries. A "new international division of labour" should be guided by the principles laid down in the International Development Strategy whereby people and Governments are "animated by a spirit of constructive partnerships and co-operation, based on the interdependence of their interest and designed to promote a rational system of international division of labour". (General Assembly resolution 2626(XXV).)

18. Meanwhile, the developing countries, although they may not adopt environmental standards as high as those applied in the developed countries, would be well advised to take the necessary steps to avoid the cumulative negative effects of development on their own environment. Pollution-free technology, if very high standards are not required, may not be much more expensive. Studies made by the World Bank show, for example, that the incorporation of the necessary pollution-control technology in an expansion of a steel plant in a developing country would amount to an increase of 2 per cent of the overall project cost.

Industrialization and inflation

19. The Survey examines a variety of inflationary patterns and causes that have been experienced in the developing countries. The basic problem is not to identify a particular inflationary process as a hindrance or benefit to

industrialization but to understand the causes and alternatives for dealing with inflation. In general, experience indicates that inflationary pressures are always present in developing countries that aspire to high rates of economic growth and capital formation.

20. In the past, a basic contention has been that inflation leads to an increase in savings. This crucial point is discussed, and some doubts about its validity are expressed, mainly owing to a lack of any supporting evidence. Moreover, wages do not always lag behind prices in developing countries with strong union organizations. Finally, the argument that increased savings result from an inflation-induced redistribution of income in favour of the upper-income groups runs counter to the current argument that a more equitable income distribution leads to positive benefits for industrial employment and growth.

21. Two other phenomena should receive particular attention by the developing country experiencing inflation, but they are often neglected. The first is that prices associated with infrastructure (for example, freight rates, other transportation costs, water, electricity etc.) often fail to keep pace with inflation. These prices are set by government agencies, which are often reluctant to match inflationary rates elsewhere in the economy. The danger is that the infrastructure will not be adequately developed to meet the needs of industrialization.

22. A second frequently neglected aspect involves the price of the domestic currency or exchange rate. Devaluation has often been interpreted as a failure of government policy, and developing countries are therefore sometimes hesitant to take this step. Furthermore, they attempt to contain inflation by keeping their imports as inexpensive as possible (undervaluing them). Consequently, exchange rates are altered erratically and over long intervals, while domestic prices maintain steady increases. This practice may have detrimental effects on both export prospects and economic growth.

23. Other common price distortions, such as wage rates, are also discussed in connexion with inflationary trends.

Technology and industrialisation

24. The role of technology in the process of industrialisation has long been recognized as one of special importance. All indications are that this is certainly going to be the case during the Second Development Decade, since the

growth of industry depends to a considerable extent on "a continuous flow of decision-making about the appropriate choice and application of industrial technology, whether it is related to the establishment of new production capacity, to the improvement of products or to technological processes in existing industries".3/ Such decisions, however, are not easy for many developing countries to make. The choices available to them are limited, and most of these countries are unable to determine the one best suited to their particular factor endowments. It would be ideal, of course, if technology were easily transferable from the developed to the developing countries. This is not the case, however, since some technologies are not applicable and others are not adaptable to the conditions in the developing countries. A recent article on this subject refers to the existence of a "communications gap" and a "suitability gap".4/ The communications gap exists because technological knowledge is only partly or imperfectly communicated to the developing countries, leading to a relatively small share of high-productivity sectors, to a small number of enterprises employing the best practices or to the latter being of a fairly low standard. The suitability gap refers to the fact that technologies originating in the developed countries may be inappropriate for the developing countries, either because existing technology is not suitable or because not enough resources have been devoted to the discovery and development of suitable technology. Inappropriateness, however, could be explained only partly by the different factor endowments of the developed and developing countries. An equally important reason is the physical and social differences between these two economic groupings, and often the lack of capability among those in the developing countries who are entrusted with the choice and application of industrial technology. These are important elements of the industrial infrastructure, the development of which is a prerequisite for the technological independence of the developing countries. Quite often there is no technology available that may be re-adapted to the conditions in the developing countries; it must instead be developed.

3/ Report of the Executive Director of UNIDO to the Industrial Development Board at its seventh session (ID/B/122), para. 39.

4/ P. Streetan, "Technology Gaps between Rich and Poor Countries", Scottish Journal of Political Economy (November 1972), pp. 213-230.

25. Another feature of the problem facing the developing countries, which should perhaps be given more attention, is the accelerated rate at which new technologies are being developed, leading to the discard of older technologies unable to withstand the competition. The developed countries can absorb these extraordinary investments, and their industrial enterprises are quite prepared to make them. The developing countries can not afford this luxury, nor for that matter would it be desirable for them to develop a taste for it. This problem and its effect on the competitive position of the developing countries need serious examination by the international community. There will indeed be some industries whose development will require for some time to come technologies imported from the developed countries, and they are the ones most likely to be affected by this disparity in investment capacity. Others may employ an indigenous technology or one that has been developed and tested in another developing country. This greater self-reliance would require, of course, that the developing countries pay more attention to technological investment in equipment, selection, process design, and the modification of technology, as well as to the development of management and worker skills in maintaining and using the equipment effectively. Admittedly, this is not possible except in a few developing countries where such capacities exist. Others need assistance.

C. The case for industrialization

26. The case put forward for industrialization in the Survey was prompted by the doubts that have been expressed recently about the validity of the role of industrialization in development and, in particular, about its contribution to achieving the social objectives of societies. It is argued, in the Survey, that while the concern for social welfare is certainly valid, the premise that industrialization is the cause of social ills may be debated.

27. The present arguments against industrialization, although they may be easily answered, have been prompted by a number of reasons. Most developing countries after the Second World War emerged from a long colonial era with great aspirations for economic development. They pinned their hopes on the industrial sector for the accelerated growth and transformation of their economies. Some of these countries, however, claim that industrialization has not solved many of their problems and has not led to the economic or social gains expected from it.

28. Although some of the arguments put forward are sound, no study has been made of why such goals have not been achieved. Developing countries no doubt appreciate the fact that industrialization by itself could not achieve economic growth, nor for that matter could it alone realize the social goals stated by Governments, which depend on the strategies and policies adopted by these countries, with industry playing its part but not substituting for other sectors. The realization of social objectives requires the co-operation of all sectors and depends, above all, on the will of Governments to institutionalize the necessary machinery to achieve such goals.

29. In judging the achievement of industry in terms of the objectives set by the developing countries, the constraints imposed on the industrialization of these countries by the international climate should not be overlooked. These include the lopsided distribution of world manufacturing output as well as the rigidity of the pattern of manufacturing trade and its concentration, both of which were referred to earlier. It is important also to realize that the manufacturing sector of the developing countries, more than any other sector, is subjected to more discriminatory measures at the international level. Further, at the basis of the arguments against industry appears to be the mistaken idea that the pattern of development of the developed countries will be repeated in the developing countries. Although no alternative pattern to that of the developed countries has appeared, the assumption that the developing countries must necessarily follow their example is questionable and may indeed have contributed to the confusion. The present ills of the industrialized societies, perhaps caused by excessive industrialization and perhaps by lack of institutional arrangements and social policies, do not pertain to the developing countries, at least in the short term.

30. The need for the developing countries to industrialize is appreciated not only by the opponents of excessive industrialization, but it is also deemed essential, provided that the pattern of industrial development fits into an over-all strategy of economic development aimed at achieving the economic and social objectives set by Governments. Industrialization tranforms the economy through its innovative capacity, infusion of technology and higher growth compared to other sectors. The achievement of these results, however, is not automatic, but requires changes in the structure of society and its institutions, and these in turn depend on the will of Governments and their capacities to institute the necessary decision-making bodies and machinery to implement

such changes. Certain changes may strike at the roots of the structure of society, and some Governments may therefore be reluctant to initiate them. Industrialization, by its very nature, however, both requires such changes and leads to them, and this may cause some of the opposition to it.

II. FOREIGN TRADE AND INDUSTRIALIZATION

31. The growth rates of exports of manufactures from the developing countries as a whole during the period 1963-1970 (an average annual rate of 14.7 per cent) not only exceeded by far the target set in the International Development Strategy for total exports[5/] of these countries but also surpassed the growth rates of exports of manufactures from the developed market economies and the centrally planned economies, which achieved average annual rates of 13.3 per cent and 9.8 per cent respectively. This led to an appreciable increase in the share of manufacturing exports of the total exports from the developing countries, from 15.4 per cent in 1963 to 23.4 per cent in 1970.

32. The growth of manufacturing imports into the developing countries over the same period was also high (an average annual rate of 10 per cent). What is of significance, however, is that their imports of manufactures as a percentage of their total imports showed a tendency to increase over the period under examination. This phenomenon was expected in view of the efforts made by these countries to industrialize. In 1970, the imports of manufactures accounted for 68.9 per cent of total imports by the developing countries.

33. The above rates, particularly those for exports of manufactures, although they are of importance, do not convey a true impression since the share of the developing countries in total world exports of manufactures is small indeed. In fact, these rates hide two highly important characteristics of foreign trade in manufacturing, namely, its concentration and rigid pattern. For example, the share of the developed market economies of world exports ranged between 81.4 per cent in 1963 and 83.8 per cent in 1970. Although the share of the developing countries over this period increased slightly, from 5.8 per cent in 1963 to 6.3 per cent in 1970, and that of the centrally planned

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5/ To achieve the over-all growth target of at least 6 per cent per annum, set by the International Development Strategy, would require an average annual expansion of exports somewhat higher than 7 per cent and of imports somewhat less than 7 per cent.

economies decreased from 13 per cent in 1963 to 9.9 per cent in 1970, this did not alter the situation but led rather to a further consolidation of the predominating position of the developed market economies and a high level of concentration of trade in that economic grouping. An examination of the breakdown of exports of manufactures confirms this characteristic of concentration. The developed market economies not only had the highest share of trade in each commodity group but constantly increased that share over the years between 1963 and 1970.

34. The rigid pattern of trade is illustrated by the following phenomena:

(a) Most of the trade in manufactures of the developed market and the centrally planned economies is conducted between countries within each economic grouping;

(b) An evident tendency exists in the developing countries to increase their dependence on the developed market economies;

(c) Trade in manufactures among developing countries witnessed a significant decline between 1963 and 1970. Only the Latin American region showed an increase in intra-Latin American trade;

(d) A concentration of trade in manufactures similar to that mentioned above for world trade exists within the developing countries themselves. In 1969, 13 developing countries had a combined share as high as 59 per cent of the total exports of manufactures from the developing countries.

35. Given the above pattern, trade barriers erected by the developed countries, whether tariff or non-tariff, would only aggravate the situation further. The good will of the Governments of the developed world is certainly the condition for the reduction or elimination of these barriers, particularly non-tariff barriers. Furthermore, the protective policies followed by the developing countries themselves have at times proved to be counter-productive and may need to be re-evaluated.

36. An analysis of trade diversification and export concentration among individual developing countries reveals that manufactures are an important element in achieving the goal of export diversification and avoiding reliance on one or two major exports. Unfortunately, only a few developing countries have made considerable progress in this area. Those that have are typically the same countries that predominated in the export of manufactures from the developing countries.

III. EMPLOYMENT IN MANUFACTURING

Recent trends

37. High unemployment, an expanding labour force, and poverty in the developing countries have placed heavy demands on the industrial sector to absorb more labour at a time when present capacity to use more labour is limited. Manufacturing, which showed production advances of 6.5 per cent per annum during the 1960's,[6/] had gains of 3.6 per cent per annum in employment for the same period. In the latter part of the 1960s the rate of increase for manufacturing employment showed a decline. This phenomenon was also noted for the centrally planned economies at a time when output was growing and labour productivity improving. In the developed market economies, the rate of increase in manufacturing employment was lower. In Latin America, the industries with the highest rates of growth in output were also those with the largest employment increases, and slow production advances were associated with even slower employment gains. Machinery, appliances, publishing, rubber products, and apparel except foot-wear recorded above average growth in employment, while traditional manufacturing such as food, textile and tobacco products showed little change. Improvements in productivity may partially explain slow employment growth in the more traditional industries. Asian countries evidenced a similar pattern of change, although the average rates of output and employment growth were somewhat higher. The data imply that the main avenues of expansion of employment lie in industries with rapid rates of growth.

38. Heavy manufacturing[7/] in the developing countries is not synonymous with the term used in the highly developed countries. Durable consumer goods or intermediate goods typically comprise heavy industry. This form of heavy manufacturing has expanded more rapidly than light manufacturing - in Asia 9.7 per cent versus 4.7 per cent, in Latin America 8.2 per cent versus 4.7 per cent, and in Africa 7.6 per cent versus 6.0 per cent over the 1960s. Gains in employment in heavy industry have been relatively greater with expanded output than in light manufacturing.

6/ For the period 1962-1969.

7/ Heavy and light industries are not necessarily synonymous with capital- and labour-intensive industries.

Current issues

39. UNIDO reviews annually the growth trends in manufacturing employment in the various economic groupings, developing regions and countries. Such a review is contained in chapter III of the Survey. Growth trends, however, are for various reasons the least important preoccupation of those dealing with employment problems. At present, attention is focused on such important issues as the social, economic and political consequences of the employment situation in many developing countries, employment and its relation to income redistribution and social justice, and the participation of the individual in the process of development itself. Some economists even argue that employment problems should be solved before attention is turned to over-all growth objectives.

40. The relationship between employment and social objectives such as income distribution is viewed from two different perspectives. A recent contention has been that the distribution of income may solve the employment problem. The existing pattern of consumption would be changed in such a way that goods typically consumed by low-income groups would be in greater demand. Food, clothing, shoes and household necessities are examples of these goods, which are also labour-intensive manufactures. Changing the pattern of consumption would also mean that fewer foreign articles would be imported, since these are normally bought by the well-to-do. The result would be a saving in foreign exchange. At the same time, the desire for a reduction in unemployment is tied to the objectives of greater social equality and the elimination of poverty. Increasing employment is a common means of distributing income, since job holders are also income receivers. It is thought to be an effective way in situations where it has proved difficult to effect a distribution of income by other means or to institutionalize the machinery necessary for that purpose. This view has been put forward and widely discussed recently at the initiative of the International Labour Organisation (ILO); and it is based on the finding of the ILO interagency employment missions.

41. The profound importance of these objectives is undebatable, nor is there any reason to argue the merits and demerits of employment policies as opposed to growth policies, since the goals of both are not necessarily contradictory. It has been assumed, however, that with economic development, the flow of labour from agriculture would be absorbed by other sectors, mainly by industry. For various reasons, however, industry has not become the principal

supplier of jobs in the short term. While the industrial sector may emerge as a major source of employment in the long term, the unemployment problem is now so serious that this sector, like some others, may be unable to satisfy the immediate needs of employment creation. This is particularly so in view of the large numbers entering the labour force and because of productivity and competitive considerations. Finally, the existing capital stock of a country cannot readily be altered and new industrial ventures, though they may utilize labour-intensive techniques, may contribute only marginally to the greater industrial use of labour.

42. A sound development strategy should take both growth and employment objectives into account as complementary goals. A policy of creating more employment at large with income redistribution as an outcome, which did not consider growth, would not make much sense. This view is already accepted by many. It is equally unreal to consider growth without sound social policies. This view is also widely if not universally accepted. The proposal suggested in the Survey is to place economic growth and the elimination of economic inequality on an equal footing. The two objectives are closely related to employment generation as a supplementary means of income distribution.

43. Industry is perhaps one of the sectors which, for a variety of reasons, could appear to be on a conflicting course with employment objectives. The conflict is apparent, however, not real, since industrialization has a leading role to play in an employment-oriented strategy.[8/] For a number of reasons, which include concern over efficiency and productivity, competitiveness in world markets and primarily long-run developmental considerations, developing countries have tended to use capital-intensive techniques in their industrial projects. Indeed, in some cases the use of such techniques resulted from the limited choice open to these countries, from distortions in factor prices and from deliberately conspicuous investment. Concern over such cases is justified, particularly where unemployment is severe. In such a situation stop-gap measures are of the utmost importance. Alternative techniques may be utilized to absorb surplus labour. The opportunities to increase employment

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8/ The replies of Governments sent to the International Labour Organisation in connexion with the Employment Policy Convention and Recommendation, 1964, confirm this view. See "Employment objectives and policies in developing countries", report of the International Labour Office to the Committee for Development Planning at its ninth session (E/AC.54/L.56).

in other sectors such as transportation, commerce, construction and services might be explored. Industries that are by nature labour-intensive might be sought rather than turning to the use of inferior technology in sectors based on a high technological level. The latter approach is neither realistic nor is it compatible with considerations of efficiency, competitiveness and growth. It is important that the policy recommendations made to developing countries in line with these measures stipulate the period of time during which recommendations will be applicable, and indicate the shortcomings of stop-gap employment measures for the growth and employment potential of the country in the long term.

44. In a consideration of the role of industrialization in an employment-oriented strategy, the generation of direct employment should not be the only factor taken into account. Often, the indirect and secondary effects of manufacturing growth on employment are quite significant, not to speak of the essential contribution industry may make in the development of other sectors that are considered to be important in generating employment as well as in raising their productivity and efficiency. Industry is also a major contributor to total income in the developing countries.

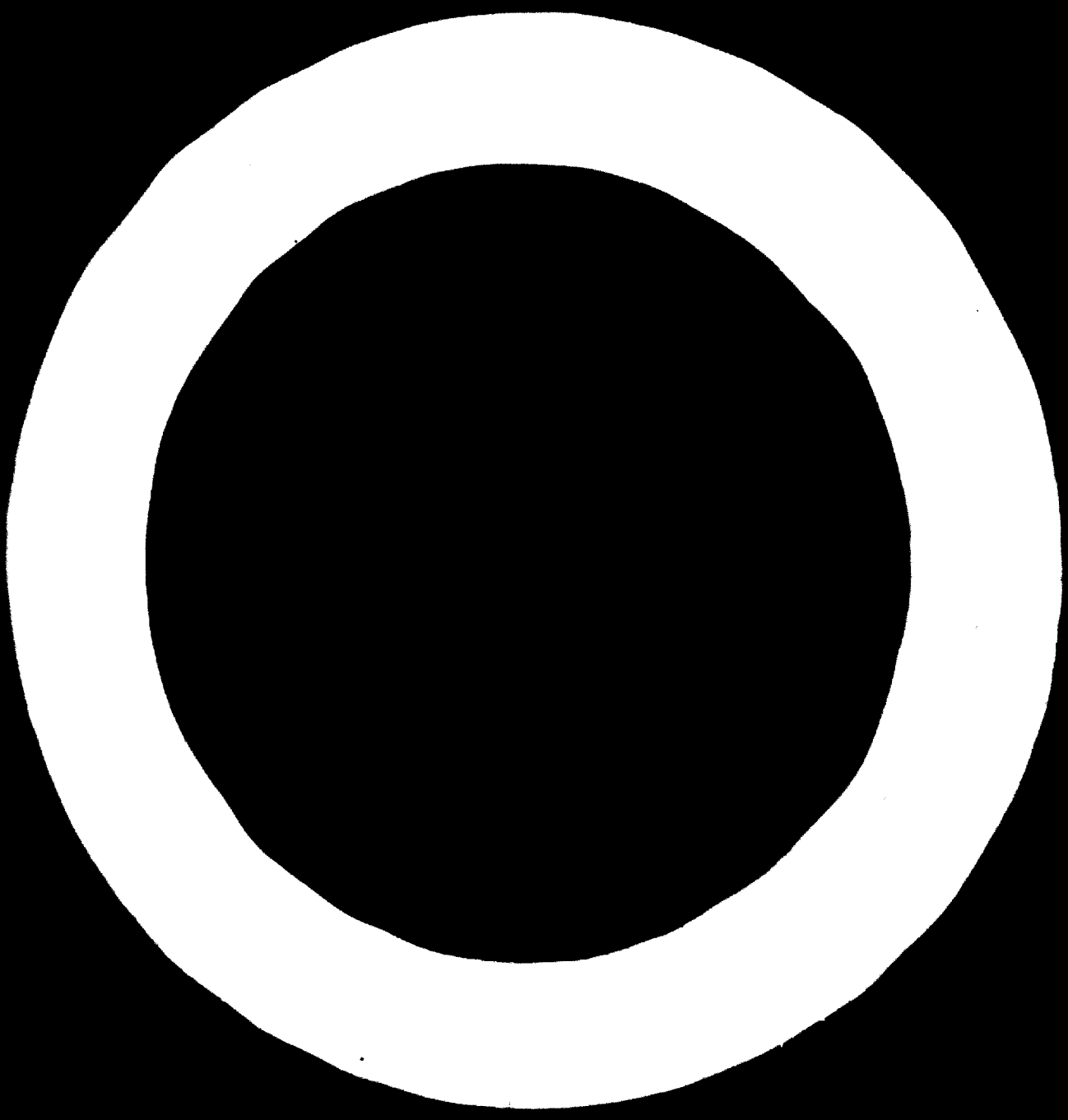
45. The generation of employment in countries with high rates of unemployment and under-employment indeed ought to be a major objective of Governments. Along with other goals, they should be compatible with the objectives of growth. Employment and its related problems are likely to gain momentum as the Second Development Decade advances, and both Governments and the international community should be prepared to devote more attention to employment than in the past.

IV. FINANCE, INVESTMENT AND INDUSTRIALIZATION

46. The most recent figures available show that capital formation continues to make up an increasing proportion of GDP in developing countries. At the same time, possibly owing to inflationary conditions in many countries, there is a tendency for investment to be devoted more to stock holding and to non-productive avenues outside the main producing sectors, which are agriculture, industry, power and transport.

47. This increased share of investment has recently been financed mainly from foreign sources, the proportion financed by domestic savings remaining virtually stationary at about 80 per cent of the total. Private funds now form a much higher proportion of foreign aid, amounting to 45 per cent in 1971 compared with 37 per cent in 1965, and an increasing proportion of official aid is now channelled through the multilateral agencies, amounting to 21 per cent in 1971 compared with 13 per cent in 1965.

48. Foreign finance is more important in the manufacturing sector, where it accounts for about 30 per cent of the total, and its importance is increasing, mainly as a result of greatly increased private direct investment and privately financed export credits. In contrast, the share of official aid in foreign financing of industry is declining as a result of an increased emphasis on social infrastructure projects. Currently, the main avenue for foreign private finance is the petroleum industry, followed closely by the manufacturing industry; the two account for about 80 per cent of total investment, while they receive, in the form of investment, little more than 10 per cent of official foreign resources.



Part two

STRUCTURAL CHANGE IN THE PROCESS OF INDUSTRIALIZATION

I. STRUCTURAL CHANGE IN THE PRIMARY, SECONDARY AND TERTIARY SECTORS

49. Throughout the period 1953-1968 the over-all structure of the developing countries was steadily modified, with a reduction in the relative size of the primary sector and an increase in that of other sectors, in particular of the manufacturing sector. In 1966-1968, on the average, the share of manufacturing in GDP increased to 17.4 per cent; this share was only 14.2 per cent in 1953-1955. In the same period the share of the primary sector decreased from 42.1 per cent to 36.1 per cent. On the other hand, in the developed market economies comparatively little change occurred in the share of manufacturing in GDP, which was already high. This meant that the gap between the developed market economies and the developing countries remained wide. Moreover, little progress was made towards narrowing this gap in the second half of the period[9/] since manufacturing output in both economic groupings expanded at about the same rate. The tertiary sector (services) was somewhat smaller in the developing countries than it was in the developed market economies, but over the period it showed a more rapid rate of increase. The gap between the relative importance of the tertiary sector in the two economic groupings, therefore, narrowed over the period. This does not necessarily indicate progress by the developing countries, however, since they have a tendency to alleviate the unemployment problem by expanding this sector, which requires little or no industrial expertise. At the same time the resulting preponderance of service occupations compared with the production of goods is inflationary. These conditions applied particularly to the Asian and African regions.

50. At the level of the developing regions, the primary sector was much smaller, and the manufacturing sector much larger, in Latin America than in Asia. There was, however, a greater change in the structure of GDP in Asia,

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9/ 1959-1961 to 1966-1968.

especially in the 1960s when the output of both manufactures and services expanded rapidly. In Latin America, the share of services in GDP was stationary; the rate of growth of manufacturing slackened, and its share was therefore reduced towards the end of the 1960s compared with the early years of that decade.

51. Among the developing countries, those with a higher growth rate of manufacturing output tended at the same time to have a higher growth rate of GDP. It was also observed that the rate of growth of manufacturing compared with that of GDP (growth elasticity) was much higher in the countries with a higher growth rate of GDP. This occurred partly because the manufacturing sector contributed more to the increase in GDP than other sectors, and partly because increasing income resulted in a more than proportional increase in the demand for manufactures.

52. Since the main purpose of development is to raise per capita income levels, an important feature of structural change is the extent to which the various sectors generate increases in productivity. In 20 developing countries for which data were available, there was an average rate of increase in labour productivity in industry of 3.5 per cent per annum, which was much higher than that in agriculture, which was 1.5 per cent annually. It would also appear that the incremental capital output ratio in manufacturing was slightly below that for the economy as a whole in the developing countries for which data were available. It may be concluded, therefore, that this sector not only uses labour more efficiently, but also capital resources.

II. STRUCTURAL CHANGE WITHIN THE MANUFACTURING SECTOR

53. Structural change within the manufacturing sector is analysed on the basis of three major factors which influence such a change, namely, the relative share of output, the structure of employment, and the relative productivity of labour. The analysis is carried out for the three economic groupings, by main branches of the manufacturing sector.

54. The data show that with regard to the per-employee level of output in the manufacturing sector as a whole, the gap between the developed market and the centrally planned economies, which was clearly evident in the middle of the 1950s, had nearly disappeared by 1970, owing to the remarkable progress

made in productivity by the centrally planned economies. However, a noticeable difference was evident in the relative shares of the various sectors in both output and employment, reflecting differences in consumption and investment patterns with regard to demand, and in comparative advantage with regard to supply.

55. While the developing countries over the period 1955-1970 attained a higher growth in manufacturing output than the developed market economies, a considerable difference existed in the per-employee level of output as well as in the output and employment structure. In 1969, the level of output per employee in the developing countries was only $900, which was less than one sixth of that in the two other economic groupings. Further, the share of light industry was still 54 per cent of total output and 71 per cent of total employment in the manufacturing sector of the developing countries. Moreover, the gap in per-employee output had been increasing, since the increase in the rate of labour productivity was lower in the developing countries, owing to the dominance of labour-intensive methods and inefficiency in production. It should be noted, however, that a lower increase in productivity relative to output was accompanied by an increase in employment, of as much as 3.9 per cent annually during the period 1955-1969, which must have helped somewhat to mitigate the unemployment problem.

56. Within the developing countries wide differences existed among the developing regions in productivity levels and industrial structures. In 1969, the level of manufacturing output per employee in Asia was still $500, which was one fourth of that in Latin America. In 1970, the share of light industry in manufacturing output in Asia was 60.6 per cent, and its share of employment was 72.3 per cent. In Latin America, its shares of output and employment were 47.6 per cent and 64.5 per cent respectively. Although Asia attained a slightly higher growth in manufacturing output than Latin America over the period 1955-1970, the gap in labour productivity between the two regions was not reduced.

57. The structure of relative productivity[10/], and to some extent comparative advantage, is by no means static, but is subject to dynamic change in the process of industrialisation. A significant alteration in the structure

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10/ The relative productivity of labour is defined here as the percentage ratio of value added per employee in the industry concerned to the average value added per employee in the manufacturing sector as a whole.

of relative productivity occurred, especially in the centrally planned economies and in the developing countries. A usual pattern of change involves the tendency of relative productivity to decrease in light industry and to increase in heavy industry. This pattern implies that light industry loses its comparative advantage and heavy industry gains comparative advantage as industrialization proceeds. In the developing countries, however, the dual character of the economy affects the structure of relative productivity to a large extent and tends to obscure this tendency. In industries where production is largely carried out in small-scale cottage factories with inferior equipment, labour tends to have a lower relative productivity, even if the industries have a latent comparative advantage from the standpoint of resource endowment.

III. STRUCTURAL CHANGE AT THE BRANCH LEVEL OF THE MANUFACTURING SECTOR, AND GROWTH AND SIZE ELASTICITIES

58. The major groups of manufacturing industry contain several heterogeneous branches within each group, and these follow different paths of development which also vary from country to country. This fact necessitates some analysis of the causes that could create differences in sectoral growth and in the industrial structure among countries. The two major factors, namely the level of per capita income and the size of population, are examined through an analysis of growth and size elasticities.

59. In the case of heavy industry, almost all branches within each major industry group tended to show a nearly uniform growth rate. One probable reason for this is that each branch is more or less related to the other branches through interindustry connexions. By contrast, in the case of light industry, where input-output relationships within the manufacturing sector are usually less strong, growth trends vary widely from branch to branch and the result is a non-uniform growth among branches. In general, beverages, wearing apparel, furniture and fixtures, and rubber products have recorded relatively high growth rates, while food products, textiles, leather products and wood products, by comparison, have lagged behind.

60. An important observation was derived from country data concerning the effect of the size of an economy on the industrial structure over time. The differences in industrial structure among countries may be attributed not only to differences in the per capita income level but also to differences in the

size of the economy. Size has been found to have more influence on the industrial structure of an economy. In countries that have a relatively large population or gross domestic product, the share of heavy industry is comparatively large. One probable reason is that a sizable part of the establishments belonging to heavy industry usually require a large market, owing to economies of scale, and it is much easier for a larger country to establish this market domestically through policies of import substitution. The same argument applies at the branch level of manufacturing. One of the most interesting examples is the relative position of the textile and wearing apparel branches: the former tends to have a greater share in large countries, and the latter a greater share in smaller countries. This could reflect the fact that spinning and weaving processes, which are major production activities in the textile branch, are more subject to the requirements of mass production than the methods usually employed in the wearing apparel branch, which are more labour-intensive.

61. An analysis of growth and size elasticities rounds out the above investigations. In this analysis, the growth rate of value added in each industry and branch are related statistically to the growth rate of per capita income and that of population. The relationship here between value added and per capita income is defined as growth elasticity, and that between value added and size of population as size elasticity; an increase in per capita income is regarded as economic growth, and population is used as a surrogate for the size of an economy. Industrial branches with a high growth elasticity expand rapidly according to increases in the level of per capita income, whereas those with a high size elasticity have a greater share in the manufacturing sector in larger countries. According to the analysis, the textile, paper and paper products, chemical produots, iron and steel basic products, and electrical machinery branches have a high size elasticity (more than 1.35) in the developing oountries. Branches of industry such as paper and paper produots, plastic products, iron and steel basic products, and electrical machinery have a high growth elasticity (more than 2.00) in developing countries.

IV. ANALYSIS OF SELECTED MAJOR COMMODITIES

62. Analyses at the industry and branch levels are certainly useful in obtaining an over-all view of the nature of and changes in industrial structure. However, the fact that almost all industrial development planning is related at

the micro-level to individual products necessitates an analysis at the commodity level. Selected manufactured goods were studied from various viewpoints: the growth rate of production and the change in the share of the developing countries in world production over the period 1960-1969, commodity balance and apparent consumption.

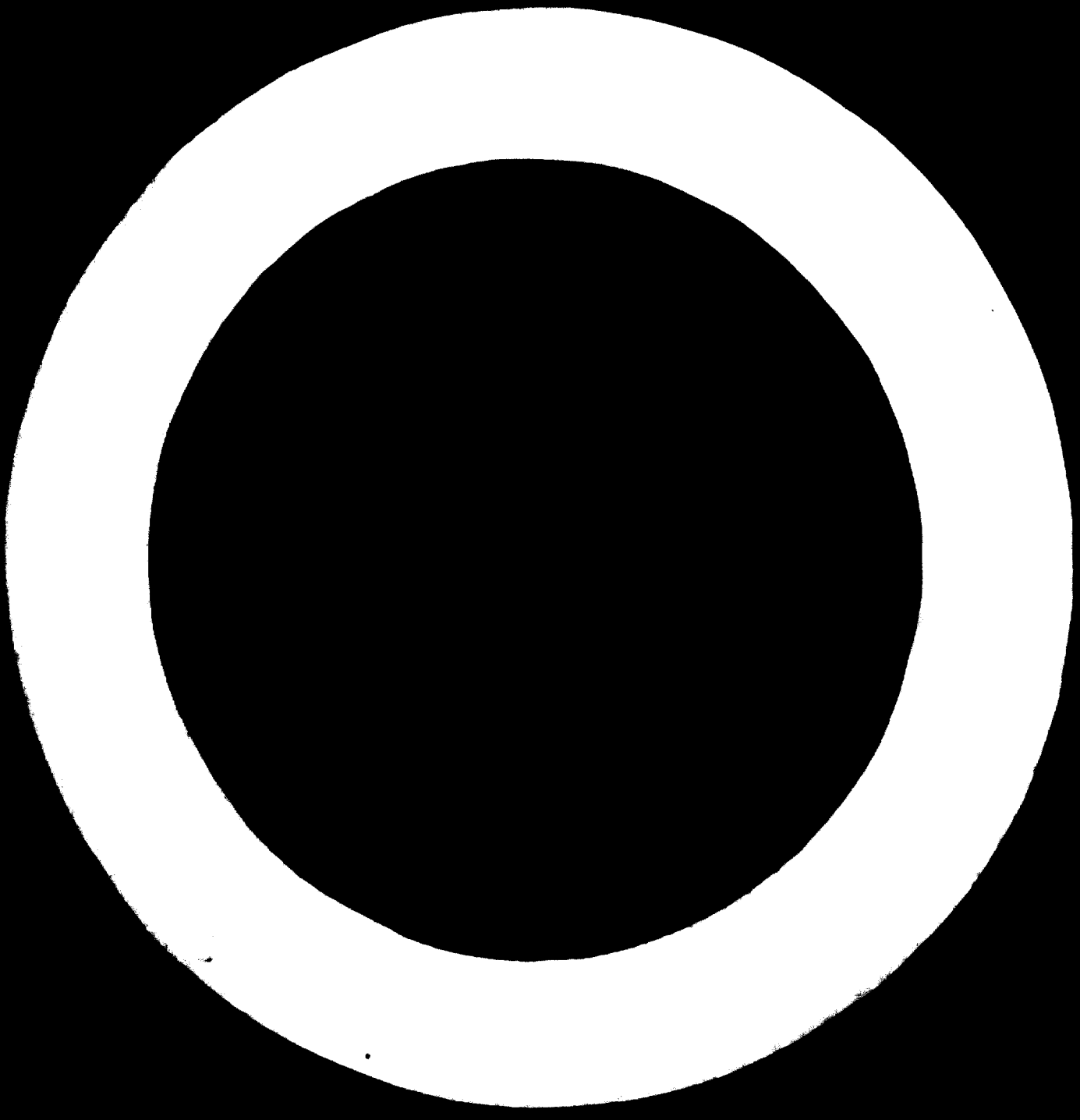
63. Commodities that achieved a remarkable annual increase in light industry in the developing countries over the period under investigation (1960-1969) were tinned or bottled fruits (10.6 per cent), tinned or bottled vegetables (19.7 per cent), non-cellulosic fibres (27.8 per cent) and footwear (10.4 per cent). However, the relative share of the developing countries in world production of these items continued to remain at a very low level. On the other hand, the developing countries had a relatively large share of world production of raw sugar, refined sugar, cigarettes, cotton yarn, cotton woven fabrics and woven fabrics of cellulosic fibres, but the growth rate of production was very low.

64. In the heavy industry sector, an outstanding annual increase in production in the developing countries was recorded by mechanical wood pulp (13.9 per cent), hydrochloric acid (18.9 per cent), nitrogenous fertilizers (18.9 per cent), cellulosic continuous filaments (23.7 per cent), non-cellulosic staple and tow (26.8 per cent), artificial resins and plastic materials (40.2 per cent), liquified petroleum gas (28 per cent), sheet glass (17.1 per cent), hot-rolled iron strip (15.3 per cent), unwrought aluminium (29.4 per cent), radio sets (20.4 per cent) and passenger cars (17.2 per cent). The share of developing countries in world production was usually small, except for petroleum products. Items with relatively large shares were cellulosic continuous filaments, soap, sheet glass, cement, refined copper, unwrought lead and lead alloys, unwrought tin and tin alloys, radio sets and bicycles.

65. A study of the commodity balance, namely, the balance between total supply of and total demand for an individual commodity, yields important information in formulating detailed industrial projects. Total supply is made up of domestic production and imports, whereas exports plus apparent consumption represent total demand. It is difficult to derive a universal conclusion on the commodity balance, since it is largely affected by such factors as the size of a country, its endowment of natural resources and its international trade policies. However, three observations may be made. First, in the case

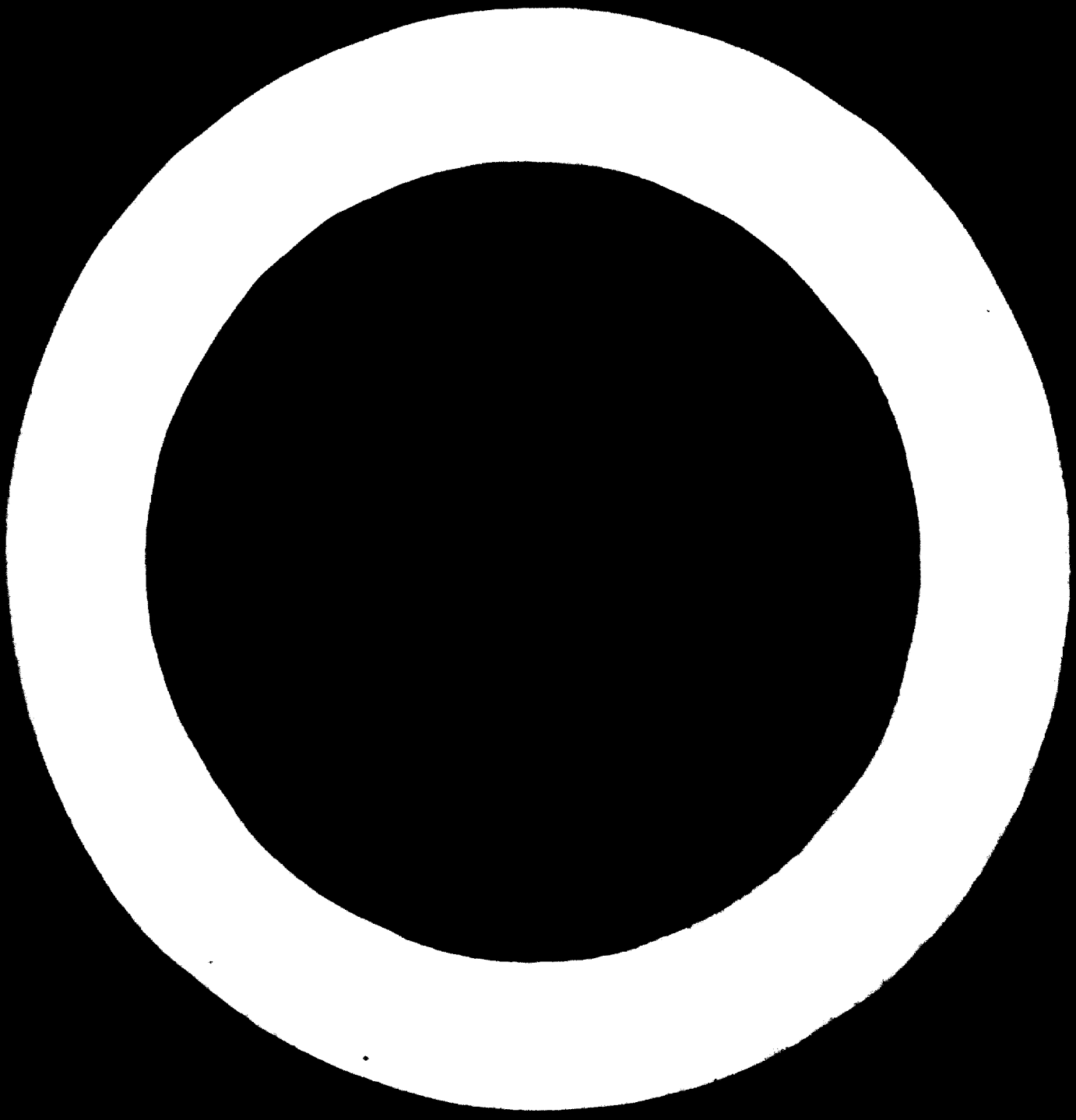
of resource-based products such as wheat flour, raw sugar, cotton yarn and petroleum products, there is a tendency for countries to be divided between exporters and importers. Secondly, in the case of bulky products such as cement, for which the material inputs are found almost everywhere, or commodities produced by simple technology such as soap, there is a tendency towards self-sufficiency. Thirdly, a heavy dependency on imports is observed in the case of commodities whose production requires a relatively sophisticated technology. Examples are refined sugar, artificial resins and steel plates.

66. An analysis of per capita apparent consumption provides very useful information since it may provide an estimation of the size of the domestic market for specific commodities. The regression analysis between per capita apparent consumption and per capita income points to four categories of industrial products. The first category comprises commodities that show a very low value of income elasticity at any level of per capita income. In this case, the level of per capita apparent consumption remains almost unchanged, despite an increasing level of per capita income. Soap is a typical example of this category. The second category consists of commodities having a relatively high value of income elasticity at any level of per capita income. Artificial resins and washing powder and detergents are two examples. However, a majority of industrial products have a changing income elasticity. These comprise the third and fourth categories. The third includes products with a decreasing income elasticity; nearly all commodities in light industry as well as some in heavy industry belong to this category. Examples are wheat flour, raw sugar, refined sugar and cotton yarn in light industry, and yarn of synthetic fibres, nitrogenous fertilisers and cement in heavy industry. The fourth category includes products showing an increasing income elasticity; commodities that are leading products or that are material inputs for producing leading products have this tendency. Newsprint paper and motor spirit are two examples.



INDUSTRIAL DEVELOPMENT SURVEY

VOLUME V



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Foreword

This is the fifth in a series of industrial development surveys, prepared in response to Economic and Social Council resolution 1030 (XXXVII) in which the Secretary-General was requested to arrange for the preparation of periodic industrial development surveys, and in response to General Assembly resolution 2152 (XXI) and resolution (I) of the Industrial Development Board.

This survey differs from earlier surveys in that it consists of two parts. Part one reviews, as earlier surveys, the course of industrial development and related changes in manufacturing output, trade, employment and investment. Part two deals, as a special feature, with structural change in the process of industrial development.

Through its review of industrial development, as shown by the latest figures available from United Nations and other official sources, and its consideration of problems affecting future development, the survey represents the contribution of UNIDO to the biennial review and appraisal of progress required in accordance with paragraph 83 of General Assembly resolution 2626 (XXV).

Chapter I analyses in section A the growth of industrial output by economic groupings and branches of industry and deals specifically with the concentration of output in a relatively small number of countries. It also contains a review of recent trends in manufacturing output. Section B highlights important issues currently affecting industrial development in the developing countries, such as the environment, inflation and technology. Section C presents the case for industrialization, with emphasis on its role in development.

Chapter II reviews international trade in manufactured goods, providing an analysis of individual trade flows between economic groupings and regions. More detailed attention is given the specific manufactured products that are significant among the imports and exports of developing countries. Trends in the pattern of trade diversification and concentration are discussed, and the topic of trade barriers is also considered.

Chapter III is concerned with employment in manufacturing, and provides recent data on the growth in manufacturing employment according to economic and regional groupings and manufacturing sectors. In addition, some of the current views on employment generation and industrial development are examined.

Chapter IV, on investment, gives recent data for individual developing countries on capital flows and sources of finance, with the distinction made among foreign official, foreign private and domestic sources. Estimates are made of the finance provided to manufacturing industry in developing regions by bilateral and multilateral official assistance and by various types of private investment. Total investment in the manufacturing industry in developing countries is also estimated.

Chapter I of part two examines intersectoral change in the economies of the developing and of the developed countries over a period of 15 years. The analysis discloses that the importance of the manufacturing sector is increasing, while that of the primary sector is undergoing a corresponding decline. The tertiary sector is

expanding slowly in the developing countries, but its growth has levelled off in the developed countries.

Chapter II provides a general review of structural change within the manufacturing sector in the developing countries, the developed market and the centrally planned economies. The analysis is carried out at the ISIC two-digit level, and it sheds light on changes in the shares of output of the major industry groups in total manufacturing output over 15 years, for the three economic groupings. Increases in output, employment and labour productivity are also examined, and an interregional comparison is made of the absolute and relative productivity of labour. Lastly, the structures of production and employment are investigated in the two developing regions, Latin America and Asia.

Chapter III contains a more detailed analysis of structural change within the manufacturing sector, carried out at the industrial branch, or ISIC three-digit, level. Growth and size elasticities are also discussed at that level of disaggregation.

Chapter IV reviews the growth trends of selected major commodities within the light and heavy manufacturing sectors over the First United Nations Development Decade in the developing countries, the developed market and the centrally planned economies. Changes in the share of the production of the developing countries in the total world production of each of these commodities are examined, and an analysis is made of commodity balances and of the apparent consumption of selected industrial products.

CONTENTS

Part one

TRENDS AND ISSUES IN THE FIRST AND SECOND UNITED NATIONS DEVELOPMENT DECADES

Part two

STRUCTURAL CHANGE IN THE PROCESS OF INDUSTRIAL DEVELOPMENT

Annexes

LIST OF TABLES

Part one

Chapter I

Chapter II

Chapter III

LIST OF TABLES *(continued)*

Annex II

LIST OF FIGURES

Part two

Annex III

EXPLANATORY NOTES

Regional classifications, industrial classifications, trade classifications and symbols used in the statistical tables of this survey follow those adopted in the United Nations *Statistical Yearbook*. (For a detailed description of the terminology used in this volume, see footnotes *(a)* and *(b)* to table 1.)

Countries are generally arranged in the order adopted in the *Statistical Yearbook*. Inclusion of a particular country or territory in any economic or geographical grouping (or its exclusion) has been dictated by considerations of the availability of comparable data in statistics of the United Nations and other international agencies.

References to SITC codes in the tables are accompanied by a descriptive title (for example, SITC 24: "Clothing, fur-skins and made-up textiles"). Space considerations, however, may sometimes result in a shortening of this description (for example, SITC 24 may be referred to simply as "Clothing").

Dates divided by a slash (1960/61) indicate a crop year or a financial year.

Dates divided by a hyphen (1960–1965) indicate the full period involved, including the beginning and end years.

References to dollars ($) indicate United States dollars, unless otherwise specified.

The term "billion" signifies a thousand million.

Annual rates of growth or change, unless otherwise specified, refer to percentage rates calculated on a compound basis.

In tables:

Totals and percentages do not necessarily add to totals, because of rounding;

Three dots (. . .) indicate that data are not available or are not separately reported;

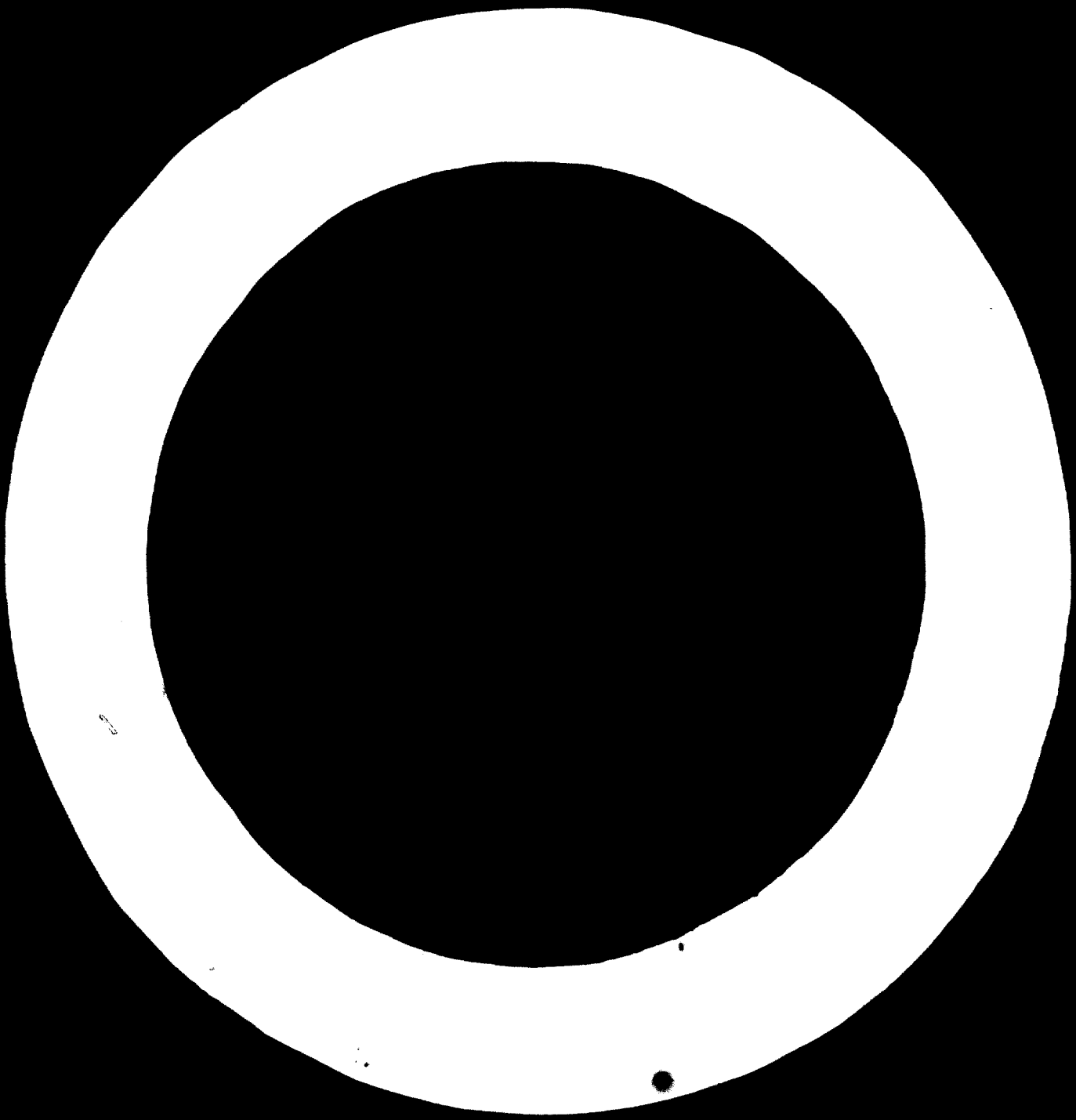
A dash (–) indicates that the amount is nil or negligible;

A blank indicates that the item is not applicable;

The names of countries are those in current official use.

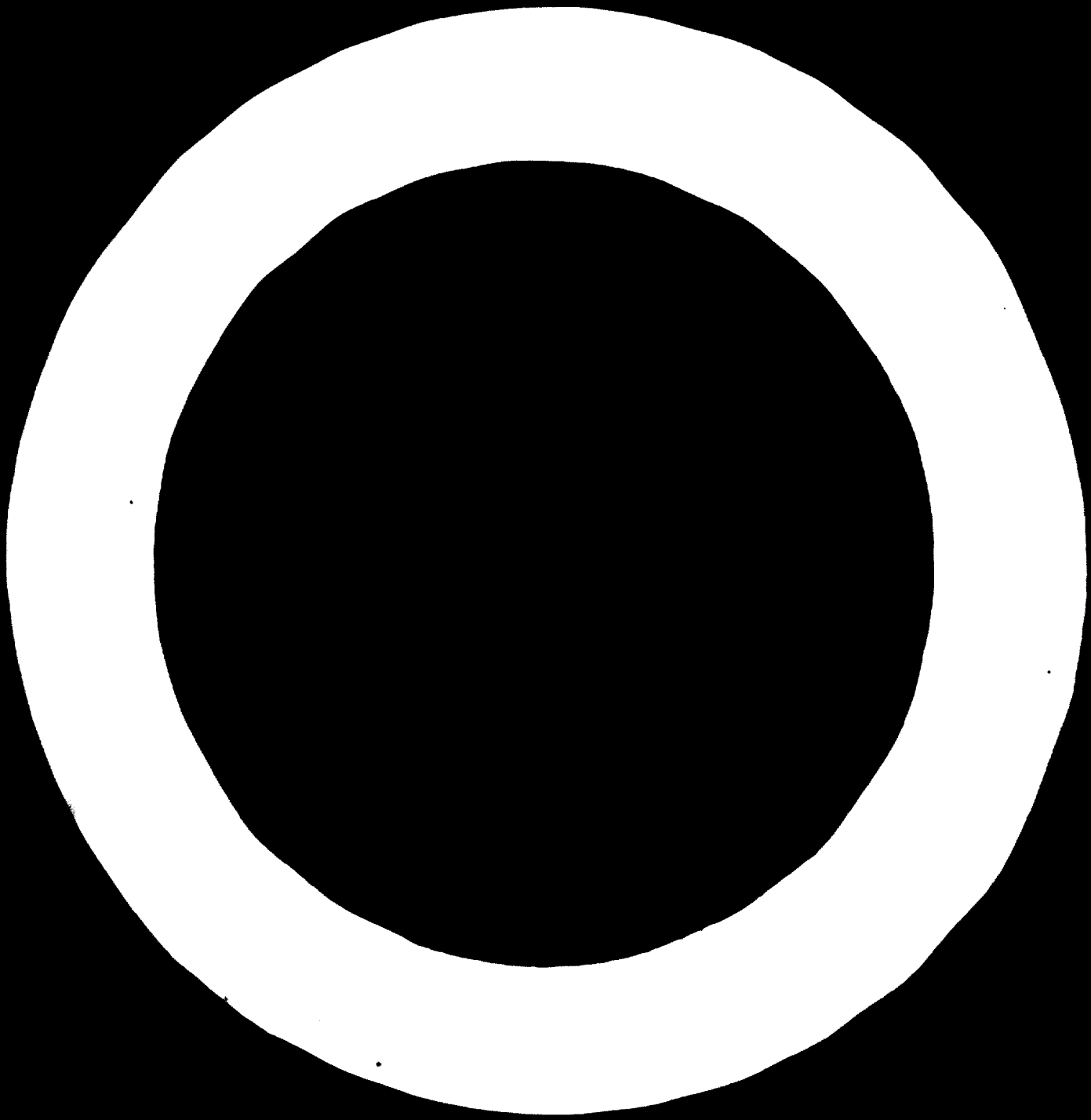
The following abbreviations are used in this volume:

DAC	Development Assistance Committee (of OECD)
EEC	European Economic Community
EFTA	European Free Trade Association
ILO	International Labour Organisation
ISIC	International Standard Industrial Classification
OECD	Organisation for Economic Co-operation and Development
SITC	Standard International Trade Classification
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme



Part one

TRENDS AND ISSUES IN THE FIRST AND SECOND UNITED NATIONS DEVELOPMENT DECADES



I. THE GROWTH OF MANUFACTURING AND RELATED ISSUES

A. MANUFACTURING GROWTH IN THE FIRST UNITED NATIONS DEVELOPMENT DECADE AND IN THE EARLY 1970s

The general setting

While the rate of industrial growth of the developing countries in the 1950s was on the average quite impressive, their growth rate over the First United Nations Development Decade fell far below that of the 1950s and below the target set for the 1960s. In the 1950s, the developing countries increased their manufacturing output at an average annual growth rate of 10 per cent, which was remarkably higher than the average of 5 per cent achieved by the world, excluding the centrally planned economies, and also considerably higher than the rate of the developed market economies, which was 4.8 per cent per annum. The high growth rate of the developing countries in the 1950s, although it reflects the small base of manufacturing in these countries and hides a wide variation among countries, represents an appreciable effort compared with the performance of these countries during the First Development Decade, and compared with the growth of their GDP and other sectors in the 1950s. The average annual rate of growth of GDP of the developing countries over the 1950s was only 4 per cent.

Although such average rates do not have much significance, if the two periods are compared on the basis of the same types of rates, it becomes quite clear that the performance of the developing countries in the First Development Decade was not as impressive as that in the 1950s. In the 1960s, they achieved an average annual rate of growth of manufacturing output of only 6.4 per cent, compared with 6 per cent for the developed market economies and 8.6 per cent for the centrally planned economies. The comparison between this set of data and that for the 1950s shows that manufacturing output in the developing countries declined, thus narrowing the difference between their rates of growth and those for the developed countries. If other factors such as population growth and the base of the industrial sector are considered, it is evident that the comparative situation of the developing countries in the manufacturing sector worsened in the First Development Decade. This is further illustrated by a comparison of the *per capita* rate of growth of manufacturing output in the 1960s, which was 7.3 per cent for the centrally planned economies, 5.2 per cent for the developed market economies, but only 3.6 per cent for the developing countries.

Average rates of growth of manufacturing output, however, although they are useful for intersectoral comparisons as well as for comparisons between periods, obscure significant variations at the world level, at the regional level, and at the level of the developing countries because they are aggregate figures.

Reference has been made to the effect of population growth within the various economic groupings on such average growth rates. Another factor of exceptional importance, which has not yet been given enough attention either in the International Development Strategy[1] or in the planning of assistance to the developing countries, is the lop-sided world distribution of manufacturing output, which has led to extreme concentration of that output not only within one economic grouping but also within the developing world. This factor renders the analysis of such aggregate rates of growth, and aggregate target growth rates such as those specified in the International Development Strategy, to some extent meaningless. Table 1 gives the distribution of manufacturing in the world from 1955 to 1970, indicating clearly that the developed market economies indeed have had the lion's share, although over these 15 years it declined significantly in favour of the centrally planned economies. Together, the two economic groupings produced more than 93 per cent of world manufacturing output in 1970. The share of the developing countries in 1970 was only 6.73 per cent, and the increase in that share over the last 15 years was insignificant. Thus, it is evident that the growth of manufacturing in the developing countries could not be planned separately from that of the developed countries. In such a situation, the international climate might embody elements unfavourable to the development of manufacturing in the developing countries, although other elements, which will be discussed later, may prove potentially favourable.

The figures giving the share of manufacturing output by commodity group indicate that concentration also exists at this level. The negative and positive implications of this concentration deserve further study.

While it is possible to discuss theoretically such questions as an international division of labour, increasing the bargaining power of the developing countries, international co-operation, and technological development, the existing world distribution of manufacturing output runs counter to the realization of theory, even in the case of manufactured commodities of which the developing countries produce a substantial share. Table 1 shows that the share of the developing countries in total world output in 1955, 1960, 1963 and 1970 was significant for only very few commodity groups. Planning for the future development of such commodity groups and more so for other commodity groups will be strongly influenced by actions taken by the developed countries, both the centrally planned and the developed market economies. The developing countries will have bargaining power vis-à-vis the developed countries only collectively.

The concentration of manufacturing output is characteristic of its distribution not only at the world level, but also at the regional level and at the level of the developing countries as an economic grouping. Table 2 illustrates this phenomenon. Latin America produces the major share of the output of developing countries, followed by Asia. In 1970, the share of Latin America in the manufacturing output of the developing countries was 52.7 per cent, and that of Asia was 40.2 per cent, leaving Africa with the meagre share of 7.1 per cent. This pattern persisted throughout the First Development Decade, as shown in table 2. The over-all regional picture, which shows intensive concentration of manufacturing output in Latin America and Asia, conceals a lop-sided concentration that was even greater over this decade within the regions themselves. Table 2 shows that, in 1970, six leading

[1] General Assembly resolution 2626 (XXV).

TABLE 1. SHARE OF THE ECONOMIC GROUPINGS[a] IN WORLD MANUFACTURING[b] OUTPUT, BY COMMODITY GROUP

	1955		1960		1963		1970	
	Million dollars	Percentage share	Million dollars	Percentage share	Million dollars	Percentage share	Million dollars	Percentage share
Developing countries[c]	18,966.5	6.28	26,867.8	6.73	31,609.2	6.57	51,523.0	6.73
Light manufacturing	12,772.6	10.27	16,570.3	10.62	18,516.5	10.45	27,957.8	11.38
Heavy manufacturing	6,198.9	3.49	10,288.5	4.23	13,092.7	4.31	23,565.2	4.53
ISIC								
31 Food, beverages, tobacco	5,775.3	12.47	7,606.4	13.06	8,452.0	12.56	12,767.9	13.58
32 Textiles, wearing apparel, leather, foot-wear	4,661.7	12.06	5,720.7	12.06	6,372.4	11.98	9,499.7	13.30
33 Wood products, furniture	726.3	5.69	1,099.4	6.22	1,216.6	6.35	1,874.1	7.02
34 Paper, printing, publishing	[illegible].2	3.85	1,304.2	4.52	1,527.5	4.94	2,489.7	5.53
35 Chemicals, petroleum, coal, rubber, plastic products	2,570.9	8.42	3,921.0	8.47	4,883.5	8.02	8,482.1	7.45
36 Non-metallic mineral products, except petroleum and coal	980.2	6.86	1,408.6	6.74	1,715.8	6.77	2,916.0	7.49
37 Basic metals	833.2	2.83	1,420.1	4.13	1,816.0	4.54	2,851.6	4.64
38 Fabricated metal products, machinery, equipment	2,073.1	2.06	3,705.7	2.74	4,938.9	2.83	9,571.5	3.18
39 Other manufacturing industries	523.6	6.91	686.7	7.06	766.5	7.02	1,150.4	7.57
Developed market economies	216,090.5	72.23	264,833.9	66.30	311,569.3	64.70	467,353.9	61.00
Light manufacturing	79,550.9	64.00	94,285.2	60.40	107,623.4	60.75	143,121.0	58.26
Heavy manufacturing	136,539.6	77.99	170,548.7	70.10	203,945.9	67.07	324,232.9	62.31
ISIC								
31 Food, beverages, tobacco	27,662.8	59.74	32,556.2	55.46	37,170.1	55.27	49,174.9	52.29
32 Textiles, wearing apparel, leather, foot-wear	2[illegible],590.2	63.63	28,999.2	60.46	32,294.0	60.73	39,187.7	54.88
33 Wood products, furniture	9,[illegible]	70.03	10,365.9	61.90	11,701.6	61.04	15,360.3	57.54

TABLE 1 (continued)

	1955		1960		1965		1970	
	Million dollars	Percentage share	Million dollars	Percentage share	Million dollars	Percentage share	Million dollars	Percentage share
34 Paper, printing, publishing	10,014.4	86.19	22,479.0	84.56	25,965.4	83.94	36,685.7	81.69
35 Chemicals, petroleum, coal, rubber, plastic products	23,298.9	76.11	33,733.0	72.85	42,910.6	71.68	79,116.0	70.12
36 Non-metallic mineral products except petroleum and coal	9,083.3	60.56	11,877.1	57.11	14,062.0	55.38	19,136.0	49.15
37 Basic metals	22,451.5	78.37	23,526.4	68.12	26,269.4	65.65	39,221.0	63.87
38 Fabricated metal products, machinery, equipment	79,428.5	70.46	97,103.3	70.16	116,169.1	66.55	182,756.6	60.81
39 Other manufacturing industries	3,749.2	69.51	4,612.8	45.39	5,039.1	46.18	6,715.7	44.20
Centrally planned economies	64,099.4	21.09	107,705.3	26.97	134,083.8	28.69	243,169.8	32.27
Light manufacturing	31,984.7	25.73	46,250.2	28.99	51,026.9	28.80	74,589.1	30.36
Heavy manufacturing	32,914.7	18.53	61,455.1	25.67	87,056.9	28.63	172,580.7	33.16
EEC								
31 Food, beverages, tobacco	12,869.4	27.79	18,488.8	31.50	21,639.7	32.17	32,103.8	34.14
32 Textiles, wearing apparel, leather, foot-wear	9,383.7	34.32	13,140.9	27.69	14,510.8	27.29	22,714.0	31.81
33 Wood products, furniture	3,141.2	24.28	5,278.1	31.88	6,252.1	32.61	9,459.6	35.44
34 Paper, printing, publishing	2,088.3	9.95	2,983.0	10.92	3,438.7	11.12	5,644.8	12.98
35 Chemicals, petroleum, coal, rubber, plastic products	4,733.9	15.46	8,650.4	18.68	12,109.5	20.30	25,706.0	22.43
36 Non-metallic mineral products, except petroleum and coal	3,543.4	24.58	7,518.1	36.15	9,599.3	37.86	16,581.9	43.36
37 Basic metals	6,184.4	20.80	9,583.2	27.75	11,926.3	29.81	19,133.8	31.48
38 Fabricated metal products, machinery, equipment	19,733.8	19.69	37,519.5	27.11	53,468.2	30.62	109,199.8	36.00
39 Other manufacturing industries	3,299.3	43.57	4,623.3	47.55	5,107.2	46.80	7,526.1	48.22

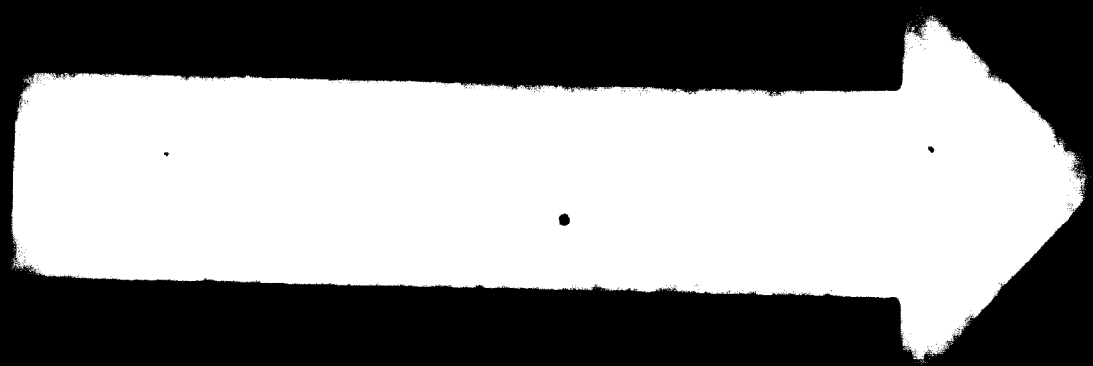
World	301,963.4	100.00	399,607.0	100.00	481,262.3	100.00	766,946.7	100.00
Light manufacturing	124,316.2	100.00	156,113.7	100.00	177,166.8	100.00	245,467.9	100.00
Heavy manufacturing	177,647.2	100.00	243,293.3	100.00	304,095.5	100.00	520,378.8	100.00
ISIC								
31 Food, beverages, tobacco	46,307.5	100.00	58,701.4	100.00	67,269.8	100.00	94,046.6	100.00
32 Textiles, wearing apparel, leather, footwear	38,505.6	100.00	47,798.8	100.00	53,177.2	100.00	71,401.4	100.00
33 Wood products, furniture	12,937.2	100.00	16,554.6	100.00	19,170.3	100.00	26,694.8	100.00
34 Paper, printing, publishing	30,099.9	100.00	36,583.2	100.00	30,931.6	100.00	45,020.2	100.00
35 Chemicals, petroleum, coal, rubber, plastic products	38,611.7	100.00	46,304.6	100.00	59,063.6	100.00	112,624.1	100.00
36 Non-metallic mineral products, except petroleum and coal	14,414.9	100.00	20,795.8	100.00	25,357.1	100.00	38,933.9	100.00
37 Basic metals	29,399.1	100.00	34,537.7	100.00	40,611.7	100.00	61,406.4	100.00
38 Fabricated metal products, machinery, equipment	101,235.4	100.00	130,488.5	100.00	174,568.2	100.00	308,527.9	100.00
39 Other manufacturing industries	7,372.1	100.00	9,722.8	100.00	10,912.8	100.00	15,192.2	100.00

Source: Based on *The Growth of World Industry, 1969 Edition*, vol. I (United Nations publication, Sales No. 71.XVII.6).

[a] The following classification of economic groupings is used throughout this volume, in conformity with the classification adopted by the United Nations Statistical Office: "Developing countries" includes the Caribbean area, Central and South America, Africa (other than South Africa), the Asian Middle East (other than Israel) and East and South-East Asia (other than Japan). "Developed market economies" includes North America (Canada and the United States of America), Europe (other than Eastern Europe), Australia, Israel, Japan, New Zealand, and South Africa. "Centrally planned economies" includes Albania, Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland, Romania, and the Union of Soviet Socialist Republics (USSR). "World" excludes China, the Democratic People's Republic of Korea, the Democratic Republic of Viet-Nam and Mongolia.

[b] "Manufacturing" includes the industry groups listed in Major Division 3 of the *International Standard Industrial Classification of All Economic Activities* (ST/STAT/SER.4/Rev.2/Add.1) (United Nations publication, Sales No. 71.XVII.8) throughout this volume, unless otherwise indicated.

[c] Manufacturing output for Africa is taken from national income data and is not strictly comparable with the data for other regional and economic groupings. Separate regional production and employment data for Africa are not available from the United Nations Statistical Office, so that Africa is not shown in several tables in this volume. Although totals for developing countries generally include figures for Africa, it does not follow that the precise figures for Africa can be derived by subtracting data for Asia and Latin America from the totals for the developing countries.



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2 OF 5

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TABLE 2. SHARE OF MANUFACTURING OUTPUT, BY DEVELOPING REGION AND 18 SELECTED DEVELOPING COUNTRIES, 1960, 1963 AND 1970

(Percentage)

Region and country or area	*1960*		*1963*		*1970*	
	Developing countries	*World total*	*Developing countries*	*World total*	*Developing countries*	*World total*
Developing countries, total	100.0	6.7	100.0	6.6	100.0	6.7
Latin America	53.9	3.6	52.1	3.4	52.7	3.5
Asia	39.0	2.6	39.9	2.6	40.2	2.7
Africa	7.1	0.5	8.0	0.5	7.1	0.5
Leading six countries, total	59.3	4.1	59.3	3.8	56.5	3.9
India	15.7	1.1	17.8	1.2	14.7	1.0
Brazil	14.0	1.0	14.1	0.9	14.3	1.0
Argentina	12.9	0.9	11.1	0.7	11.6	0.8
Mexico	8.8	0.6	9.0	0.6	10.4	0.7
Indonesia	4.4	0.3	3.7	0.2	2.8	0.2
Chile	3.5	0.2	3.6	0.2	2.7	0.2
Second six countries, total	15.2	1.1	16.0	1.1	15.7	1.1
Iran	2.8	0.2	2.1	0.1	2.4	0.2
Colombia	2.8	0.2	2.9	0.2	2.8	0.2
Venezuela	2.8	0.2	3.1	0.2	3.2	0.2
Pakistan	2.6	0.2	2.9	0.2	2.9	0.2
Philippines	2.4	0.2	2.4	0.2	2.0	0.1
Egypt	1.8	0.1	2.6	0.2	2.4	0.2
Third six countries, total	6.9	0.6	7.2	0.6	8.4.	0.7
Puerto Rico	1.5	0.1	1.6	0.1	1.0	0.1
Peru	1.4	0.1	1.5	0.1	1.5	0.1
Republic of Korea	1.4	0.1	1.5	0.1	3.4	0.2
Thailand	0.9	0.1	0.9	0.1	0.9	0.1
Morocco	0.9	0.1	0.9	0.1	0.9	0.1
Burma	0.8	0.1	0.8	0.1	0.7	0.1
Total of 18 countries	81.4	5.8	82.5	5.5	80.6	5.7

Sources: Based on *The Growth of World Industry, 1969 Edition*, vol. I (United Nations publication, Sales No. 71.XVII.6); and other data supplied by the United Nations Statistical Office.

developing countries produced 56.5 per cent of all manufacturing output in the developing countries. Another six leading developing countries produced 15.7 per cent. If a third group of six countries is added, it is found that these 18 countries in 1970 produced 80.6 per cent of manufacturing output in the developing world.

The extent of concentration within the developing regions is evident from tables 3, 4 and 5, which show the distribution share of manufacturing output of the major countries in Latin America, Asia and Africa. In 1970, Argentina and Brazil together produced 49 per cent of total manufacturing output in Latin America, a percentage that remained constant over the First Development Decade. In Asia, India's share of total manufacturing output fluctuated between 36.7 per cent and 44.6 per cent. India and Indonesia together produced over 50 per cent of manufacturing output in that region during the First Development Decade. In Africa, the picture was the same. In 1970, Egypt produced 33.3 per cent of manufacturing output, and Egypt, Morocco and Nigeria together produced about 57 per cent of total manufacturing output in the region.

The implications of such concentration are clear. If the figures are read concurrently with the figures indicating the share of manufacturing output in GDP (see table 6), for most of these countries, it is evident that the averages obscure great variations in the level of industrial development, exemplified by the concentration of manufacturing output. Hence, it is apparent that growth targets for manufacturing output embodied in the International Development Strategy could not be applicable to all. Frequently, when the performance of the developing countries, as expressed in regional average growth rates, was good or bad, it was largely owing to the performance of a few larger countries within the particular region. It may thus be concluded that monitoring industrial development in the Second Development

TABLE 3. SHARE OF SELECTED COUNTRIES IN THE MANUFACTURING OUTPUT OF LATIN AMERICA

(Percentage)

Region and country or area	*1960*	*1963*	*1970*
Latin America	100.0	100.0	100.0
Argentina	23.9	21.4	22.0
Brazil	26.1	27.0	27.0
Chile	6.4	6.9	5.1
Colombia	5.2	5.5	5.3
Mexico	16.3	17.3	19.7
Peru	2.7	3.0	2.9
Puerto Rico	2.8	3.0	1.9
Venezuela	5.1	5.9	6.0
Total	88.5	90.0	89.9

Source: Based on *The Growth of World Industry, 1969 Edition*, vol. I (United Nations publication, Sales No. 71.XVII.6).

TABLE 4. SHARE OF SELECTED COUNTRIES IN THE MANUFACTURING OUTPUT OF ASIA

(Percentage)

Region and country	*1960*	*1963*	*1970*
Asia	100.0	100.0	100.0
Burma	2.1	1.9	1.6
India	40.4	44.6	36.7
Indonesia	11.3	9.3	7.0
Iran	7.3	5.3	6.0
Pakistan	6.8	7.4	7.4
Philippines	6.1	6.0	5.0
Republic of Korea	3.5	3.7	8.6
Thailand	2.2	2.3	2.3
Total	79.7	80.5	74.6

Source: Based on *The Growth of World Industry, 1969 Edition*, vol. I (United Nations publication, Sales No. 71.XVII.6).

TABLE 5. SHARE OF SELECTED COUNTRIES IN THE MANUFACTURING OUTPUT OF AFRICA

(Percentage)

Region and country	*1960*	*1963*	*1970*
Africa	100.0	100.0	100.0
Algeria	9.7	5.6	5.8
Egypt	25.5	32.6	33.3
Morocco	12.2	11.0	12.4
Nigeria	8.4	8.5	11.2
Southern Rhodesia	6.5	5.4	6.3
Tunisia	4.7	4.3	4.6
Zaire	8.6	6.8	7.3
Total	75.6	74.2	80.9

Source: Based on *The Growth of World Industry, 1969 Edition*, vol. I (United Nations publication, Sales No. 71.XVII.6).

TABLE 6. MANUFACTURING OUTPUT AS A PERCENTAGE OF GDP IN SELECTED DEVELOPING COUNTRIES

Region and country or area	*1960*	*1963*	*1969*
Africa			
Morocco	13	14	14
Nigeria	5	5	6[a]
Southern Rhodesia	14	15	18
Tunisia	12	11	13
Zaire	...	...	16[b]
Asia			
Burma	13	10	9[c]
India	13	14	14[d]
Indonesia	8	7	9[b]
Iran	25	28	32
Pakistan	9	10	10[c]
Philippines	16	16	14
Republic of Korea	14	15	21
Thailand	13	14	14
Latin America			
Argentina	29	28	28
Brazil	18	20	19[b]
Chile	23	25	28
Colombia	18	21	18
Mexico	26	27	30[c]
Peru	17	17	20[b]
Puerto Rico	23	24	24
Venezuela	12	12	13

Source: Based on *Yearbook of National Accounts Statistics, 1969*, vol. II (United Nations publication, Sales No. 71.XVII.3) and *Yearbook of National Accounts Statistics, 1970*, vol. II (United Nations publication, Sales No. 72.XVIII.3).

[a] 1966.

[b] 1968.

[c] 1967.

[d] 1965.

Decade may only be meaningful at the country level, especially if it is to lead to pin-pointing problem areas and thus form the basis of policy decisions. Global monitoring is no doubt useful, however, to guide countries in formulating industrial policies.

The high concentration of manufacturing output in the developing world is especially significant in relation to regional co-operation. There may doubtless be strong arguments for complementarity among countries at different levels of industrial development within each region. Similarly, it might be argued that some of the more industrially advanced developing countries, such as those mentioned above, could assist other developing countries in their region, thus reducing the latter's reliance on aid from the developed countries. Although the political ramifications of such unequal partnerships should not be overlooked, the greater benefits embodied in regional co-operation should outweigh such negative aspects.

The concentration of manufacturing output and the disparities apparent within regions and the developing countries as a whole are very pronounced at the world level. For the sake of argument, it is useful to refer to an obvious relationship that appears in tables 3, 4 and 5. While India's share of manufacturing output in Asia was 36.7 per cent in 1970, and its share of manufacturing output of the developing countries in that year was 14.7 per cent, its share of total world manufacturing output was only 1 per cent. The only country that compared with India in that year was Brazil, while the share of 16 out of the other 18 leading developing countries listed in table 2 of total world manufacturing output was below 1 per cent, and for many of them it did not exceed 0.1 per cent. These figures plainly show that while some of the countries may exert considerable influence within their regions, they are by no means influential in the world. Individually, such countries have no bargaining power and their development in manufacturing will most likely depend on international factors over which they have neither control nor any significant say. Furthermore, these countries, although they lead in manufacturing output in their regions, do not have a favourable position vis-à-vis the developed countries. This is illustrated by table 7, which gives manufacturing output as a percentage of GDP, and tables 8 and 9, which show the enormous difference between the *per capita* manufacturing output of the developed countries and that of the developing countries.

The situation described above becomes more critical when high concentration in manufacturing output is coupled with the rigid pattern of world trade in manufacturing. From 1963 to 1970 the share of the developed market economies in world exports of manufactures ranged from 81.4 per cent in 1963 to 83.8 per cent in 1970. Although the share of the developing countries over this period slightly increased, from 5.8 per cent in 1963 to 6.3 per cent in 1970, and that of the centrally planned economies decreased, from 13 per cent in 1963 to 9.9 per cent in 1970, manufacturing trade was highly concentrated within the developed market economies. If a breakdown of manufactured exports by commodity groups, region and economic grouping is examined (see chapter II, table 16), the same pattern emerges; the developed market economies not only had the largest share of trade in each commodity group, but consistently increased that share in the years between 1963 and 1970. Further breakdowns are included in chapter II.

The rigid pattern of foreign trade in manufacturing is clearly illustrated in table 18. The figures indicate that the major share of trade in manufacturing of both the developed market economies and the centrally planned economies from 1963 to 1970 was intra-group. However, the export figures of the developing countries

TABLE 7. MANUFACTURING OUTPUT AS A PERCENTAGE OF GDP IN SELECTED DEVELOPED COUNTRIES

Region and country	*1960*	*1963*	*1969*
United States of America	28	28	28
Europe			
Austria[a]	38	36	36
Belgium	30	31	31
Denmark	29	29	27
Finland	24	23	25
France	37	36	35
Germany, Fed. Rep. of	42	41	43
Greece	15	14	14
Ireland[b]	26	28	30
Italy	31	30	31
Luxembourg	42	36	38[c]
Netherlands	32	31	31[d]
Norway	25	25	25
Portugal	28	28	32
Spain	25	25	25
Sweden	29	28	28
United Kingdom of Great Britain and Northern Ireland	32	30	29
Yugoslavia[e]	49	45	37
Centrally planned economies			
Bulgaria[e]	46	45	50
Czechoslovakia[e]	63	67	60[c]
German Democratic Republic	58	62	63
Hungary[e]	59	63	44
Poland[e]	47	50	50[c]
Romania[e]	44	47	57
USSR[e]	52	54	54

Source: Based on *Yearbook of National Accounts Statistics, 1969*, vol. II (United Nations publication, Sales No. 71.XVII.3), and *Yearbook of National Accounts Statistics, 1970*, vols. I and II (United Nations publication, Sales No. 72.XVII.3).

[a] Including mining and quarrying.

[b] Including mining and quarrying, electricity, gas, water and construction.

[c] 1968.

[d] 1966.

[e] Including mining and quarrying, electricity, gas and water.

TABLE 8. *PER CAPITA* MANUFACTURING OUTPUT IN SELECTED DEVELOPING COUNTRIES

(Dollars)

Region and country or area	*1960*	*1963*	*1970*
Africa			
Algeria	17	13	15
Egypt	19	30	37
Morocco	20	22	29
Nigeria	3	4	6
Southern Rhodesia	33	33	44
Tunisia	23	26	33
Zaire	12	11	12
Asia			
Burma	10	10	12
India	10	12	14
Indonesia	13	12	12
Iran	35	29	44
Pakistan	8	9	13
Philippines	23	25	28
Republic of Korea	15	17	56
Thailand	9	10	14
Latin America			
Argentina	166	169	257
Brazil	54	58	79
Chile	121	136	143
Colombia	49	53	68
Mexico	66	72	109
Peru	38	44	57
Puerto Rico	173	203	186
Venezuela	101	118	158

Sources: Based on *The Growth of World Industry, 1969 Edition*, vol. I (United Nations publication, Sales No. 71.XVII.6); and *Monthly Bulletin of Statistics*, various issues (United Nations publication).

TABLE 9. *PER CAPITA* MANUFACTURING OUTPUT IN SELECTED DEVELOPED COUNTRIES

(Dollars)

Region and country	*1960*	*1963*	*1970*
United States of America	747	825	1054
Europe			
Austria	314	344	514
Belgium	275	332	468
Denmark	436	490	705
Finland	278	323	501
France	318	364	516
Germany, Fed. Rep. of	479	523	764
Greece	63	76	120
Ireland	127	153	228
Italy	192	241	324
Luxembourg	649	631	739
Netherlands	299	335	502
Norway	320	364	491
Portugal	81	95	149
Spain	84	118	226
Sweden	508	604	869
Switzerland	574	617	825
United Kingdom of Great Britain and Northern Ireland	507	519	643
Yugoslavia	125	159	260
Centrally planned economies			
Bulgaria	237	305	623
Czechoslovakia	558	631	996
German Democratic Republic	571	693	1249
Hungary	407	526	805
Poland	259	320	549
Romania	174	259	596
USSR	326	418	723

Sources: Based on *The Growth of World Industry, 1969 Edition*, vol. I (United Nations publication, Sales No. 71.XVII.6); and *Monthly Bulletin of Statistics*, various issues (United Nations publication).

demonstrate a tendency to increase the dependence of these countries on the developed market economies. In 1970, 70.7 per cent of manufactured exports of the developing countries went to the developed market economies, as compared with 66 per cent in 1963. Although the developing countries' share of exports of manufactures to the centrally planned economies was not significant, the rate of increase between 1963 and 1970, largely owing to African trade, was significant. At the same time, trade in manufactures among developing countries witnessed a decline between 1963 and 1970, possibly indicating a parallel pattern of development rather than a complementary one, which in itself could point to the absence of regional co-operation. Only Latin America showed a significant increase in intra-Latin American trade in manufactures, possibly reflecting the success of the various regional co-operation schemes in that region.

Table 24, which shows the industrial and geographical origin of imports of manufactures of the developing countries, illustrates the heavy dependency of these countries on the developed market economies, which supplied them with about 85 per cent of their manufactured imports between 1963 and 1970. The reliance of the developing countries on the developed market economies is even greater for the importation of machinery and transport equipment, which could be considered as a proxy variable for investment in manufacturing. The developing countries imported almost 90 per cent of their machinery and transport equipment from the developed market economies between 1963 and 1970.

TABLE 10. MANUFACTURED EXPORTS OF SELECTED DEVELOPING COUNTRIES, 1969

(Countries arranged in descending order according to share of manufactured exports)

Country or area	*Manufactured exports (thousand dollars)*	*Total manufactured exports of developing countries*	*World manufactured exports*
		Percentage share	
Hong Kong	1,662,214	15.0	0.94
India	1,018,577	9.2	0.58
Chile	858,026	7.7	0.49
Republic of Korea	473,561	4.3	0.27
Mexico	429,365	3.9	0.24
Malaysia, West	405,511	3.7	0.23
Pakistan	381,927	3.4	0.22
Singapore	365,065	3.3	0.21
Brazil	226,553	2.0	0.13
Argentina	221,433	2.0	0.13
Egypt	203,521	1.8	0.11
Indonesia	172,600	1.6	0.10
Thailand	107,639	1.0	0.06
Total	6,525,992	58.9	3.71

Sources: Based on *Commodity Trade Statistics*, vol. XIX (ST/STAT/SER.D); *Yearbook of International Trade Statistics, 1969* (United Nations publication, Sales No. 71.XVII.5); and *Monthly Bulletin of Statistics* (July 1972) (United Nations publication).

While the pattern of trade indicates the heavy reliance of the developing countries on the developed market economies, a concentration similar to that of manufacturing output within the developing countries also appears in the pattern of trade among these countries. Table 10, which analyses the exports of 13 developing countries in 1969, shows that these totalled $6.5 billion, or almost 59 per cent of the total manufactures exported by the developing countries in that year. Relative to the world totals, however, this trade flow amounted to only 3.71 per cent. The share of each country in total world manufactured exports was less than 1 per cent, and for some the share was well below that figure. The implication is that, individually, none of these countries exerted any weight in the world trade of manufactures.

Aside from the internal problems facing the developing countries in their efforts to industrialize, then, the concentration of manufacturing output and the rigid pattern of foreign trade are two of the most important international factors that affect and are likely to continue to affect industrial development in the developing countries. A number of other factors will be discussed later.

Recent trends in manufacturing output

An examination of the data over the period 1955–1972 (see table 11) reveals a definite long-term trend towards a slowdown in the manufacturing output of the developing countries, a trend towards increasing growth in the developed market economies, and a consistently high growth rate in the centrally planned economies. More recently, however, annual growth rates in the developing countries as a whole, although still short of the target rates for the Second Development Decade, have been at higher levels than those achieved during the early 1960s. Extremely low rates of growth of manufacturing output, such as 4 per cent, 5 per cent and 4 per cent, were recorded for the developing countries in 1962, 1963 and 1967 respectively. After 1967, however, production recovered and rates of growth of 7 per cent were recorded in 1968, 8.6 per cent in 1969, 6.7 per cent in 1970 and 7.5 per cent in 1971. The rates for the two later years compare very favourably with that of the developed market economies, which in both years was only 1.3 per cent, although this rate recovered to 5.2 per cent in the first half of 1972. It is too early to say whether this more recent trend in the growth of manufacturing output of the developing countries will continue; if it does, growth rates may reach the 8 per cent target set for the first half of the Second Development Decade. This is most likely to occur in the Latin American region where production since 1967 has been increasing consistently at annual rates of about 8 per cent, which are well above those reached in the 1960s.

By contrast, rates of increase in Asia have fluctuated rather widely below the 8 per cent level. Data on manufacturing output in Africa are scarce. The most recent figures are for 1965–1969, which indicate a rate of growth of only 5.2 per cent, or a rate well below the rate of 9.1 per cent reached in the 1955–1960 period. As the African region contributes only about 7 per cent to the total manufacturing output of the developing countries, however, its relatively slow growth has little effect on the general trend.

TABLE 11. GROWTH OF MANUFACTURING OUTPUT, BY REGION AND ECONOMIC GROUPING, 1960–1972

(Average annual rate based on output index numbers)

Year	Developing countries				Developed market economies	World, except centrally planned economies	Centrally planned economies	World
	Total	Africa	Asia	Latin America				
1967	4.0	. . .	4.8	3.2	2.4	2.6	10.2	4.8
1968	7.0	3.9	6.2	8.6	7.8	7.8	9.3	7.6
1969	8.6	. . .	8.0	8.6	8.0	8.0	7.2	7.7
1970	6.7	. . .	5.4	7.9	1.3	2.0	8.5	3.9
1971[a]	7.5	. . .	7.1	8.0	1.3	2.0	9.0	4.4
1972[b]	6.6	. . .	4.1	. . .	5.2	4.6	8.7	5.5
1955–1960	7.2	9.1	7.9	6.2	4.0	4.3	10.7	6.0
1960–1965	6.8	6.6	7.9	5.9	6.2	6.4	8.4	6.9
1965–1970	6.1	5.2[c]	5.4	6.9	5.6	5.6	8.8	6.5
1960–1970	6.5	5.6[d]	6.6	6.4	5.9	6.0	8.6	6.7

[a] The provisional growth figure of 1.2 per cent for 1971 given in the *Survey*, vol. IV, table 1, should be revised according to the later information contained in this table. Other changes from the figures given in that table result from revisions of basic data by the United Nations Statistical Office, as published in the *Monthly Bulletin of Statistics*. Present figures are based on the May 1972 issue of the *Bulletin*, except the provisional figure for production in 1972, which is based on the November 1972 issue.

[b] Estimated by comparing output in the first quarters of 1971 and 1972, except for the developed market economies where figures for six months are available.

[c] 1965–1969.

[d] 1960–1969.

Growth of major manufacturing industries

As may be seen from table 1, light industry, which includes food, textiles, wood products, rubber and plastic, accounts for 54 per cent of the manufacturing output of developing countries and 31 per cent of the output of developed countries. These industries are primarily suppliers of non-durable consumer goods, on which expenditure declines relatively with rising incomes; they therefore have a lower rate of growth than heavy industry, as shown in table 12 for the period 1960–1970. This trend continued in 1971 for most light industries, except textiles where there was a strong upward trend. Until trade figures are available it will not be possible to attribute the rising growth rate of the textile industry entirely to the growth of exports, but this is very probable since between 15 and 20 per cent of the production of this sector is exported to developed countries, and since textile production increased relative to food production in the developing countries, whereas the contrary occurred in the developed countries.

Heavy industry supplies mainly investment and intermediate goods and therefore tends to decline relatively during periods of recession or slow growth, such as in 1970–1971 when anti-inflationary measures were adopted in the developed market economies. The centrally planned economies, which are not as sensitive to changes in demand, are able to avoid such recessions, as are the developing countries, which in this period showed scant evidence of a recession, except in basic metals and to a lesser extent metal products in the Asian region. Since the non-ferrous branch of the basic metals' sector is largely export-oriented, this recession may be partially explained by a fall in demand for these products in the developed market economies. The slackening in the rate of growth of the basic metal and metal products industries in Asia in 1970–1971 was large enough to offset more rapid growth in the chemical industry, so that total manufacturing output in this region expanded less rapidly than it had in the 1960s. By contrast, all branches of heavy industry in Latin America expanded more rapidly in 1970–1971 than previously, in particular, in 1971, in basic metals and metal products. It is still probable, however, that the chemical industry, and especially the petrochemical branch, which benefits from large markets and high capital inputs in Latin America, will become the fastest growing branch of industry in this region, as it is in the developed countries. In the remaining important branch of heavy industry, namely non-metallic minerals, production in this period expanded more rapidly than previously. Activity in this branch is closely linked to activity in the construction industry, and the developing countries have consistently increased their output in this industry more rapidly than have the developed market economies.

Country analysis

As shown in tables 3 and 5, the major manufacturing countries in Latin America and Africa increased their share of regional output during the First Development Decade, which implies that their average rate of growth was higher than that for the smaller manufacturing countries in those two regions. Asia experienced a similar trend, if India and Indonesia are excluded (table 4). This phenomenon is shown in table 13, which compares the growth rates of 70 developing countries in the first and second halves of the 1960s; the figures for 1971 are included where available. The rate of growth of the major manufacturing countries increased from 6 per cent per annum in the first half to 8.4 per cent in the second half of the period, while that of the smaller manufacturing countries remained at 6.4 per cent in both halves. These averages conceal, however, great variations in the growth rates of manufacturing output in individual countries from one year to another, and as the table shows, also from the first to the second half. In particular, it may be seen that while in the second half 9 of the 22 major manufacturing countries included increased their output above the target rate of 8 per cent per annum set for the first half of the Second Development Decade, only 3 of these also exceeded this rate in the first half of the First Development Decade. Similarly, while 13 of the 48 minor manufacturing countries included in the table exceeded this rate in the second half, only 3 did so in the first half. Countries that maintained relatively stable rates of growth had rates somewhat below the target, in most cases a rate of between 7 and 8 per cent. Five countries, all small Latin American countries, had growth rates of manufacturing throughout the period that were less than the growth rate of population.

TABLE 12. GROWTH OF MAJOR GROUPS OF INDUSTRY, BY REGION AND ECONOMIC GROUPING, 1960–1971

(Average annual rate based on output index numbers)

Region and economic grouping	*Food, beverages and tobacco*	*Textiles*	*Wearing apparel, leather products, foot-wear*	*Wood products, including furniture*	*Paper, printing, and publishing*	*Chemicals, petroleum, coal, rubber and plastic products*	*Non-metallic mineral products, except petroleum and coal*	*Basic metals*	*Fabricated metal products, machinery, equipment*
ISIC	*31*	*321*	*322–324*	*33*	*34*	*35*	*36*	*37*	*38*
Developing countries									
1960–1970	5.3	4.7	5.2	5.8	7.2	7.6	7.7	7.0	9.2
1970	7.9	5.8	0.7	−5.2	8.2	10.1	10.1	3.9	7.5
1971	4.6	9.7	3.5	7.5	7.5	8.0	8.0	9.4	8.1
Asia									
1960–1970	5.8	5.1	7.0	7.2	7.8	6.9	9.2	8.7	10.0
1970	7.4	8.7	−4.1	−14.6	5.5	7.7	10.9	−1.3	5.1
1971	5.0	9.3	7.7	6.3	7.8	8.4	6.6	7.3	4.3
Latin America									
1960–1970	5.0	3.7	4.0	4.7	7.1	8.1	6.7	7.2	8.9
1970	7.3	3.8	5.9	6.1	8.8	11.8	11.8	7.0	9.2
1971	3.4	9.5	6.3	8.6	6.2	8.3	10.0	11.2	10.4

Developed market economies									
1960–1970	4.1	3.9	2.2	4.3	5.0	9.0	4.8	5.1	6.5
1970	3.1	–0.8	–2.6	0.8	1.4	4.0	0.7	0.0	0.6
1971	3.8	2.3	0.9	6.0	0.0	5.4	3.6	–4.1	0.6
Centrally planned economies									
1960–1970	6.2	5.1	6.6	6.6	7.4	11.6	8.8	7.6	11.6
1970	6.3	7.1	9.2	7.5	6.9	10.9	9.8	6.5	10.8
1971	6.0	6.7	7.2	6.4	6.5	10.8	8.9	6.1	12.1
World									
1960–1970	4.9	4.3	3.9	5.2	5.2	9.4	6.6	6.0	8.2
1970	5.3	2.2	1.6	2.9	1.4	6.2	5.4	2.7	4.8
1971	4.3	5.1	3.8	5.6	0.7	6.9	6.5	–0.7	4.6

Sources: Based on *Monthly Bulletin of Statistics*, various issues (United Nations publication); *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4) and vol. II (United Nations publication, Sales No. 72.XVII.9) and the *Statistical Yearbook, 1970* (United Nations publication, Sales No. 71.XVII.1)

TABLE 13. GROWTH OF MANUFACTURING OUTPUT, BY SELECTED DEVELOPING COUNTRIES, 1960–1971

(Average annual rate based on output index numbers[a])

Region and country or area	*1960–1965*	*1965–1971*
Africa		
Algeria	-3.12	6.1[b]
Angola	8.0	7.5
Cameroon	14.5	-3.9
Congo	6.1	27.6[b]
Ethiopia	9.3	6.7
Gabon	17.5	6.4[b]
Ghana	9.1	4.6
Ivory Coast	7.8	6.1
Kenya	7.9	7.0
Libyan Arab Republic	8.7	7.4[b]
Madagascar	3.4	8.9
Malawi	7.0	5.8
Mauritius	16.6	1.0
Morocco	4.8	9.1[b]
Mozambique	11.1	0.5
Nigeria	10.8	7.5
Southern Rhodesia	5.1	6.5
Senegal	3.5	1.8
Sierra Leone	5.5	5.3
Sudan	8.1	7.0[b]
Tunisia	6.0	7.2[b]
Uganda	4.6	6.7
United Republic of Tanzania	5.3	7.7
Zaire	2.6	6.2
Zambia	8.6	6.9
Asia		
Burma	3.8	7.7
Hong Kong	7.5	9.8
India	10.5	3.8
Indonesia	0.1	6.4
Iran	11.5[c]	8.4
Iraq	2.9	5.2
Jordan	2.0	8.5
Kuwait	4.3	16.5
Lebanon	2.9	7.7
Malaysia	5.6	7.2
Pakistan	8.7	9.9
Philippines	4.9	7.1

Region and country or area	*1960–1965*	*1965–1971*
Khmer Republic	7.2	7.5
Republic of Korea	9.7	24.7
Republic of Viet-Nam	-0.1	10.4
Saudi Arabia	6.8	8.9
Singapore	3.5	10.0
Sri Lanka	3.0	15.3
Syrian Arab Republic	5.7	11.3
Thailand	7.4	9.2
Latin America		
Argentina	6.3	6.3
Bolivia	11.9	10.5
Brazil	3.6	10.5
Chile	9.6	1.4
Colombia	6.3	8.4
Costa Rica	7.5	4.2
Cuba	2.9	-1.4
Dominican Republic	-7.9	0.7
Ecuador	13.2	8.2
El Salvador	14.0	-0.3
Guatemala	6.3	1.2
Guyana	0.2	3.6
Haiti	1.6	2.6
Honduras	11.1	9.8
Jamaica	3.4	2.3
Mexico	8.3	9.7
Nicaragua	6.8	3.0
Panama	10.6	1.1
Paraguay	6.9	6.5
Peru	8.6	7.5
Puerto Rico	-0.3	2.0
Surinam	6.7	-2.0
Trinidad and Tobago	5.3	4.3
Uruguay	1.6	4.8
Venezuela	11.1	6.8

Sources: Based on *The Growth of World Industry*, various issues (United Nations publication); and other data supplied by the United Nations Statistical Office.

[a] The average annual growth rate is computed from the two indexes for manufacturing output taken at the beginning and at the end of the period. The index used measures the growth in production of manufacturing, based on data of physical production weighted normally by value added; it could therefore differ from index based directly on the growth of value added.

[b] 1965–1970.

[c] Value added at constant prices.

B. IMPORTANT ISSUES RELATING TO THE INDUSTRIAL DEVELOPMENT OF THE DEVELOPING COUNTRIES

Although the performance of the developing countries as judged by rates of growth of manufacturing output is encouraging, these rates still fall short of the target set for the Second Development Decade. The prospects that these trends will continue in the Second Development Decade will depend on a variety of factors. The higher growth rates achieved by certain sectors will sooner or later taper off. The over-all growth of the manufacturing sector in the developing countries will therefore depend on other manufacturing industries taking the lead. This in turn will depend on considerations such as the development of the internal and external demand for the output of these industries and on government policies and strategies. The future development of manufacturing will depend to a great extent on whether the difficulties facing that sector in the developing countries, both domestically and internationally, will be alleviated. Difficulties at the national level include the shortage of skilled labour as well as managerial and entrepreneurial cadre, the shortage of capital resources, limited markets, unfavourable balances of payments and the lack of appropriate infrastructure. Although these problems are well known to development economists, they deserve more attention by Governments, since the development of industry is their responsibility.

Three important issues, which are closely associated with industrial development in the Second Development Decade and are likely to affect it or be affected by it, are discussed in this section. They involve the environment, inflation and technology. Part one, chapters II, III and IV, of this Survey deal with other major issues, namely, trade and trade barriers, employment, income distribution, social justice, and finance and investment in manufacturing.

Industrialization and the environment

Present concern with the hazards to the environment associated with economic development arises primarily from the experiences of the developed market and the centrally planned economies. Important among these problems are:

The increase in the number of endemic and epidemic disease carriers and pests;

The exhaustion of natural resources;

The degradation of the environment through the widespread use of chemicals alien to natural processes.

Although in most developing countries environmental problems have not yet become so alarming, clearly these countries want to avoid the cumulative negative effects of development as witnessed in many industrial societies; they must take steps to preserve their existing wealth of natural resources and use these resources more judiciously, and they must anticipate environmental problems in their planning and development efforts. It is expected that more and more developing countries will incorporate environmental considerations in their programmes for industrialization.[2]

[2] For a discussion of environmental planning in developing countries and of the broader issues of industrialization and environment, see "Industrial development and the environment" (id. 72 2171), document prepared by the UNIDO secretariat and submitted to the United Nations Conference on the Human Environment, Stockholm, 1972.

While these problems are attendant on economic development, however, the problem of poverty arises where there is lack of development. And poverty is the major problem now facing the developing countries. "The preoccupation of the developing countries is not merely with the 'quality of life' but with life itself, which is often endangered by natural disasters, malnutrition, shortage of water, lack of sanitation, poor housing, and, generally, low standards of living."[2] From the standpoint of developing countries, the undesirable side effects of industrialization cannot be completely avoided by a refusal to industrialize--which would condemn these countries to permanent poverty.

The implications of environmental questions for international economic relations

The policies adopted by the developed economies to solve environmental problems may be more significant for the developing countries during the Second Development Decade. The latter countries fear that such policies may adversely affect them in the areas of international trade, technological transfer, and, perhaps, development aid.

Their major immediate concern is the effect of such policies on their manufactured exports. Both positive and negative effects are foreseen. The establishment of high standards may result in tariff or non-tariff barriers placed on products regarded as hazardous to the environment. Exports of food and beverages to developed countries are most likely to be subjected to such controls.[3]

The industrial sector of a developing country might suffer from restrictions of this sort, since it normally performs a number of processing operations (for example, canning, preserving and packaging) before products are exported. Agriculture would suffer most, however, from a reduction in these exports. Various chemicals may also be subject to such restrictions.

Naturally, the application of standards would have to be non-discriminatory. This would not lessen their potential impact on the exports of developing countries, however. In order to disrupt trade as little as possible, standards should be put into effect only after consultation between the developed country and the developing countries that are suppliers. Additional multilateral or bilateral aid could be provided to assist the exporting industries in developing countries to meet the new requirements.

Another concern is that the increased recycling of materials and products may reduce the flow of exports from the developing countries. It is impossible at present, however, to estimate the effect of recycling on the exports of these countries. Within limits, the same procedure may be employed by the developing countries. Recycling materials might mitigate negative effects on the balance of trade,[4] although the purpose of recycling is primarily to reduce harmful environmental effects. Manufactured imports of both the developing countries and the developed economies could be decreased slightly through recycling techniques.

Finally, developing countries fear that environmental considerations may claim a growing proportion of funds for development aid, or distort the priorities and the criteria for project appraisals. The developed countries' concern for the environment,

[3] The import of some fruits and vegetables carrying traces of DDT is now banned in several European countries.

[4] A number of implications for domestic industry in developing countries, which are tied to recycling techniques, are discussed in the following section on "Domestic environmental considerations for developing countries".

however, need not necessarily become a factor affecting trends in foreign aid. In fact, recognition that environmental problems are a major concern throughout the world and are becoming more serious every year should reinforce the need to obtain sufficient aid to deal with the various needs of the poorer countries.

Though developing countries may require additional foreign aid to deal with their environmental needs as well as other aspects of industrialization, this does not imply that the developed countries may insist that their own environmental standards be adopted by the recipients of aid. Environmental standards will naturally vary widely among countries, depending on their stage of development. Therefore, the formulation of criteria for project appraisal that take the environment into account should involve extensive consultation with the developing country concerned. The present trend for the basis of foreign aid to shift from projects to programmes may lessen the disposition to enforce project guidelines, which are considered too extensive from the standpoint of developing countries.

Domestic environmental considerations for developing countries

A basic observation with regard to the environment is that below certain limits nature can absorb without harm most of the wastes emitted by the industrial process. As the amount of wastes released by industry is increased, natural processes become overburdened and eventually break down. From this notion it follows that environmental and pollution controls will differ among countries. Developing countries may have good reasons to adopt less exacting standards than those applied by the developed countries.

At the same time, developing countries anticipate that new technologies designed to mitigate pollution may be much more expensive than present ones. However, there may be no alternative but to buy these new processes, although they may not be required by the standards of less industrialized countries.

This is a possibility, which, if it occurs, may mean that industrialization will be an even more expensive process than it is now. At the same time, new technologies may benefit developing countries by increasing their opportunities to save resources, utilize waste material etc. Through recycling, re-use and reclamation, the "product" portion of industrial inputs can be expanded, while the "waste" portion is diminished.[5] In this way, some of the new technologies may be efficient enough to justify their additional cost. At the same time, developing countries should not be left only with the choice of buying new and expensive technologies, which satisfy the pollution standards of developed countries but are not more efficient. Alternatives must be available to the developing countries, so that they may choose the technologies that meet their needs from the standpoints of efficiency and of the environment.

The development of new technologies is likely to have a strong impact on the procurement of metallic and non-metallic substances. Advances in this field are being prompted not by considerations of pollution but by the growing shortage of natural resources. The current practice is to rely on deposits of an increasingly lower grade—a development made possible by improvements in mining and beneficiation techniques,

[5]The concept of a material balance sheet is an effective way of evaluating "waste production". See "Industrial development and the environment" (id. 72-2171), document prepared by the UNIDO secretariat and submitted to the United Nations Conference on the Human Environment, Stockholm, 1972, pp. 12–13 and annex 3.

coupled with steady price increases.[6] For instance, iron ore is now being mined by pelletizing techniques and a new flotation process, both of which were unknown until recently. Similarly, techniques are being developed to produce aluminium from anorthosite as bauxite reserves are depleted.[7]

These trends could alter drastically the known distribution pattern for many metallic and non-metallic substances of great importance to industry. Developing countries may soon find that deposits previously of such low grade as to be worthless are now workable. At the same time, the known reserves of some natural resources are seriously depleted. For example, given the present rates of consumption, according to a recent study, known reserves of zinc are adequate for only 18 more years, copper and lead reserves will be exhausted in 21 years, and bauxite is available for only 31 more years.[8] A more efficient use of natural resources and access to new technologies are both imperative if developing countries as well as developed countries are to continue to progress industrially.

The main opportunity for developing countries may lie in a comparative advantage in industries whose production costs in developed countries will rise significantly because of pollution controls. The probability that environmental standards will differ among countries has already been suggested. The resultant increases in cost will reflect the various standards that industries must meet. However, it appears likely that the cost increase due to pollution control will be greater, possibly much greater, than the actual difference between each country's standards.[9] For example, the cost of cleaning and purifying the air and water used in some industrial operations could be twice as great if carried to 99 per cent efficiency rather than to 90 per cent efficiency.

Another cost consideration, which could alter the comparative advantage in favour of developing countries, involves the age of existing industrial plants and equipment. The installation cost of environmental controls will normally increase with the age of the plant. Since the developing countries are relative newcomers to many industries, they would have the advantage of lower installation costs over established producers in developed countries.

A few instances may be cited that illustrate the principle that the installation of environmental controls in new industrial establishments is considerably less expensive than in existing ones. World Bank studies in connexion with the expansion of a steel plant in Turkey revealed that the incorporation of the necessary pollution-control technology would amount to only 2 per cent of over-all project costs. Similarly, the recommended ecological measures for a marine terminal associated with an iron-ore mining project in Brazil were found to be only 3 per cent of total project costs.[10]

The fact that natural products are likely to be substituted for synthetics, because of environmental considerations, may be of interest to developing countries. In the past, synthetic products produced in developed countries have replaced many natural

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[6] For example, ores containing as little as 0.4 per cent copper are now being mined in the United States of America.

[7] See "Metals: the warning signals are up", *Fortune* (October 1972), p. 110.

[8] D. Meadows *et al.*, *The Limits to Growth* (London, Earth Island Ltd, 1972), pp. 56 60.

[9] This possibility is explored in some detail in *Industrial Pollution Control and International Trade* (Geneva, GATT, July 1971).

[10] These examples were cited by Robert McNamara, President of the World Bank Group, in his address to the United Nations Conference on the Human Environment, Stockholm, on 8 June 1972.

products, which compose a large portion of developing countries' exports. The balance of trade in these countries has consequently suffered, but environmental considerations may lead to a reversal of this trend.

On the basis of observations such as those discussed above, the transfer of some industries from developed to developing countries appears to offer an important possibility for co-operation with developed countries, assuming that it is accomplished with forethought and without jeopardizing the environment of the developing countries.

To reiterate, the best manner to accommodate environmental concerns in an international strategy would be to maximize the positive aspects (such as the transfer of certain industries to developing countries) and to minimize the negative aspects. In this way the concern with the protection of the environment may have a beneficial effect on the relative situation of the developing countries.

Industrialization and inflation

Inflationary pressures were persistent during the First Development Decade, both in the industrialized countries and in the industrializing countries striving for high rates of economic growth and capital formation. Experience suggests that inflation will continue to be a characteristic of the industrialization process during the Second Development Decade. However, as shifts in emphasis occur in the general attitude towards industrialization, these, in turn, will affect the thinking on inflation.

In some cases, inflation appears to have had a positive effect on economic growth. At the same time, instances may be cited where extensive inflation has seriously hindered the industrialization process and retarded economic growth. The varied degrees of success and failure of economic development in conjunction with inflation, experienced by many countries, has heightened the controversy on this subject.

It may be useful to review the opinions regarding inflation and economic development. One view is that some degree of deliberate inflation is a stimulus to economic growth. Rising prices, it is argued, act as an incentive to the more productive economic sectors. Furthermore, inflation may also result in a redistribution of income in favour of the richer sections of the economy with salutary effects on private saving and investment.

The potential drawbacks of this approach are well known: for example, the danger of accelerating inflation and the possibility of creating inelastic supply conditions in domestic industry. In addition, the burden of inflation is liable to fall on a relatively small middle class with fixed income. Although deliberate inflation has proved to be an economic stimulus in certain cases, instances may be cited where it has had negative effects of the kind mentioned above.

A second line of reasoning, often referred to as "the structuralist approach", holds that inflation is more than the result of financial disorder or lack of monetary restraint; it is simply a necessary burden that must be accepted as natural in the course of industrialization and economic development. In such a period, structural bottle-necks occur as the result of excess demand, a shortage of industrial supplies and raw materials and fluctuations in export proceeds, which lead to inflation. To curb inflation would cause increased unemployment and the stagnation of economic progress.

The opposite view is taken by monetary thinkers, who contend that inflation does not promote development and is frequently incompatible with it. They emphasize the danger that mild inflation may deteriorate into "runaway inflation" and advocate its control by a prudent combination of monetary and fiscal policies. They also disagree with the contention that inelasticities of supply and bottle-necks are the result of structural problems, attributing them instead to distortions in price and/or exchange rates.

A recent view of inflation differs from earlier views in that it embodies an attempt to identify the optimal *pattern* of inflation (as distinguished from an optimal *rate*).[11] The approach has been described as "surprise" inflation.[12] A steady rate of inflation, it is observed, will eventually be incorporated into the expectations of investors and will lead to the misallocation of new investment. Investors will tend to divert funds away from projects with long-run returns (for example, productive enterprises) into inventory speculation, land, building, short-run trading operations etc. According to advocates of an optimal pattern of inflation, however, structural bottle-necks may occur sporadically, requiring rapid increases in the need for capital. During such a period prices may be permitted to increase in order to attract labour and capital to new uses with relatively higher productivity. This would be a period of surprise inflation and could benefit growth by attracting these additional factors of production. It is important that the inflation be unanticipated and last for a limited time. The concept would therefore put the emphasis on an optimal pattern of price increases rather than on an optimal rate.

Inflationary distortions in the industrial process

The preceding arguments clearly indicate the wide diversity of opinion regarding the relationship between industrialization, economic growth and inflation. Whether inflation is a hindrance or a benefit to industrialization remains a moot question. However, sufficient experience has now been gained to observe that inflationary pressures are always present in developing countries that aspire to high rates of economic growth and capital formation. The tendency seems most pronounced in cases where the Government takes an active role – as is often necessary – in promoting industrial investment.

It is not intended here to make a strong case against inflation as a means of development, but rather to indicate the areas of economic significance that are likely to be seriously affected by the inflationary process and that may require special attention when inflation is persistent. Such observations are pertinent whether inflation is a conscious government policy or simply an outgrowth of the industrialization effort.

Inflation is characterized basically by an alteration or distortion in the price of goods, services and factors of production. Changes in these price levels, relative to one another, may have unexpected results which run counter to the Government's growth objectives.

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[11] See B. Higgins, *Economic Development* (New York, W. W. Norton and Company, 1968), p. 491.

[12] Arthur Butler and Phillip Della Valle, "Surprise inflation, economic growth and employment", *International Labour Review*, vol. 104 (December 1971), pp. 489–504.

Among these prices the relative cost of labour, that is, wage rates, has been given much attention. In the past, a basic contention of most economists has been that wages lag behind prices during inflation, and this results in lowering the real cost of labour. It was believed that the process would redistribute income by enlarging the share of profits, thereby favouring industrialists, other entrepreneurs and the upper-income groups in general. Since these groups were thought to have a high propensity to save, the redistribution process would benefit industrialization by increasing the country's total amount of funds available for investment.

Some doubts are now expressed about the accuracy and even the desirability of this process. First, it is difficult to provide evidence that inflation has definitely increased the flow of savings. Secondly, wages do not always lag behind prices. Where strong trade unions exist, wage increases have usually kept pace with price increases. Argentina and Brazil have been cited as countries where wage gains actually exceeded price increases, and thereby contributed to further inflation.[13] Thirdly, the point is often made that a more equitable distribution of income could have a positive effect on industrial employment and industrial growth. Inflation, where it results in an increased share of profits, contributes to a more lop-sided income distribution.

In addition to wages, many prices associated with infrastructure are frequently thought to lag behind general price increases. These include freight rates and other transportation costs, water, electricity and other forms of industrial energy sources, and communications. Often these prices are set by government agencies, which are reluctant to match inflationary rates elsewhere in the economy. The danger is that existing infrastructure may not be adequately maintained and fail to expand to accommodate increasing demand. Such a trend would be an additional handicap for increased industrialization, which must rely on an adequate infrastructure.

A third price that has received considerable attention in recent years is the price of the domestic currency, that is, the exchange rate. As developing countries have enlarged their industrial sectors, the need to increase the level of manufactured exports has become more apparent. In turn, the need for an appropriate rate of exchange, which reflects domestic economic conditions vis-à-vis trading partners, has taken on added emphasis. Owing to the fact that devaluation is often associated with the implication that it results from a failure of government policy, countries are usually hesitant to devalue. Furthermore, they may hope to contain inflationary pressures by keeping imports as cheap as possible (under-valuation of imports is equivalent to an over-valuation of the currency). Consequently, exchange rates are altered erratically and at long intervals. When coupled with a steady increase in domestic prices, this situation makes the profitability of exports very precarious and unpredictable.

In addition to the danger of price distortions, a few additional possibilities are worthy of consideration by developing countries and may be mentioned briefly here.[14] Inflation may discourage technological advances or at least eliminate the incentive for improved technological efficiency. This results from the fact that profits become highly dependent upon inventory management when prices are rising rapidly. The prospects for an improved situation through greater efficiency may be

[13] I. Little, T. Scitovsky and M. Scott, *Industry and Trade in Some Developing Countries* (London, Oxford University Press, 1970), p. 77.

[14] These points are noted by J. Berguman, *Brazil, Industrialization and Trade Policies* (London, Oxford University Press, 1970), p. 61.

negligible in comparison with windfall gains and losses resulting from inflation. Further, financial management may become seriously complicated if the rate of inflation is significant. The industrialist's knowledge of costs becomes tenuous indeed, and, as a result, his pricing policy may degenerate into the simple practice of matching competitor's increases.

In general, the experience gained during the First Development Decade suggests that inflation in varying degrees is quite probable, and perhaps unavoidable, as developing countries mobilize their resources for industrialization. Thus, consideration of whether inflation is "good" or "bad" does not enter the picture. The choice between a stable price level and industrialization with inflation offers no real alternative but to take the latter course. In this context, it is necessary that the Government make sure that the required investment is made and then take whatever steps are needed to minimize undesirable inflationary effects such as those mentioned above.

Technology and industrialization

Technology has long been regarded as one of the more important elements in the industrialization process. There is every reason to believe that it will be of paramount importance in the course of the Second Development Decade. An aspect that may have important implications for technological trends in the 1970s involves the disparity between developed and developing countries in the rate of technological advancement. Not only is the technological gap widening, but new techniques are being placed on the market at such an accelerated pace that developing countries, with their small industrial bases, may simply be unable to incorporate this technology economically. Practical experience and further research, however, may lead to some changes in emphasis and the recognition of new problems, which developing countries should anticipate. The discussion below is intended to touch briefly on some of the key considerations with regard to the role of technology in industrialization.

Ideally, technology should be transferred freely from developed countries to developing countries. In reality, many barriers and hindrances prohibit or encumber the transfer of technology. These vary from country to country, and they should be clearly identified before the actual job of assisting or facilitating industrial transfer can proceed.

Some technological gaps may result from the nature of the technology in question, while others may be attributed primarily to economic conditions within the developing country. There are two types of technological gap; a gap may either result from imperfections in the means of communicating and transferring existing technologies (sometimes referred to as "the communications gap"), or it may simply arise from a lack of appropriate technologies.

The communications gap refers to the fact that knowledge is only partly or imperfectly communicated.[15] The result may be that relatively few high-productivity sectors or few enterprises employ techniques that are considered the best practice, or that the best practice is of a fairly low standard.

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[15] This nomenclature is used in an article by P. Streetan, "Technology gaps between rich and poor countries", *Scottish Journal of Political Economy* (November 1972), pp. 213–230.

On the other hand, technologies originating in developed countries may be inappropriate for developing countries. In this sense, a "suitability gap" may exist, because of the lack of an appropriate technology or the failure to allocate resources to the discovery of such a technology. Resources devoted to closing the suitability gap would help to achieve such objectives as the generation of employment, which is an urgent need in most developing countries.

The inappropriateness of technology, however, is only partly a question of different endowments of capital and labour between developing and developed countries. Different physical and social conditions may also enter the picture and create a suitability gap. More important, in many areas there is no technology that can be adapted; it may have to be invented.

With regard to economic conditions in developing countries, certain characteristics often prove to be major handicaps to the transfer of technology. While the line separating barriers arising from inherent technological features and those created by domestic economic conditions is not always hard and fast, some characteristics are clearly distinguishable and are too important to be ignored here.

Developing countries have at least one disadvantage that was not encountered by the developed countries when they began to industrialize. The consumption patterns of developing countries reflect, at least partially, the consumption patterns in developed countries. This characteristic results from a demonstration factor which creates demands and economic pressures that are not a natural result of income levels or the existing social and cultural system. Industrialization may be influenced in this manner by external pressures, which are induced by the requirements of a small minority in the upper-income group, whose consumption patterns are similar to those of developed countries. These patterns influence the choice of technologies. In order that a developing country may select appropriate technology, consumption must be planned, at least partly, and not simply projected as is so often done.

The practice of planning consumption may have slightly different implications for various branches of industry. Priority should be given to the provision of basic requirements (food, clothing, housing etc.).[16] Light industry should be designed to furnish these requirements by gradual increases in present production. Prices and quality should be planned to match the income levels of the developing country rather than those of a developed country. Production need not be large-scale, but it might be distributed in smaller units, using a simplified technology to satisfy local markets. The technology to be developed in such a case would generally be adapted from imported technology; it would be more applicable and appropriate to other developing countries and would therefore have a greater chance of exportation to these countries.

The situation of heavy industries is somewhat different. Such enterprises require larger units of production and must be established on the basis of imported technology. Certain measures may be taken, however, to increase the components of local technology. This principle might be the guide in indicating technological requirements for heavy industry.

In general, developing countries tend to pay most attention to investment in equipment and building, followed by worker and management training, with little

[16] See the special address by the Executive Director of UNIDO to the International Seminar on Technology Transfer, New Delhi, 11 December 1972.

time and few resources spent on the development of technological capacity and design. In the future it may be advisable to invert this order of priority, devoting more attention to investment in the selection of equipment, process design, modification of technology, and management and worker skills in maintaining and using the equipment effectively. Hopefully, this shift in priority would lead to the gradual introduction of locally produced equipment rather than imports, and to the development and modification of technology appropriate for the further expansion of industry. These modifications would require an efficient technological capacity, which should be the result of planning and not just a response to present consumption patterns.

Expenditures on research and development provide a useful indicator of the intensity of the technological effort. Among developed countries, this ratio varies from 2 to 4 per cent of GNP. However, in developing countries the corresponding figures are generally about one tenth of this magnitude. Proposals have been made to increase the ratio of funds allocated to technological development in developing countries to 1 per cent of national income. It has been suggested further that the developed countries, which account for almost 98 per cent of total world investment in technology, should allocate a proportion of this investment to the technological problems of developing countries. In any case, it seems obvious that an increase in funds devoted to this type of research is highly desirable and, in fact, essential in the course of the Second Development Decade. At the same time, an organization such as UNIDO must continue to act as an international instrument for the transfer of technology through its programmes of technical assistance, study, training and publications.

C. THE CASE FOR INDUSTRIALIZATION

In very recent years some doubt has been cast on the validity of the role of industrialization in development. The reasons advanced have taken a form that has led to the fear of a trend of thought opposed to industry. The arguments supporting that position have appeared not only in economic writing; they are largely a culmination of the thinking in other fields that are concerned with the social objectives of society. The concern for social welfare is certainly valid, but the premise that industrialization is the cause of social ills may be debatable. If the model exemplified by the pattern of industrial development of the developed countries is under attack, industrialization as such should not be blamed, but rather the faults embodied in that system.

The present arguments against industry, although they could be answered easily, may have some validity. Most developing countries emerged after the Second World War from a long colonial era with great aspirations for economic development. They pinned their hopes on industry for an accelerated growth in income, which would lead to a surplus that in turn would further stimulate economic development. They hoped for a faster growth in output and the diversification of that output, which would lead to the structural change conducive to sustained income and economic growth. Such diversification, coupled with higher productivity and efficiency, would prompt the growth and diversification of manufactured exports, where favourable terms of trade prevailed, enhancing these countries' capacities to meet the increased

import requirements for development. At the same time it was hoped that industrialization would bring social transformation, social equality, higher levels of employment, more equitable distribution of income and a well-balanced regional development. Industrialization, whatever the mode in which it was carried out, was thought to be synonymous with economic growth. It was to bring relief from the underdevelopment suffered by these countries for centuries.

This pattern of reasoning is not shared by all developing countries. It is claimed that, instead of solving many of these problems, industrialization has not led to the economic or social gains expected from it. The growth of income and the pace of development in many of these countries, it is argued, have not been satisfactory, unemployment has tended to increase, and social unrest has become a major problem. The argument continues that all this has taken place despite the over-concentration on industrial development in these countries at the cost of the development of other sectors. From this it is concluded that having failed to fulfil the aspirations of the developing countries, industry should receive less emphasis and other sectors should be given more attention.

Although some of the arguments referred to above are sound, at present no examination is made of the reasons why such aspirations have not been achieved. Developing countries no doubt appreciate the fact that industrialization by itself could not achieve economic growth, and that if stated objectives could not be fulfilled, industry should not be blamed. It is essential to recognize that, while the industrial sector may be the most dynamic sector in the economy, the way to industrialization and thus to the transformation of society and the fulfilment of social and economic objectives is very long indeed and involves a highly complex process. Furthermore, industry does not operate in a vacuum. If development is to entail the transformation of a present economic structure into another characterized by higher efficiency, diversification of output and social justice, the role of industry, although certainly central, is just one of many complementary roles to be played by all sectors. This is a crucial point to remember, since industrialization has been regarded so far by many developing countries as a separate effort rather than as a complementary component of an over-all economic development strategy, conceived on the basis of the particular circumstances, comparative advantages and stated objectives of the country concerned.

The fulfilment of the goals and aspirations of countries, therefore, depends in the first place on the strategies and policies adopted by these countries, with industry playing its part but not substituting for the other sectors. An appreciation of this point is basic to dispel many of the misconceptions about industrialization and the achievement of national objectives. There is no place for a rigid dichotomy between industry and the other sectors, since their complementarity is essential for development. An arbitrary division of the sectors risks undermining industrial development and runs counter to the concept of economic development. If placed in proper perspective as part of an over-all development strategy, industry should fit into a pattern of industrial development that is suited to a particular country. A wide variety of industrial-development patterns exist from which a country may choose.

When viewed in this perspective, can industry be blamed for the failure of some countries to achieve such social objectives as the elimination of mass poverty, unemployment and underemployment; the attainment of greater social justice and self-reliance; the effective participation of individuals in the process of development

and the sense of responsibility and dignity that this gives to them? Industry should be judged solely on the measure of its achievement of the quantitative objectives set for it, assuming that the other complementary factors play their parts. The realization of social objectives, which are of great importance, depends then on the co-operation of all sectors and, above all, on the will of Governments to institutionalize the necessary policies and strategies to achieve such goals. Individual sectoral strategies may be fitted into an over-all strategy. It should be made clear, however, that should the international community put too great stress on social goals, and neglect the quantitative objectives of growth that are basic to the achievement of social objectives, developing countries may doubt the sincerity of the international effort to assist in their development. It is important instead that the real causes for a slackening of development and a failure to achieve social aims be seriously investigated.

In judging the achievement of industry in terms of the objectives set by the developing countries, the constraints imposed on the industrialization of these countries by the international climate should not be overlooked. Reference has been made to the concentration of world manufacturing output and its implication for the relationship between the developing and the developed countries. It should be taken into consideration in assessing the past performance of the developing countries. Reference has also been made to the rigid pattern of manufacturing trade and the restrictions imposed on the flow of exports of commodities from the developing countries. Other sectors do not have to contend with such a discriminatory situation, and the international climate is not of such importance to their development. Further, at the root of the opposition to industry appears to be the mistaken idea that the pattern of development of the developed countries is likely to be followed by the developing countries.

Although no alternative pattern of development to that of the developed countries has appeared, the assumption that the developing countries must necessarily follow the same pattern is questionable and may indeed have contributed to the confusion. The present ills of the industrialized societies, perhaps caused by excessive industrialization and perhaps by lack of institutional arrangements and social policies, do not pertain to the developing countries, at least in the short term. It is recognized by some opponents of industrialization that it will be a long time before the ills of modern society can appear in the developing countries. Meanwhile, it is hoped that the corrections and solutions now sought by the developed countries will serve to caution the developing countries in designing the future development, not only of their industrial sector but also of the other sectors.

The need of the developing countries to industrialize, however, is not only appreciated by the opponents of excessive industrialization, but it is deemed essential, provided that the pattern of industrial development fits into an over-all strategy of development to achieve the economic and social objectives set by Governments. In this respect, industry could play its role as a major sector in achieving the objectives of such a strategy and the desired change in the style and pattern of development. Characteristics of the industrial sector are its power to innovate and its forceful impact on the process of change. The capacity to innovate often gives it a dynamism that affects the other sectors and other aspects of life, including social and political aspects. Hence, industrialization is not only a way to increase output or national income; it is also a means of introducing modern

technology into the economy and of changing attitudes towards development and towards a way of life. Naturally, the results ary not automatic, but require changes in the structure of society and its institutions, and these depend on the will of Governments and their capacities to institute the necessary decision-making bodies and the machinery to implement such changes. There are indeed some changes that would strike at the roots of the structure of society, and some Governments may be reluctant to initiate them. Industrialization, by its very nature, either requires such changes or leads to them, and this may account for some of the opposition to industrialization.

From an economic and developmental standpoint, the case for industrialization needs no further argument. Its acknowledged capacities are: to produce more goods through higher productivity; to generate employment, directly and indirectly, through its backward and forward linkages with other sectors, which are often considered front-runners in employment generation; to improve the balance of payments; and to infuse greater efficiency into the whole economy.

A recent document[17] issued by the World Bank contains the statement: "Over the last two decades the manufacturing industry has been the most rapidly growing major sector in the developing countries and its contribution to over-all growth has increased with its rising share of the gross national product." Figures included in the previous *Survey* confirm the fact that in the First Development Decade the average annual growth rate of manufacturing output was higher than that for all other sectors; this was true for all developing regions. The dynamic character of the industrial sector is best illustrated, however, by figures given in the previous *Survey* and in the present *Survey*, part two, which show the contribution ratio of the manufacturing sector to the growth of national income of the developed market economies, the developing countries, the various developing regions and selected developing countries within each region. These figures clearly show the dynamism of the industrial sector, since the ratio of its contribution to the growth of national income has been invariably higher than the manufacturing sector's share in GDP. This means that the manufacturing sector has been contributing to the incremental growth of national income more than would be expected in the light of its initial share of national income. This characteristic has not been evident for the primary sector and has not been important for the tertiary sector, at the level of the three developing regions and that of the developed market economies. Nor has it been apparent for the primary and tertiary sectors of many of the developing countries.

The figures given by the World Bank show that the growth of exports of manufactures from developing countries has been rapid in recent years, increasing at an annual rate of 15 per cent over the period 1962–1969. The statement of the World Bank is further confirmed by the figures in table 14, which show the dynamic growth of manufactured exports relative to other exports from developing countries. Table 17 indicates that the percentage of manufactured exports of total exports of the developing countries increased from 15.4 per cent in 1963 to 23.4 per cent in 1970, and that the average annual rate of growth of manufactured exports between these two years was 14.7 per cent. However, the increase in manufactured exports from the developing countries should not obscure the fact that these countries' share of total world manufactured exports is small.

[17] "Industry", Sector Working Paper (Washington, D.C., World Bank, April 1972).

TABLE 14. AVERAGE ANNUAL RATES OF GROWTH OF EXPORTS, BY COMMODITY GROUP AND DEVELOPING REGION[a]

(Million dollars and percentage)

		Food, living animals, beverages, tobacco	*Crude materials, excluding fuels, oils and fats*	*Mineral fuels, lubricants*	*Primary exports*	*Chemicals*	*Machinery and transport equipment*	*Other manufacturing*	*Manufactured exports*	*Total exports*
	SITC[b]	*0 and 1*	*2 and 4*	*3*	*0–4*	*5*	*7*	*6 and 8*	*5–8*	*0–9*
Africa										
Million dollars, f.o.b.,	1962	2,010	1,910	690	4,610	82	26	850	958	5,610
	1970	3,080	2,570	4,060	9,710	135	58	2,370	2,563	12,310
Average annual rate of growth		5.5	3.8	24.8	9.8	6.4	10.6	13.7	13.1	10.3
Asia										
Million dollars, f.o.b.	1962	2,365	3,100	4,640	10,105	136	201	2,025	2,362	12,570
	1970	3,110	4,150	9,700	16,960	239	909	5,700	6,848	23,930
Average annual rate of growth		3.5	3.7	9.7	6.7	7.3	20.8	13.8	14.2	8.4
Latin America										
Million dollars, f.o.b.	1962	3,790	1,920	2,560	8,270	110	29	720	,859	9,170
	1970	6,900	3,180	4,310	14,390	430	335	2,390	3,155	17,590
Average annual rate of growth		7.8	6.5	6.7	7.2	18.6	35.8	16.2	17.7	8.5
Developing countries										
Million dollars, f.o.b.	1962	8,500	7,250	8,870	24,620	350	260	3,650	4,260	29,060
	1970	13,210	9,890	18,060	41,160	800	1,320	10,560	12,680	54,290
Average annual rate of growth		5.7	4.0	9.3	6.6	10.9	22.5	14.2	14.6	8.1

Source: Based on *Monthly Bulletin of Statistics* (March 1968 and July 1972) (United Nations publication).

[a] Exports are expressed in current prices.

[b] *Commodity Indexes for the Standard International Trade Classification, Revised*, vol. II (ST/STAT/SER.M/38) (United Nations publication, Sales No. 64.XVII.3).

II. FOREIGN TRADE AND INDUSTRIALIZATION

The historical importance of international trade as a stimulus to industrial development has been clearly evident in the growth of the developed market and centrally planned economies. Recently, the industrial expansion of many developing countries has been characterized by a similar reliance upon international trade. The proposals for trade preferences put forward by these countries and the importance that many of them attach to their export promotion programmes also reflect an awareness of the significance of international trade for industrialization.

Growth of world trade

The figures in table 15 indicate that the 1971 growth rate of world exports, 10.9 per cent, was considerably less than that for the two previous years, or 14.4 per cent. This phenomenon may be attributed primarily to the decrease in the exports of the developed market economies, particularly exports of the United States of America. The growth of exports from the developed market economies to the world decreased from a rate in excess of 15 per cent in 1969 and 1970 to 11 per cent in 1971.

It is not clear whether the decline in the exports of the developed market economies had any indirect effect on the export growth rate of the developing countries in 1971. In this year, the export growth rate for developing countries was 10.6 per cent, a magnitude roughly comparable to that achieved by the other economic groupings and to the world rate.

The 1971 growth rate of African exports continued to decline, as in the two previous years, to 6.9 per cent. As recently as 1968, African exports showed the most dynamic expansion among the developing regions, with a growth rate of 17 per cent.[18]

Asian exports increased annually in the period 1969–1971, rising to a rate of 16.8 per cent in 1971. Asia was the only developing region whose export growth rate increased in 1971. The actual level of exports from Latin America declined in 1971, and the growth rate in that year was negative.

As in previous years, the over-all pattern for imports in 1969, 1970 and 1971 was roughly similar to that for exports. The growth of world imports declined from a rate of 14 per cent in 1970 to 10.5 per cent in 1971. Decreases may be noted in the corresponding rates for both developed market and centrally planned economies, accounting for the drop in the world growth rate.

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[18] *Industrial Development Survey*, vol. IV (United Nations publication, Sales No. 72.II.B.15), p. 32.

TABLE 15. ANNUAL GROWTH RATES OF WORLD TRADE, BY ECONOMIC GROUPING, DEVELOPING REGIONS AND SELECTED COUNTRIES, 1969–1971

(Percentage)

	Exports, f.o.b.			*Imports, c.i.f.*		
	1969	*1970*	*1971*	*1969*	*1970*	*1971*
Developing countries	11.5	9.9	10.6	9.1	9.6	17.0
Africa	15.5	8.0	6.9	8.5	12.2	28.0
Asia	11.2	12.3	16.8	9.6	8.7	20.3
Latin America	9.6	8.5	-4.2	7.8	9.7	6.3
Developed market economies	15.2	15.5	11.0	14.9	15.1	11.2
EEC	17.9	16.8	12.8	21.9	16.8	11.1
EFTA	14.9	12.5	12.0	10.0	15.1	9.3
Japan	23.3	20.8	24.7	15.7	25.2	4.1
United States of America	9.5	13.7	2.1	8.5	10.9	14.5
Centrally planned economies	10.7	11.5	10.7	10.4[a]	14.4[a]	8.2[a]
World	14.4	14.4	10.9	13.7	14.0	10.5

Sources: Based on *Monthly Bulletin of Statistics*, various issues (United Nations publication); and other data supplied by the United Nations Statistical Office.

[a] Imports, f.o.b.

In contrast to the situation in the developed countries, imports by developing countries grew at substantially higher rates in 1971. This is attributed to the substantial growth of imports by Asian and African countries. In both cases, import growth rates in 1971 were more than double the rates in the previous years. Imports by Latin America rose at a slower rate in 1971 than in the past, possibly reflecting the absolute decline in the level of that region's exports in 1971.

If the 1971 growth rates for imports and exports by developing countries are compared, the figures suggest that their balance of trade may have worsened considerably. This observation applies to the individual developing regions as well as to the economic grouping as a whole.

The section that follows deals with trade in manufactures, which is the primary concern of this chapter. Performance in the manufacturing sector should be evaluated in relation to historical trends in the trade in manufactures and to the general perspective for total trade.

Growth of manufactured exports

The importance attached to manufactured exports in the process of industrialization is usually based on the assumption that: *(a)* manufactured exports offer possibilities for the most dynamic growth and could therefore provide the foreign exchange and capital needed to finance industrialization; or that *(b)* domestic markets in most developing countries are generally too small to absorb the techniques of mass production associated with efficient industry, and export possibilities must be given immediate consideration when the country begins to industrialize. Products that are commonly defined as manufactures are: chemicals (SITC 5), machinery and transport equipment (SITC 7) and "other manufactures" (SITC 6 and 8). Table 16 indicates the value of exports of manufactures by area of origin for selected years in the period 1963–1970.

The percentage of total exports (SITC 0–9) originating in the developing countries and in the centrally planned economies declined between 1963 and 1970. Over the same period the value of world exports more than doubled, a fact that points to a growing concentration of total trade among the developed market economies.

For exports of total manufactures (SITC 5–8), an opposite trend may be observed in the trade flow of the developing countries. Their percentage share of world manufactured exports rose from 5.8 per cent in 1963 to 6.3 per cent in 1970.

TABLE 16. VALUE OF EXPORTS, BY AREA OF ORIGIN, 1963–1970

(Billion dollars and percentage)

Commodity group (SITC)	*Year*	*Exports from*			
		World[a] (billion dollars, f.o.b.)	*Developed market economies*	*Developing countries*	*Centrally planned economies*
			Percentage of total		
Total exports (0–9)	1963	153.9	67.4	20.5	12.2
	1964	172.2	68.1	20.1	11.8
	1965	186.4	68.8	19.6	11.7
	1966	202.3	69.9	18.7	11.5
	1967	213.8	69.8	18.6	11.6
	1968	238.1	70.4	18.3	11.3
	1969	271.4	71.3	17.8	11.0
	1970	311.4	72.0	17.4	10.6
Manufactures (5–8)	1963	86.8	81.4	5.6	13.0
	1964	98.8	81.7	5.7	12.5
	1965	109.7	82.0	5.8	12.1
	1966	121.3	83.4	5.7	10.9

Commodity group (SITC)	Year	Exports from: World[a] (billion dollars, f.o.b.)	Developed market economies	Developing countries	Centrally planned economies
			Percentage of total		
	1967	130.4	83.2	5.9	10.9
	1968	149.8	83.3	6.0	10.7
	1969	175.9	83.4	6.3	10.3
	1970	201.7	83.8	6.3	9.9
Chemicals (5)	1963	9.4	86.4	4.1	9.3
	1964	10.9	86.9	4.2	8.8
	1965	12.2	86.9	4.2	8.9
	1966	13.6	88.5	3.6	7.8
	1967	14.8	88.0	3.5	8.5
	1968	16.9	88.8	3.5	7.7
	1969	19.2	88.8	3.7	7.5
	1970	21.8	88.9	3.7	7.4
Machinery and transport equipment (7)	1963	36.3	85.6	0.8	13.6
	1964	40.9	85.6	0.8	13.6
	1965	45.7	85.9	0.9	13.2
	1966	51.6	86.8	0.9	12.3
	1967	56.5	86.7	1.1	12.2
	1968	65.5	86.9	1.1	12.0
	1969	77.3	87.3	1.3	11.4
	1970	89.6	87.8	1.5	10.8
Other manufactures (6 and 8)	1963	41.1	76.6	10.2	13.2
	1964	47.0	77.2	10.4	12.4
	1965	51.8	77.5	10.6	11.9
	1966	56.1	79.1	10.6	10.3
	1967	59.1	78.6	11.1	10.3
	1968	67.4	78.4	11.4	10.2
	1969	79.4	78.4	11.8	9.8
	1970	90.3	78.7	11.7	9.6

Source: Based on *Monthly Bulletin of Statistics*, various issues (United Nations publications).

Note: Figures do not add to the total, which includes, among others, figures for islands in the Caribbean and the Pacific.

[a] Total exports are expressed in current prices.

The proportion of manufactures exported from the developed market economies also increased, while the percentage share of the centrally planned economies fell.

With regard to the individual product groups, world exports of chemicals (SITC 5) amounted to $22 billion in 1970. The total value of export trade in this product group has consistently been the lowest of the three types of manufactured exports shown in table 16. In the long term, the developed market economies have tended to increase their proportion of exports of chemicals, contrary to the trend in both the developing countries and the centrally planned economies.

In 1970, machinery and transport equipment (SITC 7) accounted for 44 per cent of the world total of manufactured exports. Of this total, the share of the developed market economies was almost 88 per cent. Although there was a percentage increase in the exports of this commodity group from the developing countries, the amount was small: 1.5 per cent (or $1.3 billion) in 1970.

Other manufactures (SITC 6 and 8) constituted 45 per cent ($90.3 billion) of world manufactured exports in 1970. The greater part of manufactures exported by developing countries is concentrated in this product group; these countries exported 11.7 per cent of the world total in 1970. The proportion of other manufactures exported by the developed market economies - though large and constantly increasing - was less than that for chemicals and machinery and transport equipment. The percentage of other manufactures exported by the centrally planned economies dropped noticeably over the period 1963-1970.

In general, the manufactured exports from developing countries have proven to be an important contributor to economic growth. The figures in table 17 indicate long-term trends. Only 15 per cent of all exports from the developing countries in 1963 were manufactures, but by 1970 the proportion had risen to 23 per cent. The growth rate for the developing countries over the entire period rose more rapidly

TABLE 17. MANUFACTURED EXPORTS AS A PERCENTAGE OF TOTAL EXPORTS, BY ECONOMIC GROUPING, 1963-1970

Year	*Developing countries*	*Developed market economies*	*Centrally planned economies*
1963	15.4	68.2	61.0
1964	16.3	68.9	61.0
1965	17.5	70.2	63.1
1966	18.4	71.6	56.9
1967	19.2	72.7	57.4
1968	20.7	74.5	59.5
1969	23.0	75.9	60.7
1970	23.4	75.4	60.4
Growth rate			
1963-1970	14.7	13.3	9.8

Source: Based on *Monthly Bulletin of Statistics*, various issues (United Nations publication).

than the corresponding rates for the other economic groupings, although it should be pointed out that the growth rate for the developing countries was calculated from a relatively narrow base. The conclusion that manufactured exports have played a dynamic role in improving the trade situation of developing countries remains valid, however.

Nonetheless, the disparity between the developing countries and the other economic groupings is clear. The manufactured exports of the developed market economies steadily increased as a percentage of total exports, rising from 68.2 per cent in 1963 to 75.4 per cent in 1970. The manufactured exports of the centrally planned economies remained relatively stable, at about 60 per cent of the total exports of this economic grouping over this period.

Destination of manufactured exports

Long-term trends in trade may be determined largely by the direction of trade flows and the major markets that are being supplied by each economic grouping. Table 18 provides some information on manufactured exports by area of origin and destination over the period 1963–1970.

TABLE 18. EXPORTS OF MANUFACTURES, BY AREA OF ORIGIN AND DESTINATION, 1963–1970

(Million dollars and percentage)

Area of origin	*World[a] (million dollars)*	*Destination*		
		Developing countries	*Developed market economies*	*Centrally planned economies*
		Percentage of total		
Developed market economies				
1970	169,090	19.9	75.9	4.0
Centrally planned economies[b]				
1970	19,920	14.6	15.2	68.9
Developing countries				
1963	4,860	30.8	66.0	2.5
1964	5,655	30.8	65.6	3.2
1965	6,395	29.7	66.2	3.8
1966	6,930	26.3	69.6	3.9
1967	7,650	24.8	69.7	3.8
1968	9,000	24.6	70.3	3.6
1969	11,090	25.5	70.7	3.7
1970	12,680	25.5	70.7	3.7

TABLE 18 *(continued)*

Area of origin	World[a] (million dollars)	Destination: Developing countries	Developed market economies	Centrally planned economies
		Percentage of total		
Africa				
1963	1,058	15.4	80.4	4.2
1964	1,288	19.0	77.3	3.8
1965	1,457	18.7	75.6	5.7
1966	1,598	8.0	85.9	6.2
1967	1,639	8.1	78.5	6.6
1968	1,987	9.6	78.5	6.2
1969	2,490	11.4	81.4	7.3
1970	2,563	12.5	78.7	8.4
Asia				
1963	2,725	41.3	55.7	2.7
1964	3,080	38.6	57.3	3.7
1965	3,491	36.3	59.4	4.0
1966	3,465	36.4	59.3	4.4
1967	3,929	32.0	64.1	3.9
1968	4,623	31.2	64.9	3.7
1969	5,734	31.1	64.9	3.6
1970	6,848	30.3	66.2	3.5
Latin America				
1963	983	18.5	79.8	0.8
1964	1,146	24.4	74.3	1.6
1965	1,284	26.6	72.1	1.1
1966	1,814	24.0	75.1	1.1
1967	2,040	25.2	73.2	1.6
1968	2,335	24.8	73.7	1.6
1969	2,810	26.9	72.2	0.8

Source: Based on *Monthly Bulletin of Statistics*, various issues (United Nations publication).

Note: Figures do not add to the total, which includes, among others, figures for islands in the Caribbean and the Pacific.

[a] Exports are expressed in current prices.

[b] Includes the Asian centrally planned economies: China, the Democratic People's Republic of Korea and the Democratic Republic of Viet-Nam.

With regard to the manufactured exports of developing countries, the proportion of trade between developing countries declined, from 30.8 per cent in 1963 to 25.5 per cent by 1970. The developed market economies and centrally planned economies both increased in importance as markets for the manufactured exports of developing countries. This was particularly true for the developed market economies, which received 66 per cent ($3.2 billion) of these exports in 1963 and 70.7 per cent ($9 billion) in 1970.

A wide variety of factors may be relevant in explaining these trends. In a general sense, the import-substitution policies adopted by many developing countries may have been more effective in reducing the proportion of trade between developing countries than the imports from the developed countries. Many of the manufactured goods that are commonly included among the exports of developing countries could also replace imports. Developing countries usually begin to industrialize with manufactures that are relatively simple to produce. Simultaneously, they may require more imports of the more sophisticated capital goods and intermediate supplies that are provided by the developed countries. The efforts of the developing countries to establish organizations for regional co-operation would tend to counteract this aspect of "parallel development", although such organizations have yet to make a sizable impact.

With regard to the individual developing regions, the figures for Africa indicate some trade shifts that differ slightly from the trade flows for all developing countries. The percentage of manufactures exported to the developing countries and to the developed market economies exhibited wide annual fluctuations. The proportion of manufactured exports going to other developing countries decreased over the period 1963–1970, while the figures for the developed market economies exhibit no definite pattern.

A substantial increase was recorded in the percentage of African manufactures destined for the centrally planned economies. In 1963 only 4.2 per cent ($44 million) of manufactured exports were shipped to the centrally planned economies. By 1970 this trade flow had risen to 8.4 per cent of the total, or $215 million. Thus, the centrally planned economies had become much more important as a market for African manufactures than they were for Asian or Latin American manufactured goods.

As indicated in table 18, Asian economies provided over one half of all manufactured exports from the developing countries in each of the years considered. While a majority of Asian exports of manufactures went to the developed market economies, the percentages were lower than the comparable figures for Africa and Latin America. A larger proportion of Asian manufactures were exported to other developing countries than was the case for manufactured exports from Africa and Latin America. The long-term trends suggest, however, that both of these aspects of the export pattern for Asian manufactures may change. The proportion of manufactured goods exported from Asia to the developing countries steadily declined over the period 1963–1970, while those directed to the developed market economies increased annually.

The value of manufactures exported from Latin America increased more rapidly than that for those exported from the two other developing regions, rising from $983 million in 1963 to $3,155 million in 1970. At the same time a change occurred in the direction of the flow of exports from Latin America, with an increasing percentage going to the developing countries and proportionately less to the

TABLE 19. EXPORTS OF SELECTED CHEMICAL PRODUCTS, BY AREA OF ORIGIN, 1970

Commodity group (SITC)	World (million dollars c.i.f.[a])	Developed market economies[b] (percentage of world total)	Centrally planned economies (percentage of world total)	Developing countries		Africa	Asia	Latin America
				Million dollars c.i.f.	Percentage of world total	(percentage of total of developing countries[c])		
Organic chemicals (512)	3,090	93.0	3.0	108	3.5	3.3	9.1	81.7
Inorganic elements, oxides (513)	1,180	76.6	2.1	251	21.3	4.0	1.8	87.7
Other inorganic chemicals (514)	747	73.2	9.4	130	17.4	27.7	68.8	1.5
Dyes, tanning, colour products (53)	840	97.9	0.5	11	1.3	1.0	9.2	89.3
Medicinal products (541)	1,394	94.8	1.4	54	3.9	6.4	10.0	77.4

Perfume, cleaning products (55)	716	88.3	2.7	65	9.0	27.9	35.5	35.9
Manufactured fertilizers (561)	644	88.2	7.0	22	3.4	45.4	3.3	44.2
Plastic materials (581)	2,467	99.3	0.5	6	0.2	–	75.2	24.4
Total	11,078			647				
Average		91.3	2.5		5.8	13.6	22.9	62.8

Source: Based on *Commodity Trade Statistics*, vol. XX (ST/STAT/SER.D).

[a] Exports are expressed in current prices.

[b] Calculations were based on the import schedules of January-December 1970, of the following countries: Australia (Jan.-Sept.), Belgium-Luxembourg (Jan.-Sept.), Denmark, Federal Republic of Germany, Finland, France, Italy, Japan, Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom of Great Britain and Northern Ireland, and the United States of America. Since the data were calculated from import schedules, all figures are recorded as c.i.f.

[c] Percentages do not always add to the total since the source did not allocate some exports of developing countries to a specific region.

developed market economies. Manufactures exported to the centrally planned economies remained at the same proportionate level over the period considered.

A clearer picture of the export trade in manufactures of the developing countries may be gained from a detailed breakdown showing the composition of these exports. Tables 19 21 provide data for specific products in the SITC 2-digit and 3-digit commodity groups. Unfortunately, at the time of writing the *Survey*, the complete figures were not available at such a specific level. The information is nearly complete, however, and should provide a relatively accurate picture of conditions in 1970.

Table 19 refers to selected chemical exports in 1970. The eight product groups shown in this table accounted for 51 per cent of world exports of chemicals in that year. Organic chemicals, plastic materials and medicinal products were the three largest groups among world exports. The developed market economies were the major suppliers of such goods.

The three most important chemical exports of the developing countries were inorganic elements and oxides (SITC 513), other inorganic chemicals (SITC 514) and organic chemicalss(SITC 512), together totalling $489 million. If calculated on the basis of the figures in table 16, they amounted to 61 per cent of all chemical exports from developing countries to the world in 1970. The more important commodities included among these product groups were hydrocarbons (SITC 512.1), nitrogen compounds (512.7), inorganic bases (513.6) and metal compounds of inorganic acids (514.2). Developing countries supplied 21 per cent of world exports of inorganic elements and oxides and 17 per cent of world exports of other inorganic chemicals.

Of the three developing regions, Latin America was the major supplier of chemicals, accounting for 63 per cent of such products exported from these countries. Asia provided 23 per cent, while Africa supplied 14 per cent. Important among chemical exports from Asia were inorganic chemicals (SITC 514), at 68 per cent, and among African exports, manufactured fertilizers (SITC 561), which accounted for 45 per cent of such products exported by the developing countries. Latin America was an important exporter of each product group, with the exception of other inorganic chemicals.

Table 20 gives data on the 1970 exports of eight selected products included in the group machinery and transport equipment (SITC 7). Total exports of these eight commodities were valued at $31 million in that year, or 35 per cent of world exports of machinery and transport equipment. The developed market economies exported 97.7 per cent of the total; the centrally planned economies and the developing countries accounted for 0.5 and 1.6 per cent respectively.

The largest proportion of these commodities exported by developing countries consisted of telecommunications equipment (SITC 724), which amounted to $251 million or 9.4 per cent of the world total recorded in 1970. Other important exports of the developing countries were transport equipment ($81 million) and office machines ($80 million).

The largest volume of machinery and transport equipment was exported from Asia (62.8 per cent of the total developing countries' exports of that group), followed by Latin America (32.2 per cent), with Africa supplying only 4.5 per cent. Asia was an important supplier of every commodity in this product group, and particularly of domestic electric equipment (91 per cent), telecommunications equipment (81 per cent), and textiles and leather machinery (72.6 per cent). Latin America exported 57 per cent of exports of office machines from the developing regions and 50 per cent of agricultural machinery.

TABLE 20. EXPORTS OF SELECTED MACHINERY AND TRANSPORT EQUIPMENT (SITC 7), BY AREA OF ORIGIN, 1970

Commodity group (SITC)	World (million dollars c.i.f.[a])	Developed market economies[b] (percentage of world total)	Centrally planned economies (percentage of world total)	Developing countries		Africa	Asia	Latin America
				Million dollars c.i.f.	Percentage of world total	(percentage of total of developing countries[c])		
Power machinery, non-electric (711)	3,578	97.8	0.2	44	1.2	20.3	36.2	42.9
Agricultural machinery (712)	1,039	98.5	1.4	2	0.1	–	43.0	50.2
Office machines (714)	3,334	97.3	0.2	80	2.4	0.2	42.0	57.3
Textiles, leather machinery (717)	1,446	98.3	1.3	5	0.3	–	72.6	20.4
Electric power machinery, switch gear (722)	2,122	97.2	1.0	37	1.8	1.9	49.4	47.5
Telecommunications equipment (724)	2,668	90.1	0.4	251	9.4	0.6	81.0	18.2
Domestic electric equipment (725)	2,876	99.1	0.6	3	0.3	–	91.1	–
Transport equipment (73)	15,951	99.0	0.5	81	0.5	15.3	46.5	37.8
Total	31,014			503				
Average		97.7	0.5		1.6	4.5	62.8	32.2

Source. Based on *Commodity Trade Statistics*, vol. XX (ST/STAT/SER.D).
[a] See table 19, foot-note *a*. [b] See table 19, foot-note *b*. [c] See table 19, foot-note *c*.

TABLE 21. EXPORTS OF SELECTED PRODUCTS AMONG "OTHER MANUFACTURES" (SITC 6 AND 8), BY AREA OF ORIGIN, 1970

Commodity group (SITC)	World (million dollars c.i.f.[a])	Developed market economies[b] (percentage of world total)	Centrally planned economies (percentage of world total)	Developing countries		Africa	Asia	Latin America
				Million dollars c.i.f.	Percentage of world total	(percentage of total of developing countries[c])		
Leather, dressed fur etc. (61)	715	72.2	3.7	180	24.0	8.0	50.8	37.6
Rubber manufactures, n.e.s. (62)	1,161	98.0	0.7	15	1.3	9.4	42.0	42.9
Paper, paperboard and paper manufactures (64)	3,697	98.9	0.7	13	0.3	12.9	31.5	55.3
Textile yarn, fabric etc. (65)	6,908	83.9	2.5	934	13.5	5.0	89.1	5.3
Iron and steel (67)	9,715	92.7	3.7	253	2.6	9.7	32.1	27.9
Metal manufactures, n.e.s. (69)	3,569	96.2	1.2	87	2.4	1.7	78.1	19.5

Plumbing, heating and lighting equipment (812)	455	93.9	2.0	18	4.0	–	82.2	16.3
Travel goods, handbags (831)	249	71.9	4.0	60	24.0	3.0	88.6	4.7
Clothing (84)	4,502	71.9	2.9	1,132	25.1	0.5	84.1	4.7
Foot-wear (851)	1,368	87.1	2.7	140	10.2	0.8	86.0	13.1
Instruments, watches and clocks (86)	3,310	97.9	0.8	44	1.3	5.7	83.6	9.1
Miscellaneous manufactured goods, n.e.s. (89)	5,870	85.2	1.8	758	12.9	0.8	89.5	9.6
Total	41,519			3,634				
Average		88.7	2.3		8.7	2.9	82.8	11.2

Source: Based on *Commodity Trade Statistics*, vol. XX (ST/STAT/SER.D).
[a] See table 19, foot-note *a*.
[b] See table 19, foot-note *b*.
[c] See table 19, foot-note *c*.

Table 21 gives data on the 1970 exports of 12 commodities classified as "other manufactures" (SITC 6 and 8). These exports totalled $41.5 billion or 46 per cent of world trade in this product group in 1970. Iron and steel exports (SITC 67), valued at $9.7 billion, comprised the largest single product group, followed by textile yarn and fabric (SITC 65), at $6.9 billion, and miscellaneous manufactured goods (SITC 89), at $5.9 billion. The developed market economies provided 88.7 per cent of world exports of these commodities, the centrally planned economies, 2.3 per cent, and the developing countries, 8.7 per cent.

The developing countries were important suppliers of several commodities in this product group. They provided $1.1 billion of the world exports of clothing (SITC 84), $934 million of textile yarn and fabric (SITC 65) and $758 million of miscellaneous manufactured exports. In relative terms, they accounted for 25 per cent of clothing exports, 24 per cent of the exports of leather, dressed fur etc. (SITC 61) and 24 per cent of exports of travel goods and handbags (SITC 831).

Several important items may be singled out from among the manufactured exports of developing countries within this product group. They include: bovine and equine leather (SITC 611.4); woven cotton, bleached (SITC 652.2); grey cotton fabrics, woven (SITC 652.1); textile clothes, not knit (SITC 841.1); clothing and accessories, knitted (SITC 841.4); articles of plastic, n.e.s. (SITC 893); and toys and sporting goods (SITC 894).

An examination of the regional distribution of exports of other manufactures (SITC 6 and 8) by developing countries reveals that Asian countries provided 83 per cent of this trade flow in 1970. This region supplied an important proportion of each commodity listed in table 21. Latin American countries exported 55 per cent of the paper, paperboard and paper manufactures (SITC 64) and 43 per cent of the rubber manufactures (SITC 62).

In addition to the types of commodities exported and the growth observed in the trade of a developing country or region, the general trade structure is also regarded as an indicator of the extent of development. A frequent difficulty encountered is the fact that only one or two products may account for almost all of a country's exports. In such cases, the prospects for exportation are very sensitive to production and market conditions for these major products, and wide fluctuations may occur.

Countries may find themselves limited in their ability to diversify exports for any number of reasons; for example, the complexity of advanced technology, the need to meet diverse standards in quality and performance, and inadequate distribution channels. It is generally conceded that development and industrialization are closely linked with a diversification of exports.

Table 22 provides some information on the concentration[19] of exports in the trade of selected developing countries. Of the 35 countries included in the table, 33 increased the number of commodities exported between 1962 and 1969. This fact alone did not ensure, however, that exports should become less concentrated as measured by the Hirschmann index, since in some countries the percentage of total exports accounted for by one or a few products also rose. In these cases the value of the concentration index also increased.

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[19] Concentration as used here refers to the concentration index defined in *foot-note c*, table 22. It should be distinguished from the geographical concentration of manufactures and trade discussed in chapter I.

TABLE 22. EXPORT CONCENTRATION IN SELECTED DEVELOPING COUNTRIES, 1962 AND 1969

Developing countries by per capita GDP, 1969[a]	*Number of commodities exported*[b]		*Export concentration index*[c]		*Number of manufactured exports, 1969*[b]	*Value of manufactured exports as percentage of total, 1969*
	1962	*1969*	*1962*	*1969*		
Over $500						
Mexico	110	139	0.235	0.110	89	19.2
Argentina	76	103	0.236	0.271	54	7.0
Cyprus	13	55	0.397	0.296	27	9.5
Lebanon	52	79	. . .	0.392	46	17.5
Surinam	13	23	0.783	0.479	8	55.0
Jamaica	31	55	0.521	0.506	30	19.2
Panama	9	45	0.532	0.541	21	10.0[d]
Chile	42	49	0.654	0.711	22	73.0
$250 to $500						
Thailand	44	77	0.399	0.243	38	2.9
Philippines	32	75	0.342	0.297	43	5.0
Brazil	74	120	0.513	0.333	68	6.2
Guyana	7	28	0.547	0.492	12	14.7
Guatemala	21	36	0.610	0.508	13	1.6
Syrian Arab Republic	23	32	0.433	0.533	13	1.7
Dominican Republic	15	33	0.567	0.544	12	1.6
Honduras	23	25	0.484	0.662	6	0.9
Cuba	8	29	0.839	0.669	13	3.7
Iran	19	60	0.660	0.817	32	6.7
Iraq	11	31	0.921	0.976	16	0.6
$250 and below						
Tunisia	39	66	0.310	0.210	28	14.9
United Republic of Tanzania	19	44	0.364	0.213	16	2.4
Republic of Korea	32	101	0.237	0.276	71	77.1
Morocco	34	82	0.318	0.297	42	6.6
Kenya	22	69	0.334	0.313	37	10.1
Central African Republic	12	17	0.465	0.351	4	36.5
Egypt	32	76	0.543	0.410	45	11.3
Sudan	12	25	0.612	0.445	8	0.3
Uganda	11	26	0.582	0.503	9	14.7

TABLE 22 *(continued)*

Developing countries by per capita GDP, 1969[a]	*Number of commodities exported*[b]		*Export concentration index*[c]		*Number of manufactured exports, 1969*[b]	*Value of manufactured exports as percentage of total, 1969*
	1962	*1969*	*1962*	*1969*		
$250 and below (continued)						
Ethiopia	18	34	0.549	0.534	13	2.2
Nigeria	34	56	0.360	0.538	24	5.5
Afghanistan	13	17	0.324	0.584	8	18.7[e]
Sierra Leone	8	22	0.650	0.592	6	65.7
Sri Lanka	24	37	0.650	0.627	18	3.5
Republic of Viet-Nam	21	19	0.677	0.634	8	2.5
Chad	10	7	0.711	0.918	0	0

Sources: Based on United Nations Statistical Office, *1969 Supplement to the World Trade Annual: Trade of the Industrialized Nations with Eastern Europe and the Developing Nations* (New York, Walker and Co., 1970); and *Handbook of International Trade and Development Statistics, 1972* (United Nations publication, Sales No. 72.II.D.3), pp. 212–213.

[a] Within each group, countries are ranked according to the export concentration index in 1969.

[b] SITC 3-digit commodity groups.

[c] The Hirschmann index is normalized to make values ranging from 0 to 1 (maximum concentration). The index is defined as follows:

$$H_j = \frac{m}{m - 100} - \frac{100}{m - 100} \left| \sum_{i=1}^{n} \left| \frac{x_i}{X} \right| \right|$$

where j = country index; n = number of commodities; $m = \frac{100}{\text{minimum value of the index}}$;

x_i = value of export of commodity i; $X = \sum_{i=1}^{n} x_i$

[d] Nearly all are copper exports.

[e] Nearly all are pearls or processed semiprecious stones.

Two countries that illustrate this phenomenon are Iran and Iraq. Although the number of products rose considerably for each country over this period (19 to 60 and 11 to 31 respectively), the concentration of exports also increased. The trend is explained by the fact that both are major oil-exporting countries and substantially increased their exports of this one product between 1962 and 1969.

A comparison of the concentration indices for 1962 and 1969 reveals that 24 of the 34 developing countries listed in table 22 achieved a greater degree of export diversification (that is, the index declined between the two years).

There is some evidence that an inverse relationship exists between the concentration index and the level of *per capita* GDP, although exceptions may be noted, such as the Republic of Korea, which had a *per capita* GDP below $250 in 1969, exported 101 commodities in that year, but registered a concentration index

of only 0.276. In the case of the Republic of Korea, this phenomenon may reflect the impact of its export promotion programme. Similar instances may be observed elsewhere within the same group of countries with a *per capita* GDP of $250 and below.

If manufactured exports are considered separately from total exports, certain other implications are evident. The relationship between the number of manufactures exported by the countries included in table 22 and the export concentration index appears to be close. For example, Mexico, with an index of 0.110, exported 89 manufactured commodities in 1969. The Republic of Korea exported the second largest number, 71, with an index of 0.276. Comparable figures were recorded by Argentina, Brazil and Lebanon.

With a few exceptions, manufactured exports did not make up a large percentage of total exports for the countries listed in table 22. The percentages were usually larger for countries with a *per capita* GDP greater than $500 in 1969. The fact that the proportion of manufactured exports was relatively small suggests that there might be additional scope for export diversification through industrialization, if problems of technology, quality, capital etc. can be overcome.

Growth of manufactured imports

As evidenced in table 23, total imports of developing countries rose considerably during the period between 1963 and 1970, reaching a value of $57.7 billion in 1970. Asian imports consistently comprised the largest proportion of the three developing

TABLE 23. IMPORTS OF MANUFACTURES BY DEVELOPING COUNTRIES, 1963–1970

(Million dollars and percentage)

Commodity group (SITC)	*Year*	*Total imports into*[a]			
		Developing countries	*Africa*	*Asia*	*Latin America*
		Million dollars[b]			
Total imports	1963	32,200	6,760	15,010	8,110
(0–9)	1964	35,240	7,390	16,090	9,160
	1965	37,580	8,170	17,340	9,320
	1966	39,810	7,910	18,390	12,760
	1967	41,050	8,150	19,310	13,120
	1968	45,730	8,780	21,600	14,820
	1969	51,240	9,900	23,930	16,270
	1970	57,690	11,890	25,680	18,590
		Manufactured imports as percentage of total imports			
Manufactures	1963	63.5	68.8	60.6	71.0
(5–8)	1964	64.0	68.9	61.1	71.0
	1965	66.0	72.0	59.6	73.0

TABLE 23 *(continued)*

Commodity group (SITC)	Year	Total imports into[a] Developing countries	Africa	Asia	Latin America
		Manufactured imports as percentage of total imports			
Manufactures (5–8) *(continued)*	1966	66.9	71.8	65.5	68.2
	1967	67.1	71.3	65.1	68.6
	1968	68.2	73.5	65.6	69.5
	1969	69.1	74.8	67.2	71.2
	1970	68.9	74.5	67.0	70.6
Chemicals (5)	1963	8.0	7.3	7.1	10.9
	1964	8.3	7.0	7.3	11.7
	1965	8.5	7.6	7.6	11.7
	1966	9.1	7.8	8.7	11.1
	1967	9.4	7.9	9.0	11.1
	1968	9.5	8.4	9.0	11.2
	1969	9.1	8.5	8.4	10.7
	1970	9.0	8.2	8.4	10.8
Machinery and transport equipment (7)	1963	29.0	30.3	26.2	37.2
	1964	29.0	30.7	26.4	35.9
	1965	30.5	34.0	24.5	36.6
	1966	31.4	34.5	29.3	33.6
	1967	31.7	34.7	28.7	34.7
	1968	33.0	35.7	29.6	36.8
	1969	33.6	37.1	30.9	37.2
	1970	33.5	38.0	30.1	36.4
Other manufactures (6 and 8)	1963	26.5	31.2	27.3	22.9
	1964	26.7	31.2	27.4	23.4
	1965	27.0	30.4	27.5	24.7
	1966	26.4	29.5	27.5	23.5
	1967	26.0	28.7	27.4	22.8
	1968	25.7	29.4	27.0	21.5
	1969	26.4	29.2	27.9	23.3
	1970	26.4	28.3	28.5	23.4

Source: Based on *Monthly Bulletin of Statistics*, various issues (United Nations publication).

Note: Figures do not add to the total, which includes among others figures for inlands in the Caribbean and the Pacific.

[a] Import data were calculated from the "exports to" columns for world trade, by commodity class and region in the *Monthly Bulletin of Statistics*. They are therefore recorded as f.o.b.

[b] Figures are expressed in current prices.

regions. In relative terms, the largest increase was recorded by Latin America, whose imports more than doubled, from $8.1 billion in 1963 to $18.6 billion in 1970.

Manufactured imports as a percentage of total imports also showed a tendency to increase over the period examined. In 1970 they accounted for 68.9 per cent of all imports by developing countries. Similar trends may be noted for both Africa and Asia. Almost 75 per cent of all African imports and 67 per cent of Asian imports were manufactures in 1970. Latin American imports of manufactures exhibited no pronounced trend; they remained at about 70 per cent of the region's total imports over the period.

With regard to the individual product groups, the trends for each region were roughly comparable to those for imports of total manufactures. In the cases of Africa and Asia, the percentages tended to increase over time for each of the three product groups.

Chemicals (SITC 5) have traditionally made up the smallest proportion of manufactured imports by developing countries. In 1970 they accounted for 8.9 per cent ($5.1 billion) of the total imports of this economic grouping. Machinery and transport equipment (SITC 7) consist primarily of capital imports, and it is therefore not surprising that this product group accounted for the largest proportion of the trade in manufactures to the three developing regions. In 1970, 33.4 per cent ($19.3 billion) of all imports to developing countries were machinery and transport equipment.

The proportion of imports of other manufactures (SITC 6 and 8) to total imports over the period considered was relatively constant; the figure was 26.4 per cent or $15.2 billion in 1970. The percentage of other manufactures imported by Africa declined, while the percentages for Asia and Latin America increased slightly between 1963 and 1970.

The figures in table 24 show the trends in imports of manufactures by developing countries in the period 1963–1970. Of major interest is the breakdown showing the industrial and geographical origin of these imports. The predominance of the developed market economies as the major supplier is clearly indicated for each product group. In 1970 the developing countries imported $33.5 billion (84.5 per cent) from the developed market economies. The comparable figure for the centrally planned economies was $2.9 billion (7.3 per cent), while the interregional trade of developing countries in manufactures amounted to $3.2 billion, or 8.2 per cent.

With regard to the composition of the flow of imports into developing countries, some differences are apparent according to the area of origin. Among the manufactured imports from the developed market economies, machinery and transport equipment (SITC 7) accounted for a major part of the total trade. The composition of imports from the centrally planned economies was roughly similar, although the volume of chemical imports (SITC 5) was proportionately smaller while that of other manufactures (SITC 6 and 8) was larger.

The composition of manufactured imports originating in developing countries and destined for these countries was distinctly different from that of the two other economic groupings. Over 70 per cent of these imports consisted of other manufactures (SITC 6 and 8). A slight but encouraging trend may be observed in the composition of this trade flow. Imports of other manufactures declined slightly in relative terms (from 73.6 in 1963 to 70.5 per cent in 1970), while the percentages for machinery and transport equipment increased over the period (from 15 per cent in 1963 to 17.6 per cent in 1970). As mentioned earlier, the first of these product

TABLE 24. MANUFACTURED IMPORTS OF DEVELOPING COUNTRIES, BY AREA OF ORIGIN AND COMMODITY GROUP, 1963–1970

(Million dollars and percentage)

Year	Value (million dollars f.o.b.)[a]	Percentage share by area of origin				Percentage share of total manufactures, by commodity group		
		Total manufactures (SITC 5–8)	Chemicals (SITC 5)	Machinery, transport equipment (SITC 7)	Other manufactures (SITC 6, 8)	Chemicals (SITC 5)	Machinery, transport equipment (SITC 7)	Other manufactures (SITC 6, 8)
Imports from developed market economies								
1963	17,280	84.6	89.5	89.0	78.3	13.3	48.1	38.6
1964	18,990	84.3	88.4	88.7	78.2	13.6	47.7	38.7
1965	20,860	84.2	87.9	89.2	77.5	13.5	48.9	37.6
1966	22,670	85.1	89.7	89.8	77.9	14.4	49.5	36.1
1967	23,490	85.2	88.4	90.0	78.5	14.5	49.9	35.6
1968	26,620	85.3	88.5	90.0	78.1	14.5	51.1	34.4
1969	29,910	84.4	87.5	89.4	77.0	13.6	51.7	34.7
1970	33,550	84.5	88.1	89.6	76.9	13.5	51.5	35.0
Imports from centrally planned economies								
1963	1,653	8.1	3.8	8.6	8.8	5.9	48.7	45.4
1964	1,802	8.0	3.4	8.9	8.4	5.7	50.5	43.8
1965	2,007	8.1	4.4	8.4	8.9	7.1	48.1	44.8
1966	2,155	8.1	4.0	7.9	9.7	6.7	46.0	47.3
1967	2,155	7.8	4.8	7.8	8.8	8.6	47.8	43.6
1968	2,360	7.6	4.8	7.6	8.5	8.9	48.7	42.4
1969	2,690	7.6	4.7	7.9	8.2	8.2	50.5	41.3
1970	2,910	7.3	4.4	7.5	8.1	7.9	49.5	42.6
Imports from developing countries								
1963	1,495	7.3	6.7	2.4	12.9	11.4	15.0	73.6
1964	1,740	7.7	8.2	2.4	13.4	13.8	13.8	72.4
1965	1,900	7.7	7.7	2.4	13.6	12.9	14.5	72.6
1966	1,820	6.8	6.3	2.3	12.4	12.7	15.9	71.4
1967	1,900	7.0	6.8	2.2	12.7	13.7	14.7	71.6
1968	2,215	7.1	6.7	2.4	13.4	13.1	16.0	70.9
1969	2,825	8.0	7.8	2.7	14.8	12.7	16.5	70.8
1970	3,235	8.2	7.5	2.9	15.0	11.9	17.6	70.5

Source: Based on *Monthly Bulletin of Statistics* (March 1969, March 1971 and July 1972) (United Nations publication).

[a] Figures are expressed in current prices.

groups (SITC 6 and 8) consists largely of finished goods, while the latter (SITC 7) is composed primarily of capital goods. If the present trend can be maintained, developing countries could become relatively less dependent in meeting their own needs for capital goods.

Trade barriers against manufactured goods

A review of the trends in industrial policy during the First United Nations Development Decade reveals a distinct shift in emphasis from a philosophy of import substitution to one of export promotion. Consequently, developing countries, while pursuing programmes of export promotion have found that they share a common interest in seeking the relaxation of import barriers instituted by developed countries. A variety of studies have been prompted by this shift in emphasis, with the aim of identifying trade barriers and of estimating the extent to which they have reduced the exports of developing countries.

Briefly, trade restrictions have been described as either tariff or non-tariff barriers. Tariff barriers were the first to receive wide attention, which focused on the extent to which tariff rates might inhibit imports, or provide protection to domestic producers faced with foreign competition. Out of these studies has evolved the concept of the effective tariff or effective protection, which refers to the tariff protection afforded by the entire structure of tariffs and quotas for a particular activity or stage in the production process. The concept of effective protection differs from the approach that took into consideration only the amount by which the price of the final product was raised, and ignored the protective impact at any specific stage in the production of that product.

More recent studies have been concerned with non-tariff barriers.[20] The importance of non-tariff barriers to the export prospects of developing countries now appears to be greater than was originally thought. For certain products (for example, textiles, clothing and processed agricultural products) these barriers may have a more detrimental effect than tariffs.[21] A further contention is that tariff concessions will have only limited benefits without corresponding reductions in import restrictions.[22]

The following section concerns some of the possible consequences of current discussions regarding tariff and non-tariff barriers. It does not cover the wide variety of barriers that may be instituted, nor can a thorough analysis of the implications of each practice be provided. The field is still too new, and too few factual data are available on which to base definite conclusions. Nevertheless, it is apparent that the subject involves an area of major concern to developing countries and one that will command a great deal of attention in the course of the Second Development Decade.

Trade restrictions of the developed countries

Both tariff and non-tariff barriers appear to be highly relevant to a discussion of international trade. With regard to tariff barriers, protection is especially high in the

[20] These include quantitative restrictions through quotas and licensing, export restraints, import embargoes, requirements for domestic content, variable levies, direct and indirect subsidization and a number of other related policies.

[21] See I. Little, J. Scitovsky and M. Scott, *Industry and Trade in Some Developing Countries* (London, Oxford University Press, 1970).

[22] *Towards Full Employment* (Geneva, International Labour Office, 1970), p. 337.

case of manufactured imports into the developed countries. The effective rate of protection is often defined as the amount of protection accorded to value added for a particular activity or stage of production. It takes into account duties imposed on material inputs.

Using this measure, studies show that the burden of tariffs is usually heaviest on finished goods and decreases for semi-processed goods and raw materials. Accordingly, the exporters of manufactures in developing countries must assume a larger share of the total tariff burden than other enterprises which export only the raw materials or semi-processed goods. Thus, the policies of developed economies may have indirectly discriminated against industrial exporters in the developing countries compared with other exporters.

The long-run trend has been towards a decline in tariff rates throughout the world. Since 1966 tariff reductions have lowered the average rate by about one third.[23] Although the majority of the negotiations have involved industrial products traded between developed countries, the principle of unilateral concessions to developing countries has been accepted.

With perhaps few exceptions, the tariff burden placed on any stage of production has decreased as tariffs for a given product were reduced. However, tariff negotiations, as well as the commercial policies of both developed and developing countries, have traditionally been based on tariff rates for products without consideration of the effective burden on a specific production stage. As both government officials and economists become more familiar with the concept of effective protection, including the pitfalls of interpretation, the usefulness of tariffs as a means of encouraging industrialization will be enhanced. This applies to an understanding of tariffs as a barrier to the exports of developing countries as well as of the significance that the tariffs of developing countries have for the industrialization of their domestic economies.

The significance of non-tariff barriers is much more complex than that of tariff barriers. Non-tariff barriers have been the subject of only a few studies. They are embodied in a wide variety of policies. Among manufactured and semi-manufactured products, those most frequently subject to import restrictions are cotton textiles (covered by the Long-Term Arrangement), petroleum products, other textile products, ferro-alloys and ceramic products, jute products, leather and leather goods and woollen goods.[24]

Discretionary licensing and import quotas are the two types of trade restrictions most frequently applied to trade in manufactures and semi-manufactures. In addition to the products referred to above, processed foods, aluminium products, electronic components, pharmaceuticals and rubber manufactures are sometimes subject to these restrictions. The practice of allocating licences to importers on a discretionary basis raises several problems for developing countries. The inability to rely on a stable pattern of exports or export growth is a frequent consequence of discretionary licensing. In fact, the element of uncertainty created by this practice may be its greatest disadvantage.

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[23] "Implementation of the International Development Strategy for the Second United Nations Development Decade" (E/AC.54/L.52), p. 6.

[24] Based on UNCTAD findings as cited in "Programme for the liberalization of quantitative restrictions and other non-barriers in developing countries on products of export interest to developing countries" (TD/120/Supp.1), p. 7.

Quite often, the criterion on which the licensing procedure is based is not clearly defined, or it is left unstated. Furthermore, the principle governing licensing procedures in developed countries is often unknown to importers in these countries, who tend to rely on traditional suppliers without attempting to locate suppliers in developing countries. Licences may be based on some definite quota, or they may be allocated on a discretionary basis, which is governed by domestic production of the commodity in question. These unknowns make it difficult for importers in the developed countries to anticipate the quantity of goods that they will be allowed to import. This problem, in turn, is passed on to the suppliers in other countries, including those in developing countries. In addition, the bureaucratic delays involved in the licensing procedure may complicate the situation for developing countries. At times, quotas may not be fully utilized owing to delays in the issuance of licences, or subsequent difficulties in obtaining the necessary foreign exchange.

While the long-run objective of developing countries may be to free their manufactured exports from the restrictions of discretionary licensing, a few intermediate steps may be taken to lessen the negative effect of the practice. First, in order to minimize the uncertainties involved, developed countries should make every effort to issue licences promptly, along with the necessary foreign exchange where foreign-exchange controls are in effect. Secondly, in cases where licensing and associated quotas are based on past performance, special consideration might be given to including new producers in developing countries. Thirdly, steps may be taken to replace discretionary licensing practices by global quotas, which recognize potential suppliers in developing countries as well as the established ones in developed countries. Finally, if discretionary licences are continued, the criteria on which they are based should be made clear to importers in the given country as well as to suppliers abroad.

Many other trade restrictions, in addition to discretionary licensing, are relevant to a discussion of the manufactured exports of developing countries. A thorough analysis of any one of these would constitute a major study in itself and is beyond the scope of this chapter. However, several observations may be made that are applicable to most non-tariff barriers.

First, they are frequently introduced in response to increasing inflows of imports, which put pressure on domestic producers of products competing with these imports. Developed countries are normally the major suppliers of manufactured exports to other developed countries, and this kind of foreign competition is typical of their trade. Though developing countries may account for only a small portion of the competing imports, they, too, are subject to the restrictions directed at other developed countries. Secondly, non-tariff restrictions are generally imposed across the board and are intended to maintain a constant level and consistent pattern of a country's imports. This practice favours "traditional suppliers", who, though they may not increase their proportion of imports, are allowed to maintain a percentage achieved in some base year. Moreover, traditional suppliers are other developed countries, while developing countries are limited to insignificant shares of the market and small absolute volumes of trade. Such trade restrictions may force developing countries to abandon products in the export of which they have a comparative advantage, and turn to other products that are not subject to these barriers. This results in a misallocation of resources, which, in the long run, will damage their prospects.

In conclusion, it must be recognized that reducing non-tariff restrictions poses a much more complex and difficult problem than reducing tariffs. It is generally accepted that negotiations to reduce tariffs are designed to distribute the benefits of freer trade among all participants. No individual country is discriminated against in this case. By contrast, those who advocate non-tariff restrictions claim that they are intended ideally to offset existing misallocations of resources and consequently to raise income levels in the world as a whole. There is as yet no general agreement on the principles behind non-tariff restrictions and their net effect on trading partners. In the course of the Second Development Decade, study and experience should lead to a clearer understanding, which may provide the basis for further multilateral negotiations. In any event, it is accepted that the tariff and non-tariff barriers applied by developed countries are a serious obstacle to the industrialization of developing countries, by limiting their exports. Unfortunately, this practice may remain a major problem during the Second Development Decade.

Industrialization and tariff protection in developing countries

Industrialization and tariff protection in developing countries have additional implications when contrasted with the tariff barriers of the developed countries. Initially, industrialization through import substitution led to a heavy reliance upon protection as a means of encouragement.[25] Several arguments were put forward to justify this policy. Perhaps the best known is the infant-industry argument, or the contention that it is very difficult to establish a new firm in the face of competition from imports. Experience and production techniques must be perfected, and this will require time. Eventually, costs will drop to competitive levels, but the new enterprise must be protected by a tariff wall or other means until this occurs.

A second argument often given as a justification for high protection involves the importance attached to economies of scale. Many industries, owing to their production characteristics, must produce on a large scale if they are to be efficient. This may mean that most of the domestic market must be captured—a contention that has frequently led to tariff barriers to ensure adequate market size.[26]

Only the recent experience gained by developing countries has indicated some of the disadvantages associated with over-protection. Perhaps most important is the recognition that policies of protection have proved to be biased against exports. The whole philosophy of import substitution has been based on the idea of encouraging production for the domestic market. This is simply another way of saying that a programme of protection discourages exports, since it renders the domestic market more profitable relative to export markets than would be the case without protection.[27]

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[25] In general, the observations made in this section apply to both tariff and non-tariff barriers.

[26] Several other arguments have been given as justifications for tariff protection. These include imperfections in the existing price and wage structure, and external economies.

[27] The same conclusion is reached by more rigorous economic analysis. Briefly, high rates of protection in the market for finished manufactures mean that the domestic selling price will probably exceed prices in markets with little or no protection. If the domestic producer must also pay for imported supplies that are subject to tariffs, this puts him at a cost disadvantage relative to producers in other countries, but does not affect his position relative to other domestic competitors. Both facts may make domestic production more profitable than export. For a discussion of cost differences resulting from protection, see R. H. Ballance, "Market elasticities and the effective protection", *The Manchester School of Economic and Social Studies*, No. 1 (March 1971), pp. 1–11.

Frequently, protection has been adopted to encourage industry. This has occurred in countries where it has been observed that industrialists must bear exceptionally heavy costs as a result of particular economic conditions. Examples of such conditions include: instances where wages in manufacturing over-value the real cost of labour and are maintained at levels considerably higher than those in other economic sectors, and instances where industry must bear many of the costs of infrastructure, such as the costs of housing, communications and electricity, which would normally be paid by the Government. Protection of industry has been used to compensate the sector for these additional costs and to raise industrial profits.

Unfortunately, a policy of protection to encourage industry has sometimes proved to be counter-productive. Where industry is plagued by what are believed to be abnormally high wage rates, protection does ensure that profit margins shall be maintained. However, labour remains too expensive relative to capital. Consequently, labour-intensive industries are confronted with an undue bias, which may limit employment and tend to alter the basic industrial structure in favour of capital-intensive industry. Other means to correct such distortions in factor prices may be more useful under such circumstances.

The practice of compensating industry through protection for bearing the cost of its own infrastructural needs has also at times failed. Many services of infrastructure could be provided more efficiently by the Government. Furthermore, firms must divert precious managerial talent, energies and time to operations with which management is not familiar.

These difficulties illustrate a basic weakness of protection as a means of encouragement. Its effect on the domestic market relative to the export market or on industry relative to other sectors is seldom "neutral". An alternative may be industrial encouragement through promotion (for example, export subsidies, labour subsidies, and adequate industrial services at reasonable costs). These may be combined with a programme of protection to offset the unwanted effects of such a programme, or they may be implemented on their own.

Such an approach has frequently been recommended. Its full implications are not yet apparent, and further study and experience are required. Nevertheless, it appears that promotion as a means of industrial encouragement will receive growing attention over the present decade, and it is a promising approach to evolving a rational policy of industrial development.

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III. EMPLOYMENT IN MANUFACTURING

Recent trends

In the 1960s the developing countries made progress in their effort to industrialize. Manufacturing output expanded at an average annual rate of 6.5 per cent. Employment in manufacturing expanded by 3.6 per cent per annum over the same period, a rate that was more than double that of the developed market economies, and that surpassed the high rates of employment growth of the centrally planned economies (see table 25). Given the high rates of increase in the labour force in many of the developing countries, however, and the prevailing unemployment and poverty in these countries, the present capacity of their manufacturing industry to absorb new labour is inadequate. Moreover, available data for the 1960s point to a decline in the capacity of manufacturing to expand employment; the rate of growth in employment for all developing countries decreased from 4.4 per cent per annum in the first half of the decade to 2.5 per cent[28] in the second half, while output grew in both periods at 6.5 per cent.

This tendency is strongly suggested by the regional data available for Asia and Africa. The Latin American region does not appear to have experienced the same process, but this could be the result of fluctuations in the business cycle or attributable to a statistical accident.[29]

A marked decline in the capacity of the manufacturing industry to absorb new labour in the second half of the 1960s relative to the first half was also evident for the developed market economies. The average annual rate of growth of employment declined from 2 per cent in the period 1960–1965 to 1.3 per cent in the subsequent five years. This fact might be attributed in part to the decline in the growth rate of manufacturing output in these countries over this period. The centrally planned economies also experienced a slowdown in the expansion of manufacturing labour in

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[28] This figure represents an average rate of employment growth for 1965–1969. The available data for output extending to 1970 point to an increase between 1969 and 1970 of 6.7 per cent, which largely corresponds to the average for 1965–1969. Hence, employment trends that were apparent in the period 1965–1969 might be expected to continue.

[29] Examination of the year-to-year changes in the figures for total manufacturing convey the impression that in the periods 1965–1966 and 1966–1967 employment grew more rapidly than output for the whole region. The respective figures are: 6 and 3.2 per cent for manufacturing output and 6.5 and 4.4 per cent for manufacturing employment growth. It is significant, however, that this anomaly was apparent for some industries only, such as the food, beverages and tobacco industry group, the textile industry and metal products. Except for metal products, these industries belong to the traditional segments of manufacturing and are characterized by a rather low income elasticity of demand and a high share of artisan production. In the case of the metal industry, the higher rate of employment growth may reflect a short-term slump in the business cycle and a related slackening of output unaccompanied by a change in the level of employment. The irregularity may also be experienced by an increase in artisan employment and increased work-sharing in that sector owing to the lack of other employment opportunities. Statistical peculiarities in aggregate employment figures that also cover the artisan sector may also have contributed to this anomaly.

TABLE 25. GROWTH OF EMPLOYMENT IN MANUFACTURING, BY REGION AND ECONOMIC GROUPING, 1960–1970

(Average annual rates, by percentage, based on actual values)

	1960–1965	*1965–1970*	*1960–1963/1967–1970*
Developing countries, average	4.4	2.5[a]	3.6[b]
Latin America	1.8	3.7[a]	3.2[b]
Asia	4.7	1.8[a]	3.3[b]
Africa	10.2	6.4[a]	8.7[b]
Developed market economies	2.0	1.3	1.7
Centrally planned economies	3.7	3.0	3.4
World, exlcuding centrally planned economies	2.9	1.9[a]	
World average	3.1	2.2[a]	

Source: Based on data supplied by the United Nations Statistical Office, July 1972.
[a] 1965–1969.
[b] 1960–1963/1967–1969 (over six and a half years).

the second half of the 1960s relative to the first half, from an average annual rate of 3.7 to 3 per cent. This took place at the same time that manufacturing output was growing steadily, and may be attributed to an acceleration in broadly defined labour productivity.

An examination of the year-to-year changes in manufacturing employment in the second half of the 1960s reveals significant fluctuations in growth rates (see table 26). In Latin America the growth of employment showed a marked decline over this period, from an annual increase of 6.8 per cent in 1965–1966 to 1.3 per cent in 1968–1969. The developed market economies experienced even greater fluctuations, with a decline in the total level of manufacturing employment, to –0.3 per cent in 1966–1967.

A study of the industrial structures of developing countries discloses significant regional and country differences in the composition of manufacturing output and employment and in their growth potential. In general, however, the food, beverages, textile, wearing apparel, leather products and foot-wear, wood products and other light manufacturing industries dominate manufacturing in these countries. For developing countries as a whole these sectors accounted for little less than two thirds of manufacturing output and for three quarters of manufacturing employment in 1960. Over the 1960s the relative weight of light manufacturing declined somewhat in favour of heavy manufacturing, possibly reflecting the reduced possibilities for import substitution in light manufacturing.

The growing share of heavy manufacturing in the total output of developing countries might also suggest the increasing importance of lines of manufacturing using a more complex technology and organization of production. Manufacturing

TABLE 26. GROWTH OF EMPLOYMENT IN MANUFACTURING, BY REGION AND ECONOMIC GROUPING, 1965–1970

(Average annual rate, by percentage, based on index numbers)

	1965–1966	1966–1967	1967–1968	1968–1969	1969–1970	Average for 1965–1970
Developing countries, average	2.4	3.3	1.4	2.9	...	2.5[a]
Latin America	6.8	4.4	2.5	1.3	...	3.7[a]
Asia	1.0	2.5	0.9	2.8	...	1.9[a]
Africa	4.9	9.3	3.6	7.8	...	6.4[a]
Developed market economies	2.6	0.3	0.9	2.8	0.8	1.3
Centrally planned economies[b]	4.4	3.3	3.9	2.1	1.6	3.0
World, excluding centrally planned economies	2.5	1.1	1.1	2.8	...	1.9[a]
World average[c]	2.9	1.6	1.7	2.7	...	2.2[a]

Source: Based on data supplied by the United Nations Statistical Office, July 1972.

[a] 1965–1969.

[b] Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland, Romania and the USSR.

[c] Excluding Albania, China, Democratic People's Republic of Korea, Democratic Republic of Viet-Nam, and Mongolia.

that is classified as heavy manufacturing is not homogeneous with respect to goods produced or technology utilized. Ordinarily, only some phases of the highly complex production processes of heavy manufacturing are performed in developing countries. There is also no homogeneity with regard to the uses of the output of heavy manufacturing industries. Many of these industries are producing durable consumer goods or intermediate goods for the production of consumer goods. It would be presumptuous to identify the heavy segment of manufacturing, which prevails in developing countries, as the one that produces capital and intermediate goods and thus caters mainly to the extended growth potential of industry and other sectors. Nevertheless, it is the most dynamic segment of manufacturing. Output and employment expanded more rapidly in heavy manufacturing than in light manufacturing in developing countries in the 1960s (see table 27). The output of heavy manufacturing tended to expand at a higher annual rate than that of light manufacturing over this period: 9.7 per cent *versus* 4.7 per cent in Asia, 8.2 per cent *versus* 4.7 per cent in Latin America and 7.6 per cent *versus* 6 per cent in Africa. Moreover, for each percentage point increase in the output of heavy manufacturing there seemed to be the same, or an even slightly greater, increase in the demand for new labour in this sector than in light manufacturing, although this relationship appears more clearly for Asia and Africa than it does for Latin America. On the

TABLE 27. GROWTH OF EMPLOYMENT IN MAJOR SECTORS OF MANUFACTURING IN THE DEVELOPING REGIONS, 1960–1969

(Average annual rates, by percentage)

	Total manufacturing	*Light manufacturing*	*Heavy manufacturing*
Developing countries			
1960–1965	4.4	3.9	5.8
1965–1969	2.5	1.8	4.1
1960–1963/ 1967–1969	3.6	3.0	5.0
Asia			
1960–1965	4.7	4.0	6.6
1965–1969	1.8	0.9	4.2
1960–1963/ 1967–1969	3.3	2.6	5.3
Latin America			
1960–1965	1.8	1.4	2.6
1965–1969	3.7	3.9	3.4
1960–1963/ 1967–1969	3.2	3.2	3.2
Africa			
1960–1965	10.2	9.2	13.6
1965–1969	6.4	6.2	6.9
1960–1963/ 1967–1969	8.7	8.3	10.1

Source: Based on data supplied by the United Nations Statistical Office, July 1972.

average over-all, each percentage point increase in the output of heavy manufacturing was matched by a 0.6 per cent increase in employment in that sector in Asia and over 1.3 per cent in Africa in the 1960s. Conversely, the increase of output in light manufacturing apparently absorbed less manpower than heavy manufacturing in Asia, or 0.5 per cent for each percentage point increase in output. In Africa, however, the increase in output of light manufacturing generated slightly more employment than heavy manufacturing, or 1.4 per cent for each percentage point increase in output. No clear pattern in this relationship is discernible in Latin America over this period, but its absence could be due to the peculiarities of the effects of business cycles and/or a statistical accident, as noted earlier. The growth of heavy manufacturing thus appears to give the greatest impetus to the expansion of employment in the manufacturing industry in developing countries. As heavy manufacturing industries[30] tend to be more capital-intensive than light manufacturing industries, an implication of the above-mentioned trends in output

[30] It should be noted here that heavy and light manufacturing industries are not necessarily synonymous with capital- and labour-intensive industries.

and employment is that the expanded employment in manufacturing in developing countries has been at a relatively high capital cost. This fact by itself should not be taken as a disturbing phenomenon, if the growth of heavy manufacturing facilitates further industrial growth as well as increased employment.

A cross-industry examination of growth rates of employment tends to confirm the earlier suggestion that the sectors of industry where output growth is most dynamic are also those where the highest rates of employment growth take place (see table 28). In Latin America, the so-called "high growth elasticity industries",[31] noted elsewhere as activities in which output has responded more than proportionately to increases in *per capita* GDP, such as electrical machinery and appliances (ISIC 383), machinery except electrical machinery (ISIC 382), printing and publishing (ISIC 342), rubber products (ISIC 355), and wearing apparel except foot-wear (ISIC 322), tended to record much higher rates of employment growth in the period 1963–1968 than the average prevailing in industry, or rates of 7.6 to 4.3 per cent per annum as opposed to an average of 1.9 per cent for the whole of the manufacturing sector in the sample used.[32] On the other hand, most of traditional manufacturing, such as the food, textile and tobacco industries, either experienced slow employment expansion or recorded declines in the number of people employed (see table 28).

TABLE 28. EMPLOYMENT AND OUTPUT GROWTH RATES IN MAJOR INDUSTRIES FOR SELECTED COUNTRIES OF LATIN AMERICA,[a] 1963–1968

(Industries are ranked in descending order according to the growth elasticity of manufacturing output[b])

ISIC	*Commodity group*	*Annual rate of employment growth 1963–1968*	*Annual rate of output growth 1963–1968*
383	Electrical machinery, appliances, supplies[c]	7.5	14.1
371	Iron and steel basic industries	...	...
341	Paper and paper products[c]	2.9	8.3
356	Plastic products	...	...

[31] See *Industrial Development Survey*, vol. IV (United Nations publication, Sales No. 72.II.B.15), p.29, for a more detailed discussion of the growth and size elasticities of the major industry groups.

[32] Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Honduras, Mexico, Panama and Peru, on the basis of the respective national tables. See *The Growth of World Industry, 1969 Edition*, vol. I (United Nations publication, Sales No. 71.XVII.6) and vol. II (United Nations publication, Sales No. 71.XVII.7), and *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4) and vol. II (United Nations publication, Sales No. 72.XVII.9).

The data generally covered establishments engaging more than five persons and thus excluded most of the artisan employment, which frequently makes up nearly one half of the total manufacturing employment in many developing countries. The sample covered would correspond perhaps more to the modern segment of manufacturing: factory-organized, small, medium and large establishments.

ISIC	Commodity group	Annual rate of employment growth 1963–1968	Annual rate of output growth 1963–1968
382	Machinery, except electrical machinery[c]	7.6	9.9
355	Rubber products	4.4	9.1
351 352	Industrial chemicals and other chemical products	3.3	8.3
384	Transport equipment	. . .	. . .
381	Fabricated metal products, except machinery and equipment	. . .	. . .
322	Wearing apparel, except foot-wear[d]	4.3	6.2
342	Printing and publishing[c]	5.7	6.2
361, 362, 369	Pottery, china and earthenware, glass and glass products and other non-metallic mineral products	1.6	6.0
353	Petroleum refineries	. . .	. . .
372	Non-ferrous metal basic industries	. . .	. . .
313	Beverages	2.0	5.3
323	Leather and leather products[c]	2.3	3.9
324	Foot-wear, except rubber and plastic	. . .	. . .
331 332	Wood, wood and cork products, furniture and fixtures, except metal[c]	3.4	3.0
311 312	Food	1.0	6.0
321	Textiles[e]	-0.7	3.6
314	Tobacco	1.4	4.0
	Average for the sample	1.9	6.8

Sources: The Growth of World Industry, 1969 Edition, vol. I (United Nations publication, Sales No. 71.XVII.6) and vol. II (United Nations publication, Sales No. 71.XVII. 7), and *The Growth of World Industry, 1969 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4) and vol. II (United Nations publication, Sales No. 72.XVII.9); and national tables and other material supplied by the United Nations Statistical Office.

[a] Brazil, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Honduras, Mexico, Panama and Peru. The basic data are derived from the national tables of the countries concerned. Data on output do not include El Salvador. Employment data refer mostly to establishments engaging more than five persons.

[b] See *Industrial Development Survey*, vol. IV (United Nations publication, Sales No. 72.II.B.15), p.29, for details of the concept and relevant data.

[c] Excluding output data for Mexico.

[d] Excluding output data for Mexico and employment data for Honduras.

[e] Excluding output data for Panama and employment data for Mexico.

A decline in employment might be explained by improvements in productivity and attempts to increase the competitive efficiency of some industries, thus tending to reduce the demand for new labour at a faster rate than the growth rate of output. The experience of the textile industry, as shown in the sample of Latin American countries in table 28, is particularly relevant; with output growing at 3.6 per cent per annum in the period 1963–1968, improvements in productivity tended to reduce the number of people employed in that industry, by a rate of 0.7 per cent. This occurrence suggests that a part of the improvements in productivity may stem from economies of scale, new technology embodied in newly installed equipment, the increased education of labour, and other factors largely external to the producer, all of which may determine growth in productivity and may limit the capacity of industry to absorb new labour.

Detailed country data on manufacturing output and employment in the 1960s, comparable to those given for the Latin American region in table 28, are infrequent. A small sample is given for the Asian countries in table 29. This sample includes few

TABLE 29. EMPLOYMENT AND OUTPUT GROWTH RATES IN MAJOR INDUSTRIES FOR SELECTED COUNTRIES OF ASIA,[a] 1963–1968

(Industries are ranked in descending order according to the growth elasticity of manufacturing output)[b]

ISIC	*Commodity group*	*Annual rate of employment growth 1963–1968*	*Annual rate of output growth 1963–1968*
383	Electrical machinery, appliances, supplies[c]	14.0	15.2
371	Iron and steel basic industries[d]	(2.7)	11.6
341	Paper and paper products[e]	9.4	7.8
356	Plastic products	...	...
382	Machinery, except electrical machinery[e]	8.8	11.6
355	Rubber products[f]	4.2	4.8
351–352	Industrial chemicals and other chemical products[f]	9.3	14.1
384	Transport equipment[e]	4.7	28.0
381	Fabricated metal products, except machinery and equipment[g]	8.4	8.1
322	Wearing apparel, except foot-wear[h]	(10.2)	17.0
342	Printing and publishing[i]	2.1	6.9

ISIC	Commodity group	Annual rate of employment growth 1963–1968	Annual rate of output growth 1963–1968
361, 362, 369	Pottery, china and earthenware, glass and glass products and other non-metallic mineral products[f]	7.2	9.0
353	Petroleum refineries[j]	(5.0)	2.7
372	Non-ferrous metal basic industries[k]	(4.8)	(4.7)
313	Beverages	5.1	11.5
323	Leather and leather products[l]	4.1	1.8
324	Foot-wear, except rubber and plastic[m]	(8.2)	(11.8)
331 332	Wood, wood and cork products, furniture and fixtures, except metal[c]	6.7	13.0
311 312	Food	7.5	6.5
321	Textiles[n]	8.6	10.4
314	Tobacco	5.4	10.2
	Average for the sample	7.8	10.1

Sources: *The Growth of World Industry, 1969 Edition*, vol. I (United Nations publication, Sales No. 71.XVII.6) and vol. II (United Nations publication, Sales No. 71.XVII.7), and *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4) and vol. II (United Nations publication, Sales No. 72.XVII.9); and national tables and other material supplied by the United Nations Statistical Office.

[a] Hong Kong, Iran, Iraq, Jordan, Malaysia, Pakistan, Philippines, Republic of Korea and Singapore.

The basic data are derived from the national tables of the countries concerned. Employment data refer mostly to establishments engaging more than five persons.

[b] See *Industrial Development Survey*, vol. IV (United Nations publication, Sales No. 72.II.B.15), p. 29, for details of the concept and relevant data.

[c] Employment data exclude Iraq and Malaysia.

[d] Output data cover Hong Kong, Iran, Pakistan, Philippines and Republic of Korea; employment data cover Hong Kong, Pakistan and Republic of Korea.

[e] Employment data exclude Iran.

[f] Employment data exclude Iraq.

[g] Employment data exclude Jordan and Malaysia.

[h] Output data exclude Iran, Malaysia and Pakistan. Employment data cover only Hong Kong, Jordan, Philippines and Republic of Korea.

[i] Employment data exclude Malaysia.

[j] Output data cover Iran, Iraq, Jordan, Malaysia and Pakistan; employment data include only Iraq and Jordan.

[k] Output data cover Malaysia, Pakistan, Philippines and Republic of Korea; employment data cover Hong Kong, Pakistan and Republic of Korea.

[l] Output data exclude Iran and employment data exclude Malaysia.

[m] Output data cover Jordan, Malaysia, Pakistan and Philippines, and employment data cover Hong Kong, Iraq, Jordan and Republic of Korea.

[n] Employment data exclude Malaysia and Singapore.

smaller countries with a limited range of industries. Moreover, output and employment data cover comparable periods of time for only a few industries. Allowance should be made for the limitations of the sample. The experience of the Asian countries none the less suggests a similar pattern to that for Latin America, although the average rates of output and employment growth over the period were somewhat higher than those shown for the Latin American countries. As in the Latin American region, the industries with high growth elasticities tended to record higher rates of employment growth than those attained in the more traditional areas of manufacturing, such as the food processing and textile industries. This phenomenon might be attributed to higher output growth in the former industries as well as to a high demand for new employment for each percentage point of output growth. The experience of the more traditional industries could possibly be explained by the greater share of non-factory employment (in small workshops and other family-organized units) in these areas of manufacturing, and by their tendency to absorb new labour, irrespective of output growth, whenever no employment opportunities exist elsewhere.

The data in the samples for Latin America and Asia point to the general conclusion that a main avenue for the expansion of employment lies in industries with rapid rates of growth. A policy that neglects the over-all growth of the economy in favour of immediate employment gains, however, may tend in the long term to reduce the capacity of industry to absorb new labour, unless a more equitable distribution of income is sought, with an attendant increase in the demand for industrial products. The positive effects on employment of attempts to eliminate disparities in income have been stressed in the proposals of the country missions sponsored by the World Employment Programme.[33]

Current issues in employment

The argument that industry is an employment-generating sector is perhaps the one most frequently used in support of industrialization. This contention has been the subject of frequent and severe criticism in recent years, however. Development economists in th 1950s and early 1960s underestimated the effects of population growth on increases in the labour force. They assumed that labour flows from agriculture would automatically be absorbed into manufacturing. Actual experience indicates, however, that this has not necessarily been the case. While industry may emerge as a major source of employment in the long term, the present gravity of the employment problem may render this economic sector (like others) unable to satisfy the immediate needs of employment. The scope of the problem may easily be demonstrated. For example, if a manufacturing sector presently employs 25 per cent of the labour force, it would be obliged to increase employment by 24 per cent per annum merely to absorb the increase in a total labour force that was growing at a rate of 3 per cent per annum.[34]

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[33] See, for instance, *Towards Full Employment* (Geneva, International Labour Office, 1970), p. 337. See also *Employment and Income Policies for Iran* (Geneva, International Labour Office, June 1972).

[34] If labour productivity also increased, the required growth rate for employment in manufacturing would be higher than 24 per cent.

Few reliable figures are available to clarify industry's performance in the area of employment generation. One extensive study estimated that the manufacturing labour force of developing countries was 8.5 per cent (25.1 million) of the total labour force in 1920. By 1960, this figure had increased to 8.9 per cent (44.8 million).[35] More recent data have indicated a growth rate of 3.6 per cent per annum for employment in manufacturing among developing countries between 1960 and 1969 (see table 27). Judging from these aggregate trends, it seems doubtful that the modern manufacturing sector could have absorbed directly a large proportion of the available labour force resulting from population growth, rural-to-urban migration, displacement of artisan labour etc.

With regard to future trends, some projections may serve to illustrate the potentially serious nature of the employment problem in the Second Development Decade. For example, it is estimated that the total labour force of Asia (excluding Japan) is likely to grow from about 810 million in 1970 to 1,016 million in 1980.[36] Similarly, in Latin America it is estimated that 3 million persons will be added to the labour force every year during the 1970s an increase of 32 per cent over the decade.[37] For developing countries as a whole, the annual growth rate of the labour force is expected to increase from 1.7 per cent in the period 1950–1965 to 2.3 per cent in 1970–1980.[38] With increases as large as these there is little doubt that the employment question will assume added significance in the future.

The above figures regarding historical trends in industrial employment and the projections of future increases in the labour force make it appear doubtful that sufficient employment opportunities will be created directly through industrialization. However, the data do not touch on one encouraging aspect of the ability of industry to generate employment. Employment opportunities are not confined to the industrial sector alone; industrial development and growth generate job opportunities in other sectors, even those marginally related to industry.[39] Examples include the service and maintenance of a wide range of industrial products, transportation, commerce, and, especially, construction.[40]

Further, the wide range of industrial activities from which a developing country may choose encompasses both capital- and labour-intensive industries. Within this spectrum, developing countries may consciously select any combination of these industries to achieve their employment objectives. Encouragement of labour-intensive industries may be a valid approach providing the long-run implications for both employment and economic growth are considered.

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[35] P. Bairoch and J.-M. Limbor, "Changes in the Industrial Distribution of the World Labour Force by Region, 1880–1960", *International Labour Review*, vol. 98, No. 4 (October 1968), p.324.

[36] M. M. Mehta, "200 Million New Jobs by 1980", *Ceres*, vol. 5, No. 5 (October 1972), p. 31.

[37] Irv Beller, "Latin America's Unemployment Problem", *Monthly Labour Review* (November 1970), p. 9.

[38] D. Turnham and J. Jaeger, *The Employment Problem in Less Developed Countries. A Review of Evidence* (Paris, Organisation of Economic Co-operation and Development, 1971), p. 33.

[39] For example, S. Kuznets has found a fairly close relationship between growth of service-sector industries (for example, trade and transport) and growth of the industrial sector. See his "Quantitative Aspects of the Economic Growth of Nations", part 2, *Economic Development and Cultural Change* (July 1957).

[40] Construction has been found to be a relatively labour-intensive industry, as indicated by several of the recent inter-agency employment missions. See, for example, *Towards Full Employment* (Geneva, International Labour Office, 1970).

Current views on industrial employment

The question of the choice of production technique has been dominant in the thinking regarding industrialization and employment. The basic contention is that producers must choose among various combinations (sometimes quite numerous) of labour and capital, when beginning operations. Thus, where unemployment is a major problem, producers are encouraged to select those combinations that will employ relatively large numbers of persons.

Of interest here is the experience gained in the course of the First Development Decade and the implications it has for future responses to the employment problem. First, actual engineering data do not reflect the wide range of choice from among the combinations of labour and capital that were originally envisaged by many planners and economists.[41] In the future, possibilities for labour-intensive production may have to be created. The fact that some entrepreneurs in developing countries have to substitute labour for capital in areas of surplus labour supports this proposal.

Secondly, the existing capital stock of industry in a developing country can seldom be altered to provide substantial increases in employment. Normally, only new investments can accommodate more labour. These, however, account for only marginal changes in a country's total capital stock. Both observations, if borne out by future experience, would make the employment problem more difficult to solve than previous thinking has suggested.

Unemployment in many developing countries has increased to such an extent that it has prompted new proposals, which go beyond the advocacy of labour-intensive industry. At one extreme it is argued that employment problems are so important that they should be solved directly and independently of questions of over-all economic growth or national income objectives. Other goals should be subordinated to the achievement of full employment. If countries accept this line of reasoning, they may be led to limit productivity increases and purposely choose outdated technology, although this entails smaller output per unit of labour.

If adopted, such a proposal could be detrimental to industrial development and potential increases in the standard of living. It is, in fact, an extension of earlier proposals which advocated the use of labour-intensive production techniques whenever possible, the encouragement of industries requiring relatively large numbers of unskilled labour, the establishment of rural industries to reduce the flow of rural-to-urban migration, the preference of small-scale over large-scale establishments etc.[42]

In a general sense, a shift in emphasis has occurred in the current discussions of this problem away from the approaches proposed in the course of the First Development Decade. Though it seems unlikely that many developing countries will give the highest priority to full employment rather than economic growth and higher living standards in their development schemes—a policy that would be perhaps inadvisable—the objective of employment will surely receive greater attention in the Second Development Decade.

Many economists have contended recently that income distribution may be of key importance in solving the employment problem of developing countries, as well

[41] This characteristic varies from industry to industry and country to country. However, practical experience seems generally to support this impression.

[42] The counter arguments, which include the advantages of a capital-intensive approach, unbalanced growth, large-scale enterprises etc., are omitted from this discussion.

as a commendable objective in terms of social justice. The limited data on income in developing countries indicate that its distribution is typically lop-sided; that is, a large proportion of income is in the hands of a few, while the vast majority of income earners receive a disproportionately small amount of total income. A redistribution of income would affect employment by altering the existing pattern of consumption. Supporters of this view argue that there will be basic changes in the type of goods that will be consumed and that this will be reflected both in domestic production and imports.

The ramifications of this approach are: first, a redistribution of income in favour of the lower-income groups will mean an increase in the demand for basic goods, which are widely purchased by these consumers. Such products are primarily food and simple manufactures (for example, clothing, foot-wear and household necessities). The manufacture of these products is regarded as relatively labour-intensive compared with the manufactured goods typically consumed by the upper-income groups. Secondly, upper-income groups have a much greater tendency to import products than do the lower-income groups. Thus, a redistribution of income in favour of lower-income groups would mean a reduction in the consumer demand for foreign products. In turn, additional foreign exchange would then be available for the purchase of capital goods and intermediate supplies, which would expand employment.

Since the relevant data on the subject are incomplete, no factual basis exists for substantiating this argument, although logic supports the earlier argument that simple consumer needs can be met by labour-intensive processes. Certainly, the impact of income distribution on employment could vary widely from one developing country to another. Nevertheless, it seems likely that in future discussions of development problems the two objectives of social justice and employment opportunities will be linked through income redistribution.

Some observations are appropriate in regard to the above line of reasoning. First, the practical and political considerations involved in the redistribution of income are formidable for any country. The task would be doubly difficult in the case of a developing country where the government machinery and appropriate manpower may be lacking. Secondly, any difficulties will be magnified in situations where econonic growth is not taking place simultaneously with the redistribution process. If, on the other hand, income redistribution is supplemented by gains in real income, it would have the effect of making the whole programme more beneficial.

Thirdly, redistribution of income (through taxation, various fiscal measures etc.) will not necessarily correct the forces that originally generated the income imbalance. Over time, the original uneven pattern of income distribution, and, consequently, its negative impact upon employment levels, may reappear. The policy would require that the growth process itself must be consciously geared to the redistribution of income in the long term.

The role that industry would play in such a programme has yet to be fully elaborated, but some considerations are obvious. First, it is clear that industry must occupy a central place even in an employment-oriented strategy. It is felt that greater output now will create a situation where greater employment will be generated in the long term. There is no basic conflict between industrialization and employment objectives. The problem arises in the timing. Can current unemployment be tolerated in order to achieve rapid increases in output, which will eventually lead to greater productivity and greater employment? Or should stress be placed on the short-run

unemployment problem and on an allocation of resources to projects that will absorb labour but slow the growth of output in the short term? The latter choice may well mean a lower level of employment in the future than the first choice.

In regard to industrial planning, policy should be formulated to link growth of employment in industry to employment generation and expansion of other sectors. Care should be taken not to over-emphasize short-run employment objectives that will not contribute to long-run economic growth. The dynamism of a country's development should not be sacrificed to short-run considerations.[43]

Planners cannot afford to overlook the direct and indirect employment that industry could provide. Equally important is the fact that industry is a major contributor[44] to total income in most developing countries. If manufacturing productivity is reduced, planners will be faced with the task of achieving a more equitable distribution of total income, which will be considerably below past or potential levels.

Basically, the desire for a reduction in unemployment stems from the objectives of greater social equality and the elimination of poverty. Employment is a common means of distributing income. Where extreme approaches to the problem of poverty are called for, planners may find it necessary to attack the problem through more direct means of redistributing income rather than through indirect approaches such as attempts to increase employment. In such cases, this could be a viable alternative to the proposal mentioned: to stress employment first and economic growth later. Countries where conditions are dire and require drastic action cannot afford to do less than make efficient use of available resources (including labour). The proposal suggested here would place economic growth and the elimination of economic inequalities on an equal footing. These two objectives could also be closely related to employment generation as a method of distributing income.

As with other proposals, the appropriate mechanisms for direct distribution of income remain to be worked out, as well as many of the implications of this proposal for industrial development. Hopefully, one or more of the various possibilities will prove to be more effective in dealing with social equality and employment as pressures mount during the Second Development Decade.

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[43] See *Official Records of the Economic and Social Council, Fifty-third Session, Supplement No. 7*, para. 39.

[44] Earlier, it was shown that the contribution ratio of the manufacturing sector in most developing countries is invariably higher than that sector's original share in GDP, thus indicating the dynamic nature of the manufacturing sector relative to other sectors.

IV. FINANCE, INVESTMENT AND INDUSTRIALIZATION

Capital formation

As shown in table 30 and noted in previous issues of the *Survey*, capital formation makes up an increasing share of GDP in the developing countries, especially in Asia and Latin America. At the same time, the most recent figures available indicate a corresponding increase in the rate of growth of output in all regions. In particular, increased output in Argentina, Ghana, Morocco, the Syrian Arab Republic and Tunisia has been more in accordance with levels of investment in those countries and has led to a reduction in their previously abnormally high incremental capital output ratios. There was an increased propensity to hold stocks, and the margin between fixed and total gross capital formation in the countries shown in table 30[45] widened from 1.1 per cent of GDP in the period 1960–1962 to 1.5 per cent in 1967–1969. This trend is characteristic of inflationary conditions, which encourage not only inventory speculation but also undue investment in social infrastructure (housing) and a decline in saving, both of which are suggested by the figures discussed below.

Recent data on capital formation (fixed) in manufacturing industry are available only for the limited number of countries shown in table 31. A trend away from investment in manufacturing to investment in the infrastructure, services and social sectors is indicated in these countries, but their number is too small to permit a general conclusion to this effect. Further evidence is examined in this chapter.

Domestic finance

Table 32 gives the most recent data (for 1969) on sources of finance, divided into domestic and foreign, for selected countries in each of the developing regions. It appears that on the average the increase in the level of investment achieved in that year was due almost entirely to an increase in the share of foreign-financed capital formation, which rose from 3.3 per cent of GDP in the period 1966–1968 to 4.2 per cent in 1969. In other words, the propensity to save, measured by domestic saving as a proportion of GDP, did not increase, and, in the case of the African countries, saving actually declined.

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[45] Average gross fixed capital formation as a percentage of GDP for the countries shown in table 32 was 16.4 in 1960–1962 and 18.2 in 1967–1968, and the average gross total capital formation as a percentage of GDP was 17.5 in 1960–1962 and 19.7 in 1967–1968.

TABLE 30. GROWTH OF GDP, LEVEL OF GROSS CAPITAL FORMATION AND INCREMENTAL CAPITAL OUTPUT RATIO IN SELECTED DEVELOPING COUNTRIES

Region and country or area	Annual percentage growth of GDP			Gross capital formation as percentage of GDP			Incremental capital output ratio[a]		
	1960–1962	1965–1967	1967–1969	1960–1962	1965–1967	1967–1969	1960–1962	1965–1967	1967–1969
Average of African countries indicated	6.5	4.2	7.0	16.0	17.5	17.4	2.5	4.2	2.5
Ghana	4.2	0.9	2.5	19.1	18.7	13.3	4.5	20.8	5.3
Ivory Coast[b]	8.7	7.3	14.6	14.6	18.4	17.9	1.7	2.5	1.2
Kenya	...	8.9	6.3	...	17.3	17.8	...	1.9	2.8
Morocco[b]	8.1	1.7	8.2	10.9	12.0	14.8	1.3	7.1	1.8
Southern Rhodesia	...	2.3	7.0	...	14.9	17.9	...	6.5	2.6
Tunisia	4.9	0.1	7.0	19.4	25.7	23.3	4.0		3.3
United Republic of Tanzania	...	8.6	3.6	...	15.7	16.6	...	1.8	4.6
Average of Asian countries indicated	5.9	7.1	8.8	15.6	16.7	18.3	2.6	2.4	2.1
Iran	5.8	9.9	10.8	15.7	18.5	19.9	2.7	1.9	1.8
Kuwait[b]	...	7.8	6.4	...	18.1	18.9	...	2.3	3.0
Malaysia[b]	2.0	4.2	7.8	14.2	15.4	14.7	7.1	3.7	1.9
Sri Lanka	...	5.1	6.7	...	13.7	17.1	...	2.7	2.6
Syrian Arab Republic	...	1.1	9.8	...	11.9	15.0	...	10.8	1.5
Thailand[b]	10.0	14.2	11.0	16.9	22.6	24.3	1.7	1.6	2.2

Average of Latin American countries indicated	6.7	6.1	6.5	18.2	20.1	20.6	2.7	3.3	3,2
Argentina	2.6	1.6	6.3	21.5	18.6	20.0	8.3	11.6	3.2
Bolivia	3.8	6.7	6.0	18.0	21.8	22.6	4.7	3.3	3.8
Chile	5.6	4.7	3.0	17.8	17.3	16.8	3.2	3.7	5.6
Colombia	5.3	4.8	6.2	20.4	18.4	18.6	3.8	3.8	3.0
Costa Rica[b]	7.1	7.9	10.9	20.3	24.6	24.0	2.9	3.1	2.2
Ecuador[b]	6.7	9.9	9.8	14.8	13.3	13.7	2.2	1.3	1.4
El Salvador[b]	6.3	5.5	3.7	13.5	15.8	12.5	2.1	2.9	3.4
Guatemala	3.9	4.8	5.7	10.0	12.0	13.3	2.6	2.5	2.3
Guyana[b]	7.1	8.3	8.8	22.5	23.8	22.6	3.2	2.9	2.6
Honduras	5.4	7.0	5.1	18.0	24.6	27.3	3.3	3.5	5.4
Jamaica[b]	5.5	7.6	10.5	21.0	21.5	26.5	3.8	2.8	2.5
Panama	9.5	8.1	7.8	18.5	22.0	24.8	1.9	2.7	3.2
Paraguay[b c]	14.7	5.4	6.2	15.2	15.9	15.9	1.0	2.9	2.6
Peru	8.8	4.6	0.8	21.8	23.3	18.9	2.5	5.1	23.6
Puerto Rico	8.3	6.3	6.9	20.4	28.0	30.0	2.5	4.4	4.3
Venezuela	7.2	4.8	6.1	17.5	20.4	21.8	2.4	4.3	3.6

Source: Based on *Yearbook of National Accounts Statistics, 1970*, vol. I (United Nations publication, Sales No. 72.XVII.3). Unless otherwise stated, valuation is at constant purchasers' values.

[a] Defined as the average share of gross domestic capital formation in GDP over the period, divided by the corresponding annual growth, when possible, of GDP at constant purchasers' values. The arithmetic mean of the figures for incremental capital output ratio, for the periods 1960–1962, 1965–1967 and 1967–1969, may differ from those in table 45, covering the period 1960–1969, since the rates of growth of GDP shown in the above table reflect more the fluctuations in GDP than the rates shown in table 45.

[b] At current purchasers' values.

[c] 1960 and 1961 gross capital formation.

TABLE 31. AVERAGE FIXED CAPITAL FORMATION[a] IN SELECTED DEVELOPING COUNTRIES: SECTORAL DISTRIBUTION AND RELATION TO GDP, 1960–1969

(Percentage)

Country or area	*Year*	*Sectoral distribution as percentage of total fixed capital formation*					*Fixed capital formation as percentage of GDP*
		Agriculture, forestry, fishing (ISIC 1)	*Mining and quarrying (ISIC 2)*	*Manufacturing (ISIC 3)*	*Infrastructure[b] (ISIC 4, 5, 7)*	*Services[c] (ISIC 6, 8, 9)*	
Bolivia	1960–1966	3	12	42	33	10[d]	18
	1967–1969	5	13	22	40	20[d]	21
Kenya	1964–1966	20	0	18	33	29	12
	1967–1969	15	1	17	36	31	16
Mauritius	1960–1966	10		15	36	39	18
	1967–1969	13		9	30	48	15
Republic of Korea	1960–1966	12	1	27	32	28	15
	1967–1969	7	1	23	42	27	25
Southern Rhodesia	1960–1966	25	11	18	12	34[e]	11
	1967–1969	14	14	21	10	41[e]	15
Tunisia	1960–1966	25	12	18[f]	19	26	18
	1967–1969	24	14	13[f]	21	29	18
Venezuela	1960–1966	15	13[g]	16	24	32	13
	1967–1969	13	10[g]	13	26	38	14

Source: Based on *Yearbook of National Accounts Statistics, 1970*, vol. I (United Nations publication, Sales No. 72.XVII.3). [a]Fixed capital formation differs from gross domestic capital formation, in that the latter allows for increase in stocks. [b]Electricity, gas, water, construction, transport, storage and communications. [c]Wholesale and retail trade, restaurants and hotels, finance, insurance, real estate and business services, community, social and personal services. [d]Including construction. [e]Including transport, storage and communications (7); category (8) includes only finance and insurance. [f]Including fishing. [g]Including refining of petroleum.

TABLE 32. FOREIGN-FINANCED AND TOTAL GROSS DOMESTIC CAPITAL FORMATION IN SELECTED DEVELOPING COUNTRIES

(Percentage of GDP at current purchasers' values)

Region and country or area	Foreign-financed capital formation[a]			Gross domestic capital formation		
	1966–1968 (average)	1969	Change[b]	1966–1968 (average)	1969	Change[b]
Average of African countries indicated	1.2	1.4	0.2	20.5	20.3	0.2
Kenya	2.5	0.9	-1.6	19.8	18.0	-1.8
Libyan Arab Republic[c]	4.2	7.8	3.6	26.1	24.9	-1.2
Sierra Leone[c]	5.7	-0.9	-6.6	13.9	14.1	0.2
Southern Rhodesia	2.6	-0.4	-3.0	18.5	19.4	0.9
Sudan[d]	1.6	3.4	1.8	14.4	13.7	-0.7
Tunisia[e]	1.2	1.1	-0.1	26.2	23.9	-2.3
United Republic of Tanzania[d]	-3.2	-1.0	2.2	16.5	17.7	1.2
Zambia[c]	-5.5	0.3	5.6	28.3	30.4	2.1
Average of Asian countries indicated	2.6	4.6	2.0	18.9	21.6	2.7
Malaysia[e]	1.1	1.3	0.2	15.2	15.9	0.7
Philippines	0.7	2.9	2.2	20.7	19.5	-1.2
Republic of Korea	5.3	7.8	2.5	24.2	30.4	6.2
Sri Lanka	3.3	6.5	3.2	15.5	20.4	4.9
Average of Latin American countries indicated	4.6	5.5	0.9	18.9	20.0	1.1
Chile	1.9	0.9	-1.0	16.3	16.5	0.2
Colombia	2.7	3.0	0.3	20.1	20.9	0.8
Costa Rica	7.0	6.8	-0.2	22.6	26.3	3.7
Ecuador	3.1	6.0	2.9	13.5	13.6	0.1
El Salvador[c]	3.0	1.6	-1.4	15.8	11.1	-4.7
Guyana[e]	9.4	11.4	2.0	20.7	25.6	4.9
Honduras	4.9	5.6	0.7	17.7	19.6	1.9
Jamaica	7.2	9.9	2.7	24.2	28.1	3.9

TABLE 32 *(continued)*

Region and country or area	Foreign-financed capital formation[a]			Gross domestic capital formation		
	1966–1968 (average)	1969	Change[b]	1966–1968 (average)	1969	Change[b]
Average of Latin American countries indicated (continued)						
Netherlands Antilles[c]	2.2	2.2	0.0	15.1	18.2	3.1
Nicaragua[c]	7.2	5.4	1.8	21.1	17.4	-3.7
Panama[c]	3.9	2.0	1.9	20.2	22.3	2.1
Paraguay	5.0	5.4	0.4	15.8	16.1	0.3
Puerto Rico	14.3	19.3	5.0	27.6	29.7	2.1
Uruguay[e]	2.9	1.1	4.0	10.9	12.4	1.5
Venezuela	0.1	2.5	2.6	21.4	22.2	0.8
Average	3.3	4.2	0.9	19.3	20.3	1.0

Source: Based on *Yearbook of National Accounts Statistics, 1970*, vol. I (United Nations publication, Sales No. 72.XVII.3).

[a] National deficit on current account.

[b] Percentage in 1969 minus percentage in 1966–1968.

[c] 1965–1967 and 1968.

[d] 1966–1967 and 1968.

[e] 1964–1966 and 1967.

Foreign finance

The latest figures for the *per capita* net receipts of foreign finance received by developing countries from offical and private sources are given in table 33. As is well known, the data reported by the developing countries are incomplete; they cover only about 60 per cent of the receipts reported as outflows from the developed countries. No conclusion can therefore be safely drawn from these figures as to the absolute levels of foreign finance reaching the various countries and regions. It may be concluded, however, that foreign private financing is at a much higher level in Latin America than in the other regions, and that its importance is increasing relative to foreign official finance. By contrast, private financing, although it is increasing, is relatively unimportant in Asia, largely because of the very heavy dependence of the larger countries—India, Indonesia and Pakistan—on official aid.

Complete and up-to-date information on official aid reaching the various countries is given in the annual *Review* of the Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development (OECD). Table 34 gives a summary by regions, from which it appears that on a *per capita* basis the African region continues to obtain the highest level of bilateral aid, which mainly reflects the low level of *per capita* aid registered for the larger countries in Asia and Latin America. Multilateral aid has become much more important, especially in Latin America, where it accounts for most official aid to Brazil and Mexico.

TABLE 33. *PER CAPITA* NET RECEIPTS OF FOREIGN PRIVATE CAPITAL BY DEVELOPING COUNTRIES, 1965-1967

(Dollars)

(Countries are arranged in descending order of value of private net inflow, 1965–1967)

Region and country or area	*Per capita private net receipts*[a]		*Per capita total net receipts*[b]	
	1965–1967 (average)	*1968*	*1965–1967 (average)*	*1968*
Africa, average	1.7	1.3	4.2	3.9
Tunisia	11.6	3.9	28.7	20.2
Ghana	5.5	1.7	11.8	5.0
Sierra Leone	5.0	3.6	6.5	4.4
Ivory Coast	3.7	3.9	10.5	16.3
Nigeria	2.4	2.4	3.3	2.9
Kenya	1.2	3.4	9.8	8.6
Malawi	0.9	2.3	7.5	8.9
Somalia	0.8	0.7	6.4	8.7
Ethiopia	0.7	1.0	1.6	1.8
Morocco	0.5	0.5	5.4	5.8
United Republic of Tanzania	0.5	0.9	1.8	3.2
Sudan	0.1	0.1	2.3	1.0
Libyan Arab Republic	-25.5	-43.8	-40.0	-42.7
Asia, average	0.5	0.8	3.6	3.7
Saudi Arabia	10.5	-2.3	20.4	5.6
Malaysia	8.3	1.7	10.3	6.6
Singapore	7.8	6.5	6.3	8.0
Republic of Korea	4.7	15.4	9.6	20.1
Iran	3.5	2.2	6.4	15.3
Thailand	1.6	2.2	3.6	5.2
Jordan	0.7	–	55.9	76.6
Pakistan	0.6	0.5	4.6	5.0
India[c]	0.0	0.0	2.3	1.2
Burma	–	1.1	0.6	2.0
Indonesia	-0.1	0.1	1.8	2.0
Philippines	-0.1	2.8	3.3	3.9
Republic of Viet-Nam	-0.1	-0.7	21.0	23.6
Sri Lanka	-0.1	-0.2	2.7	3.3
Syrian Arab Republic	-0.9	-2.9	3.3	5.6

TABLE 33 *(continued)*

Region and country or area	Per capita private net receipts[a] 1965–1967 (average)	Per capita private net receipts[a] 1968	Per capita total net receipts[b] 1965–1967 (average)	Per capita total net receipts[b] 1968
Latin America, average	4.0	5.8	6.8	8.5
Surinam	54.3	22.5[d]	81.9	27.0
Trinidad and Tobago	38.2	22.5	45.2	30.4
Jamaica	26.1	69.5	29.4	77.9
Costa Rica	22.5	20.7	26.4	20.1
Nicaragua	14.7	15.2	20.7	25.0
Venezuela	12.7	23.3	14.0	22.5
Panama[e]	11.1	16.8	21.0	21.9
Mexico	6.8	8.8	8.0	11.5
Guatemala	6.4	4.9	7.7	8.8
El Salvador	6.4	3.4	10.0	6.1
Paraguay	5.9	4.9	8.9	11.7
Peru	5.3	0.2	14.1	6.9
Ecuador	4.1	8.1	6.4	11.4
Honduras	3.8	5.4	7.5	12.4
Colombia	3.7	3.3	5.1	9.1
Uruguay	2.3	2.9[d]	5.3	10.3
Dominican Republic	2.2	7.7	13.2	13.4
Brazil	1.7	2.2	3.4	2.7
Bolivia	1.6	1.5[d]	9.1	11.3
Haiti	0.2	0.2	1.0	1.1
Argentina	0.0	0.0	1.9	−1.1
Chile	−1.8	16.7	9.5	29.7
World average	1.3	1.9[f]	4.3	4.6[f]

Sources: Based on *The External Financing of Economic Development: International Flow of Long-Term Capital and Official Donations, 1964–1968* (United Nations publication, Sales No. 70.II.A.3); and *Monthly Bulletin of Statistics* (September 1969) (United Nations publication).

[a] Net receipts of foreign private capital are defined as: foreign direct investment and loan received (net of repayments), including loans to local Governments and private monetary institutions; and changes in other long-term liabilities (arising, for example, from transactions in existing bond issues of developing countries). The return flow of interest and profits is not deducted.

[b] Official and private receipts.

[c] Population data cover part of Jammu and Kashmir, whose final status had not yet been determined.

[d] 1967.

[e] Excluding the population of the Canal Zone.

[f] 50 countries.

TABLE 34. TOTAL OFFICIAL BILATERAL AND MULTILATERAL NET FLOWS,[a] BY REGION, 1960–1966 and 1969–1971

	Year	Southern Europe[b]	Africa	Latin America	Asia	Oceania[c]	Unallocated	Total
		Annual average in million dollars						
Bilateral	1960–1966	419	1,500	739	2,469	105	188	5,420
	1969–1971	189	1,376	844	2,915	251	320	5,895
Multilateral	1960–1966	34	169	143	232	1	20	599[d]
	1969–1971	127	425	600	470	7	25	1,654
Total	1960–1966	453	1,669	882	2,701	106	208	6,019
	1969–1971	316	1,801	1,444	3,385	258	345	7,549
		Per capita in dollars						
Bilateral	1960–1966	4.75	5.46	3.31	2.73	34.80	. . .	3.63
	1969–1971	1.94	4.20	3.03	2.74	67.99	. . .	3.33
Multilateral	1960–1966	0.39	0.61	0.64	0.26	0.33	. . .	0.40
	1969–1971	1.30	1.30	2.15	0.44	1.90	. . .	0.94
Total	1960–1966	5.14	6.07	3.95	2.99	35.13	. . .	4.03
	1969–1971	3.24	5.50	5.18	3.18	69.89	. . .	4.27

Source: Based on *Development Co-operation: 1971 Review* (Paris, Organisation of Economic Co-operation and Development, 1971), table 17, pp. 188–189; and *Development Co-operation: 1972 Review* (Paris, Organisation of Economic Co-operation and Development, 1972, table 13, pp. 238–239.

[a] Bilateral flows net of loan repayments; multilateral flows net of loan repayments, grants and capital subscription; and net official purchases of bonds, by less developed countries.

[b] Cyprus, Gibraltar, Greece, Malta, Spain, Turkey and Yugoslavia.

[c] Fiji, Gilbert and Ellice Islands, French Polynesia, New Caledonia, New Hebrides, Pacific Islands, Papua New Guinea, Solomon Islands, Tonga and Western Samoa.

[d] Excluding figures for African and Asian development banks.

Finance for manufacturing industry

On the basis of information given in the OECD annual *Review* and in the United Nations *Yearbook of National Accounts Statistics*, it is possible to make an estimate of the flow of foreign and domestic capital to the manufacturing sector in developing countries in 1967–1968 and to offer some comment on more recent changes.

The distribution of official aid in terms of commitments in 1967–1968 is given in table 35, from which it appears that 36.7 per cent of official bilateral capital project commitments, or 13.4 per cent of all official bilateral commitments other than for export credits, were designated for industry. If it is assumed that this latter percentage applied to actual official bilateral flows during those two years (table 37), an estimate of $770 million is obtained for the actual average flow to industry. Similarly, 16.1 per cent of official multilateral capital project commitments or 13.4 per cent of all multilateral commitments were for industrial purposes, and if it is assumed that the latter percentage also applied to actual flows, an estimate of $126 million is obtained as an average for the two years. By 1971, the flow of multilateral aid for all purposes had doubled (table 37), so that in that year, assuming the same percentage distribution, multilateral aid to industry would have reached $252 million. For bilateral aid to industry, although strictly comparable figures are not available, the share of industry in capital project commitments appears to have been greatly reduced in recent years, mainly in favour of social infrastructure, falling to 21 per cent in 1970.[46]

TABLE 35. OFFICIAL BILATERAL AND MULTILATERAL COMMITMENTS, BY PURPOSE, 1967–1968

(Percentage)

	Official bilateral	*Official multilateral*
Capital project assistance	30.04	83.09
Agriculture	2.38	16.82
Industry	11.04	13.39
Energy	4.23	19.34
Transport	6.35	22.57
Social infrastructure	3.47	9.82
Other	2.57	1.14
Technical assistance	19.27	15.37
Non-project assistance	23.10	1.52
Export credits	16.50	–
Other contributions	11.11	–
Total	100.0	100.0

Source: Based on *Development Assistance, 1969 Review* (Paris, Organisation of Economic Co-operation and Development, 1969), table 15.

[46] *Development Co-operation, 1972 Review* (Paris, Organisation of Economic Co-operation and Development, 1972), table 12.

TABLE 36. REGIONAL AND SECTORAL DISTRIBUTION OF TOTAL DAC DIRECT INVESTMENT IN DEVELOPING COUNTRIES, 1965–1970

(Average annual flows in million dollars)

Area	*Year*	*Petroleum*	*Mining*	*Manufacturing*	*Other*	*Total*
Southern Europe[a]	1965–1966	44	10	124	90	268
	1967–1968	19	3	130	55	207
	1969–1970	60	5	224	59	348
Africa	1965–1966	328	85	89	84	586
	1967–1968	352	85	80	65	582
	1969–1970	487	58	95	99	739
Latin America and Caribbean	1965–1966	57	99	591	292	925
	1967–1968	73	180	540	297	1,090
	1969–1970	295	29	643	306	1,215
Middle East	1965–1966	374	1	12	5	392
	1967–1968	198		7	14	219
	1969–1970	243		24	15	282
Asia and Oceania	1965–1966	62	28	129	117	336
	1967–1968	92	37	185	99	413
	1969–1970	155	104	147	68	474
Total	1965–1966	751	223	945	588	2,507
	1967–1968	734	305	942	530	2,511
	1969–1970	1,240	138	1,133	547	3,058

Source: *Development Co-operation, 1971 Review* (Paris, Organisation of Economic Co-operation and Development, 1971).

[a] See table 34, foot-note *b*.

Industry is also adversely affected by the increasing importance of multilateral aid with its harder financial terms. According to a recent report to the United Nations Committee for Development Planning,[47] the grant element in loans extended by multilateral agencies in 1971 ranged from 25 per cent to 38 per cent compared with a grant element of 56 per cent for loan commitments and 82 per cent for total commitments of loans and donations by the DAC countries.[48]

Private resources available to developing countries consist of direct investment, export credits and private subscriptions to loan issues. An estimate of direct investment by sectors and by regions was made in the 1971 OECD *Review* and since information on this subject is scant, it is reproduced in table 36.

[47] "Implementation of the International Development Strategy for the Second United Nations Development Decade: preliminary papers for the first over-all review and appraisal of progress—Developed market economies and the International Development Strategy" (E/AC. 54/L.52), p.15.

[48] The DAC group of countries consists of Australia, Austria, Belgium, Canada, Denmark, France, the Federal Republic of Germany, Italy, Japan, the Netherlands, Norway, Portugal, Sweden, the United Kingdom of Great Britain and Northern Ireland, and the United States of America.

TABLE 37. NET RECEIPTS OF DEVELOPMENT ASSISTANCE FROM DAC COUNTRIES AND MULTILATERAL AGENCIES

(Billion dollars)

Source	*1964*	*1965*	*1966*	*1967*	*1968*	*1969*	*1970*	*1971*
Bilateral ODA[a]	5.55	5.57	5.67	5.82	5.63	5.56	5.70	6.43
Other		0.28	0.37	0.49	0.74	0.59	0.87	1.01
Multilateral	0.79	0.89	0.90	1.04	0.81	1.35	1.61	2.00
Private								
Direct	1.57	2.47	2.18	2.10	3.04	2.91	3.56	4.09
Portfolio	0.84	0.65	0.48	0.80	0.97	1.21	0.78	0.80
Export credits	0.86	0.75	1.12	1.01	1.60	2.05	2.21	2.80

Sources: Based on *Development Assistance, 1969* (Paris, Organisation of Economic Co-operation and Development, 1969), and *Development Co-operation, 1972 Review* (Paris, Organisation of Economic Co-operation and Development, 1972).

[a] Official development assistance, that is, all contributions which are administered with the main objective of promoting the economic development and welfare of the developing countries, and whose financial terms are intended to be concessional in character.

Investment is distributed almost equally between mining, including petroleum, and manufacturing. The figure of $942 million for direct foreign private investment in manufacturing as an average for 1967–1968 is close to the average figure of $893 million for official aid for these two years. For the two years 1969–1970, however, the corresponding averages are estimated to have been about $720 million for official and $1,133 million for private investment. More than half of the total direct private investment in Latin America is in manufacturing.

Guaranteed private export credits (table 37) have trebled in recent years, and they increased in 1971 to a level of about 70 per cent of direct investment, compared with an average of about 50 per cent for 1967–1968. It may perhaps be assumed that a corresponding increase took place in export credits in financing the manufacturing sector, giving figures of $471 million as an average for 1967–1968 and $793 million in 1970. Official export credits have remained at a level of about 10 per cent of official development aid. Private subscriptions to bonds issued by developing countries have greatly increased and now amount to about $800 million per annum. This source of funds is almost entirely for official use, but some proportion may be used by Governments to finance the development of manufacturing. In total, external finance for manufacturing received from the developed market economies increased from an average of about $2,370 million for 1967–1968 to $2,780 million in 1970, but the concessional element, as represented by the official bilateral contribution, fell from just over one third to just over one sixth.

To this should be added contributions from non-DAC members and in particular from the centrally planned economies. DAC estimates of total net disbursements in 1967 and 1968 averaged about $400 million,[49] and United Nations estimates,

[49] *Development Assistance, 1969 Review* (Paris, Organisation of Economic Co-operation and Development, 1969), table I1.2.

excluding aid within the centrally planned economies, were somewhat higher, or an average of $540 million for the two years.[50] About half of this is estimated to have been for manufacturing projects, so that total aid from all sources to manufacturing is estimated to have averaged $2,600 million for the two years 1967 and 1968.

The calculation of the amount of domestic finance received by manufacturing is more hazardous. It may be estimated, however, with some precision that gross fixed capital formation in all sectors amounted to between 17.5 and 18 per cent of GDP (see foot-note 45). Fixed capital formation in manufacturing forms a higher percentage of total fixed capital formation than manufacturing output forms of total output, provided the normally higher rate of increase in manufacturing output is sufficient to offset the lower capital output ratio.[51] For 15 developing countries for which information is available, this appears to be the case; the investment ratio of manufacturing to GDP was about 16.5 per cent compared with an output ratio of 14 per cent. For most countries the output ratio is higher than 14 per cent, and a reasonable estimate may be between 17 and 18 per cent for the share of manufacturing in capital formation (see table 31), where the average is 17 per cent. On this basis, fixed capital formation in manufacturing industry would amount in 1967–1968 to $9–9.5 billion, and foreign finance would therefore supply about 30 per cent of this as compared with less than 15 per cent in other sectors.

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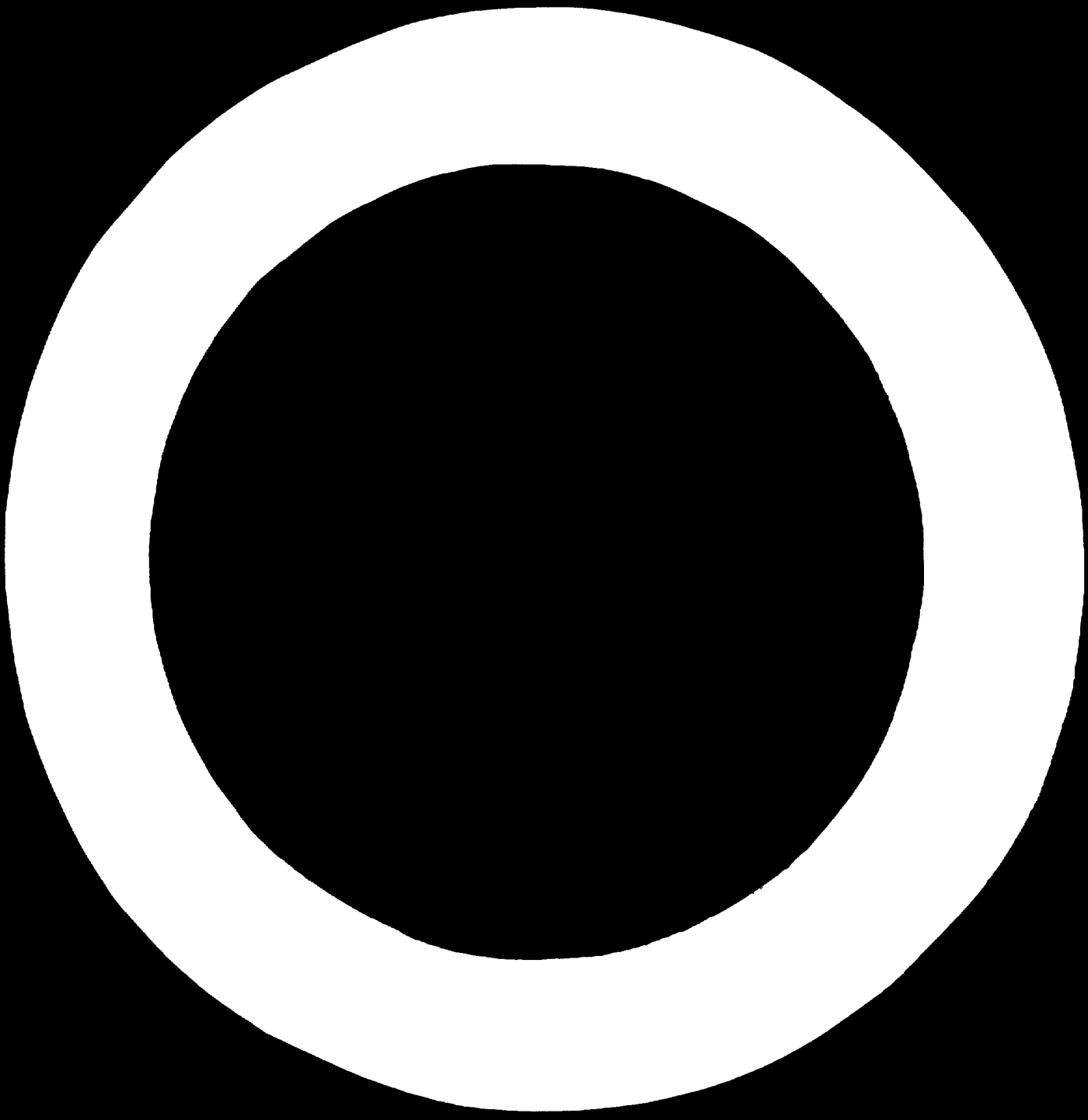
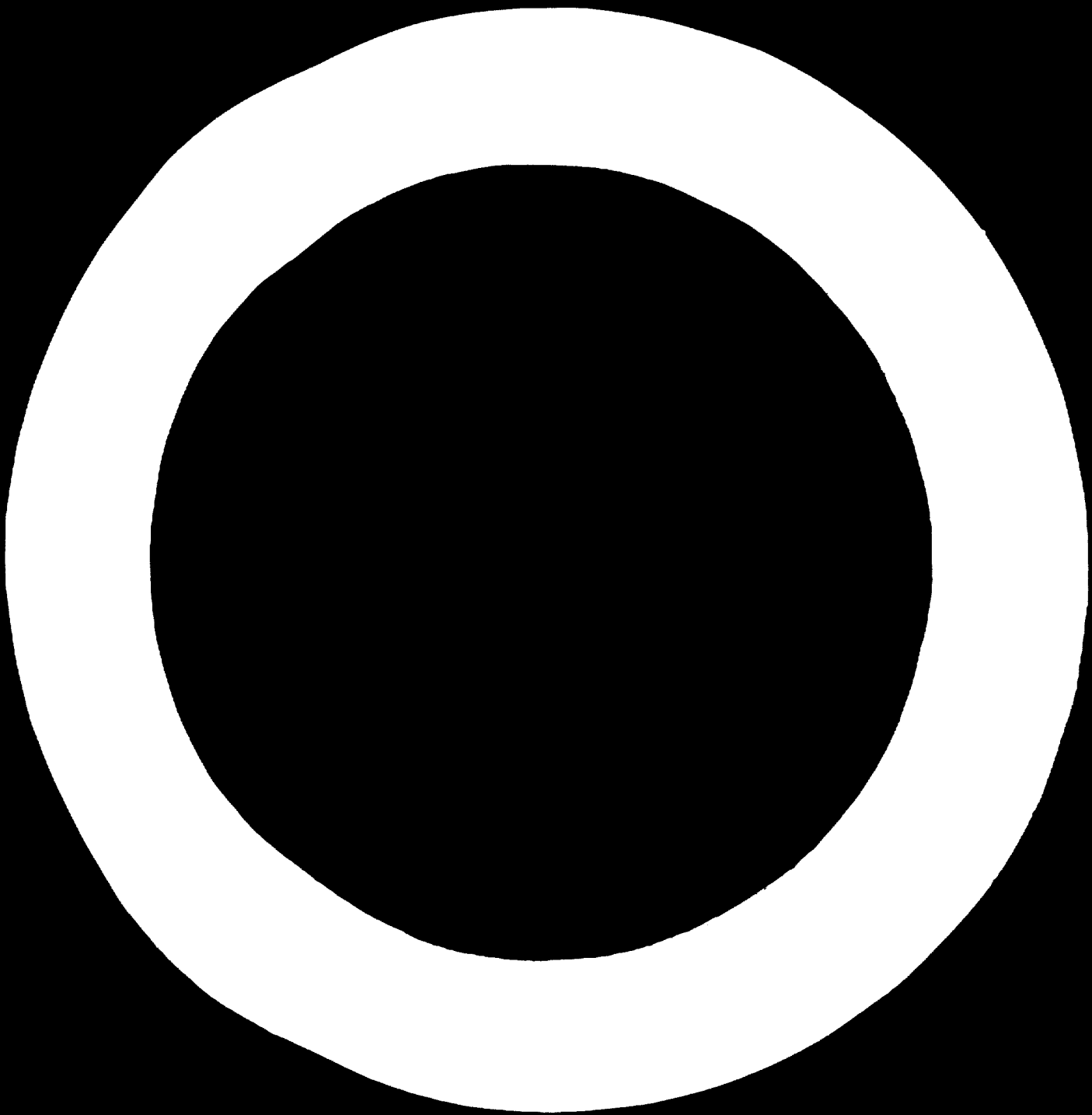
[50] *The External Financing of Economic Development* (United Nations publication, Sales No. 70.II.A.3), table 22.

[51] If I, O, C, R are respectively investment, output, capital output ratio and the rate of growth in an economy, then $R = \frac{I/O}{C}$ and with the suffix m for manufacturing $R = \frac{I_m/O_m}{C}$ it follows that $I_m/I = O_m/O \times \frac{C_m}{C} \times \frac{R_m}{R}$.



Part two

STRUCTURAL CHANGE IN THE PROCESS OF INDUSTRIAL DEVELOPMENT



I. STRUCTURAL CHANGE IN THE PRIMARY, SECONDARY AND TERTIARY SECTORS

In this chapter the changing pattern of production in the developing countries and in the developed market economies is discussed in terms of the output of the primary, secondary and tertiary sectors. The primary sector is normally taken to include agriculture, forestry and mining (ISIC[1] 0 and 1), the secondary sector to encompass manufacturing, construction and utilities (ISIC 2, 3 and 5), and the tertiary sector to cover distribution, transport, financing and other services (ISIC 6, 7 and 8). The country figures given in table 39 have been compiled to conform to this division. In order, however, to obtain complete figures for all developing countries, as shown in table 38, it was necessary to include utilities along with mining in the primary sector; the alternative to include mining with utilities in the secondary sector would have been misleading, since for many countries mining is more important than manufacturing.

Table 38 shows that in the period 1953-1968 manufacturing made a much greater contribution to GDP in the developed market economies than in the developing countries, and that the primary sector made a relatively much smaller

TABLE 38. SHARE OF GDP,[a] GROWTH RATES AND CONTRIBUTION RATIO OF THE THREE MAJOR SECTORS, BY ECONOMIC GROUPING[b] AND REGION, 1953-1968

(Percentage)

Economic grouping, region and sector (ISIC)	*Share of GDP (average)*			*Average annual growth rates*		*Contribution ratio*
	1953–1955	*1959–1961*	*1966–1968*	*1953–1955 1959–1961*	*1959–1961 1966–1968*	*1953–1955 1966–1968*
Developed market economies						
Primary (0, 1 and 5)	12.3	11.6	10.2	2.7	3.2	7.4
Secondary (2–4)	34.9	35.0	36.7	3.8	5.9	39.1
Manufacturing (2 and 3)	28.9	29.1	31.1	3.8	6.2	33.9
Tertiary (6–8)	52.8	53.4	53.1	3.9	5.1	53.5

[1] In order to obtain comparable figures, the ISIC classification used throughout this chapter refers to the previous *International Standard Industrial Classification of All Economic Activities* (ST/STAT/M.4/Rev.1).

TABLE 38 *(continued)*

Economic grouping, region and sector (ISIC)	*Share of GDP (average)*			*Average annual growth rates*		*Contribution ratio*
	1953–1955	*1959–1961*	*1966–1968*	*1953–1955 1959–1961*	*1959–1961 1966–1968*	*1953–1955 1966–1968*
Developing countries[c]						
Primary (0, 1 and 5)	42.1	39.8	36.1	3.8	3.2	28.8
Secondary (2–4)	17.8	19.4	21.4	6.2	6.1	25.7
Manufacturing (2 and 3)	14.2	15.7	17.4	6.4	6.3	21.3
Tertiary (6–8)	40.1	40.8	42.5	5.0	5.3	45.5
Latin America						
Primary (0, 1 and 5)	27.0	25.1	23.1	4.3	3.7	19.0
Secondary (2–4)	23.8	25.8	27.5	7.0	5.8	31.5
Manufacturing (2 and 3)	20.3	32.5	24.1	7.4	5.9	28.1
Tertiary (6–8)	49.2	49.1	49.4	5.5	5.0	49.5
Asia						
Primary (0, 1 and 5)	50.5	49.1	44.4	3.5	3.1	35.9
Secondary (2–4)	15.1	16.0	18.5	5.0	6.7	23.1
Manufacturing (2 and 3)	11.9	12.4	14.5	4.8	6.9	18.2
Tertiary (6–8)	34.4	34.9	37.2	4.2	5.5	41.0

Sources: Based on the *Yearbook of National Accounts Statistics, 1970*, vols. I and II (United Nations publication, Sales No. 72.XVII.3); and other material supplied by the United Nations Statistical Office.

[a]The percentage share is calculated on the basis of a three-year average of GDP at constant factor cost. The primary sector includes agriculture, mining and quarrying; it also includes electricity, gas and water (ISIC 5) since these cannot be disaggregated from mining. The secondary sector includes manufacturing and construction. The tertiary sector covers the rest of economic activities in the national accounts published in the *Yearbook of National Accounts Statistics*. Manufacturing is defined in this chapter as ISIC 2 and 3 in the *International Standard Industrial Classification of All Economic Activities* (ST/STAT/M.4/Rev.1). In chapters II, III and IV, manufacturing is defined as ISIC 3 in the latest revision of this publication (ST/STAT/M.4/Rev.2/Add.1). Growth rates refer to the average annual rate of growth calculated on a compound basis.

[b]The following classification of economic groupings is used throughout this volume, in conformity with the classification adopted by the United Nations Statistical Office: "Developing countries" includes the Caribbean area, Central and South America, Africa (other than South Africa), the Asian Middle East (other than Israel) and East and South-East Asia (other than Japan). "Developed market economies" includes North America (Canada and the United States of America), Europe (other than Eastern Europe), Australia, Israel, Japan, New Zealand, and South Africa. "Centrally planned economies" includes Albania, Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland, Romania, and the Union of Soviet Socialist Republics (USSR). "World" excludes China, the Democratic People's Republic of Korea, the Democratic Republic of Viet-Nam and Mongolia.

[c]Manufacturing output for Africa is taken from national income data and is not strictly comparable with the data for other regional and economic groupings. Separate regional production and employment data for Africa are not available from the United Nations Statistical Office, so that Africa is not shown in several tables in this volume. Although totals for developing countries generally include figures for Africa, it does not follow that the precise figures for Africa can be derived by subtracting data for Asia and Latin America from the totals for the developing countries.

contribution in the former than in the latter countries. Moreover, since the rate of growth of the manufacturing sector is higher than that of other sectors, manufacturing made a still greater contribution to marginal increases in GDP, as indicated by the contribution ratio in the last column of table 38. Conversely, since the primary sector expands much less rapidly than other sectors in both the developed market economies and the developing countries, its contribution to marginal increases in GDP was reduced. In the developed market economies, its contribution ratio was 7.4 per cent compared with a share in GDP of 10.2 per cent in 1966–1968, and in the developing countries it was 28.8 per cent compared with a share in GDP of 36.1 per cent in 1966–1968.

Throughout the entire period 1953–1968 the over-all structure of the developing countries was steadily modified, with a reduction in the relative size of the primary sector and an increase in that of other sectors, in particular of the manufacturing sector. The developed market economies showed little change in structure over the first half of this period. This pattern also pertained to construction, whose share steadily increased in the developing countries throughout the period, from 3.6 per cent to 4 per cent of GDP. In the developed market economies, however, its share remained at about 6 per cent over the first half of the period and fell to 5.6 per cent over the second half.

The tertiary sector is somewhat smaller in developing countries than it is in the developed market economies, but throughout the period it showed a more rapid rate of increase. This sector encompasses services, and it is useful to compare its growth with that of the productive sectors, since a more rapid expansion in the supply of services than of goods is inflationary in character. In the case of the developed market economies, services expanded more rapidly than goods over the first half of the period, achieving an annual rate of 3.9 per cent compared with 3.5 per cent for goods, but this situation was corrected in the second half. In the developing countries, however, the gap widened over the period; the supply of goods expanded at a rate of 4.5 per cent in the first half and at a rate of 4.1 per cent in the second, and the supply of services grew at rates of 5 per cent in the first half and 5.3 per cent in the second.

From table 38 it may be seen that the primary sector was much smaller, and the manufacturing sector much larger, in Latin America than in Asia. There was, however, a greater change in the structure of GDP in Asia, especially in the second half of the period when the output of both manufactures and services expanded rapidly. In Latin America, the share of services in GDP was stationary, and the rates of growth of manufacturing slackened. The expansion of the services sector in Asia involved some degree of inflation, with the supply of services increasing at an annual rate of 5.5 per cent, compared with a rate of 4.1 per cent for goods.

The most consistent feature of structural change in the developed market economies as well as in developing countries and regions was evidently the increasing importance of manufacturing output in relation to the output of raw materials; the output of the former expanded about twice as rapidly as that of the latter. This aspect is examined further in tables 39, 40 and 41, which give figures for sectoral growth for a total of 36 developing countries in Latin America, Asia and Africa.

If these countries are grouped according to *per capita* GDP (table 42), it appears that the contribution of manufacturing to GDP increases rapidly with rising incomes, while the contribution of the primary sector falls.

TABLE 39. SHARE OF GDP,[a] GROWTH RATES AND CONTRIBUTION RATIO OF THE THREE MAJOR SECTORS IN 17 LATIN AMERICAN COUNTRIES, 1953 1968

(Percentage)

Country or area and sector	Share of GDP (average)			Average annual growth rates		Contribution ratio
	1953–1955	1959–1961	1966–1968	1953–1955 / 1959–1961	1959–1961 / 1966–1968	1953–1955 / 1966–1968
Argentina						
Primary	21.8	18.4	18.1	0.7	2.8	11.0
Secondary	34.5	37.8	40.7	5.2	4.2	52.5
Manufacturing	29.1	32.4	34.7	5.5	4.1	45.2
Tertiary	43.7	43.8	41.2	3.6	2.2	36.5
Chile[b]						
Primary	18.1	20.0	21.6	...	...	...
Secondary	20.2	27.7	33.3	...	...	...
Manufacturing	18.4	22.3	26.9	...	...	...
Tertiary	59.7	52.3	45.1	...	...	...
Bolivia						
Primary	45.8	42.4	38.1	-0.8	3.8	22.3
Secondary[c]	21.0	18.5	23.0	-1.6	8.8	27.2
Manufacturing	16.9	13.4	15.2	-3.3	7.3	11.8
Tertiary	33.2	39.1	38.9	3.3	5.3	50.5
Colombia						
Primary	40.4	39.5	35.2	3.8	3.0	28.4
Secondary	19.0	20.9	22.4	5.8	5.8	26.7
Manufacturing	14.8	16.6	17.6	6.3	5.6	21.2
Tertiary	40.6	39.6	42.4	3.8	5.7	44.9
Dominican Republic						
Primary	...	29.3	25.7	...	0.9	8.1
Secondary	...	21.0	22.0	...	3.9	27.0
Manufacturing	...	17.2	16.2	...	2.0	11.0
Tertiary	...	49.7	52.3	...	4.0	65.0
Ecuador						
Primary	40.5	38.9	...	3.7	...	33.5
Secondary	19.3	20.7	...	5.7	...	25.5
Manufacturing	15.3	15.5	...	4.6	...	16.1
Tertiary	40.2	40.4	...	4.5	...	41.0

Country or area and sector	Share of GDP (average) 1953–1955	1959–1961	1966–1968	Average annual growth rate 1953–1955 / 1959–1961	1959–1961 / 1966–1968	Contribution ratio 1953–1955 / 1966–1968
El Salvador						
Primary	...	31.6	26.1[d]	...	3.5[d]	15.0
Secondary	...	18.6	22.8	...	10.5	31.3
Manufacturing	...	14.5	18.0	...	10.7	25.1
Tertiary	...	49.8	51.1	...	7.3	53.7
Guatemala						
Primary	31.9	30.2	29.1	4.0	4.4	25.1
Secondary	15.3	15.8	17.0	5.5	6.8	19.5
Manufacturing	12.2	12.9	14.1	5.8	7.2	16.8
Tertiary	52.8	54.0	53.9	5.3	5.2	55.4
Guyana						
Primary	...	40.7	42.0	...	0.9	...
Secondary	...	17.4	15.9	...	3.1	...
Manufacturing	...	10.0	11.5	...	4.6	...
Tertiary	...	41.9	42.1	...	0.0	...
Honduras						
Primary	49.7	48.8	40.6	3.6	2.7	29.5
Secondary	16.9	16.2	21.3	3.1	9.8	26.7
Manufacturing	11.1	12.6	16.3	6.1	9.4	22.5
Tertiary	33.4	35.0	38.1	4.8	6.7	43.8
Jamaica						
Primary	...	21.4	21.2	...	4.5	20.5
Secondary	...	26.6	27.4	...	5.3	30.6
Manufacturing	...	14.1	15.6	...	6.8	21.4
Tertiary	...	52.0	51.4	...	4.4	48.9
Nicaragua						
Primary	...	...	33.0	...	...	...
Secondary	...	...	18.8	...	...	...
Manufacturing	...	...	12.5	...	...	...
Tertiary	...	...	48.2	...	...	...

TABLE 39 *(continued)*

Country or area and sector	Share of GDP (average)			Average annual growth rates		Contribution ratio
	1953–1955	1959–1961	1966–1968	1953–1955 / 1959–1961	1959–1961 / 1966–1968	1953–1955 / 1966–1968
Panama						
Primary	...	24.6	22.3	...	6.1	18.3
Secondary	...	22.3	25.5	...	10.2	31.0
Manufacturing	...	13.8	16.6	...	11.1	21.3
Tertiary	...	53.1	52.2	...	7.5	50.6
Paraguay						
Primary	36.8	35.7	33.1	2.7	3.2	27.2
Secondary	19.3	19.6	19.8	3.5	4.4	20.5
Manufacturing	17.3	16.7	16.2	2.8	3.6	14.4
Tertiary	43.9	44.7	47.1	3.5	5.1	52.3
Puerto Rico						
Primary	...	13.0	6.4	...	1.6	1.4
Secondary	...	32.4	36.7	...	11.2	41.8
Manufacturing	...	22.3	25.7	...	11.1	28.5
Tertiary	...	54.6	56.9	...	9.9	59.6
Uruguay						
Primary	15.7	14.7	15.9	2.1	2.2	25.0
Secondary[e]	30.1	30.6	29.3	0.5	0.4	0.0
Manufacturing	22.2	22.7	22.9	0.0	1.0	50.0
Tertiary	54.2	55.3	54.8	0.0	0.6	75.0
Venezuela						
Primary	...	36.0	33.1	...	3.3	24.2
Secondary	...	20.1	22.2	...	6.5	28.7
Manufacturing	...	13.0	14.8	...	7.0	20.3
Tertiary	...	43.9	44.7	...	5.1	47.1

Sources: Based on *Yearbook of National Accounts Statistics, 1970*, vols. I and II (United Nations publication, Sales No. 72.XVII.3); and other material supplied by the United Nations Statistical Office.

[a] See table 38, foot-note *a*, for sources and definitions.

[b] Growth rates are not computed because of the discontinuity of time series data in the *Yearbook of National Accounts Statistics*.

[c] Excluding gas and water.

[d] 1965–1967.

[e] Including mining and quarrying.

TABLE 40. SHARE OF GDP,[a] GROWTH RATES AND CONTRIBUTION RATIO OF THE THREE MAJOR SECTORS IN 10 ASIAN COUNTRIES, 1953–1968

(Percentage)

Country or area and sector	Share of GDP (average)			Average annual growth rates		Contribution ratio	
	1953–1955	1959–1961	1966–1968	1953–1955 / 1959–1961	1959–1961 / 1966–1968	1953–1955	1966–1968
Cyprus							
Primary	38.8	25.7	30.0	...[b]	8.4	25.5	
Secondary	19.1	21.5	19.2	...	4.3	19.2	
Manufacturing	13.4	13.0	11.9	...	4.7	11.2	
Tertiary	42.1	52.8	50.8	...	5.4	55.3	
India[c]							
Primary[d]	54.5	50.7	43.2	2.3	0.2	5.0	
Secondary	20.2	20.4	23.3	3.7	5.3	38.5	
Manufacturing	...	14.0	16.4	...	5.6	30.3	
Tertiary	25.3	28.9	33.5	5.9	5.5	56.4	
Iran							
Primary	...	47.7	45.6	...	6.6	41.5	
Secondary	...	13.6	17.9	...	12.5	26.1	
Manufacturing	...	8.8	11.6	...	12.3	16.7	
Tertiary	...	38.7	36.5	...	6.3	32.4	
Iraq							
Primary	61.3	53.8	52.7	3.1	6.2	45.1	
Secondary	11.4	14.6	13.3	9.8	5.2	15.0	
Manufacturing	6.3	9.4	8.8	12.7	5.5	10.9	
Tertiary	27.3	31.6	34.0	8.0	7.7	39.9	
Malaysia							
Primary	...	40.0	37.1	...	3.7	25.6	
Secondary	...	13.9	17.1	...	11.3	30.2	
Manufacturing	...	8.4	10.5	...	11.5	18.9	
Tertiary	...	46.1	45.8	...	5.4	44.2	
Pakistan							
Primary	56.2	52.6	45.7	6.9	3.4	31.9	
Secondary	9.7	12.7	17.4	7.6	10.4	28.0	
Manufacturing	8.0	9.9	11.8	6.7	8.2	17.0	
Tertiary	34.1	34.7	36.7	3.3	6.3	40.1	

TABLE 40 *(continued)*

Country or area and sector	Share of GDP (average) 1953–1955	1959–1961	1966–1968	Average annual growth rates 1953–1955 / 1959–1961	1959–1961 / 1966–1968	Contribution ratio 1953–1955 / 1966–1968
Philippines[c]						
Primary	36.9	33.3	32.6	3.8	4.6	28.1
Secondary[e]	19.8	21.4	21.1	6.9	4.8	22.5
Manufacturing	15.1	17.8	17.4	8.5	4.6	19.8
Tertiary	43.3	45.3	46.3	6.4	5.3	49.4
Sri Lanka						
Primary	...	47.4	42.4	...	2.5	27.0
Secondary	...	13.2	15.4	...	6.4	22.0
Manufacturing	...	4.8	8.9	...	13.7	21.5
Tertiary	...	39.4	42.2	...	5.2	51.0
Republic of Korea						
Primary	51.9	46.7	37.7	2.9	4.4	25.9
Secondary	11.4	16.4	26.5	11.2	15.3	39.0
Manufacturing	8.7	13.0	20.6	11.9	15.0	30.4
Tertiary	36.7	36.9	35.8	4.8	7.2	35.1
Thailand						
Primary	...	39.5	32.3	...	4.5	19.0
Secondary	...	15.8	21.0	...	12.0	28.7
Manufacturing	...	11.6	14.2	...	10.7	18.0
Tertiary	...	44.7	46.7	...	8.3	49.8

Sources: Based on the *Yearbook of National Accounts Statistics, 1970*, vols. I and II (United Nations publication, Sales No. 72.XVII.3); and other material supplied by the United Nations Statistical Office.

[a] See table 38, foot-note *a*, for sources and definitions.

[b] Growth rates are not computed because of the discontinuity of time series data in the *Yearbook of National Accounts Statistics*.

[c] Net domestic product (NDP).

[d] Including mining.

[e] Excluding electricity, gas and water, which are included in the tertiary sector.

TABLE 41. SHARE OF GDP,[a] GROWTH RATES AND CONTRIBUTION RATIO OF THE THREE MAJOR SECTORS IN 9 AFRICAN COUNTRIES, 1953–1968

(Percentage)

Country or area and sector	Share of GDP (average)			Average annual growth rates		Contribution ratio	
	1953–1955	1959–1961	1966–1968	1953–1955 / 1959–1961	1959–1961 / 1966–1968	1953–1955	1966–1968
Egypt							
Primary	...	29.1	26.3	...	3.4	18.3	
Secondary	...	26.0	27.7	...	6.3	32.7	
Manufacturing	...	21.0	21.6	...	5.7	23.3	
Tertiary	...	44.9	46.0	...	5.6	45.0	
Ethiopia[b]							
Primary	...	63.5	57.3	...	2.1	26.5	
Secondary	...	12.6	15.3	...	10.0	28.7	
Manufacturing	...	6.2	8.0	...	11.5	16.6	
Tertiary	...	23.9	27.4	...	8.4	44.7	
Kenya							
Primary	...	...	37.6	...	...	...	
Secondary	...	...	15.7	...	...	...	
Manufacturing	...	...	9.9	...	...	...	
Tertiary	...	...	46.7	...	...	...	
Libyan Arab Republic							
Primary	...	50.7[c]	60.5	...	31.0[d]	67.1	
Secondary	...	10.2	10.3	...	25.7	10.4	
Manufacturing	...	3.6	2.4	...	12.5	1.5	
Tertiary	...	39.1	29.2	...	16.6	22.5	
Nigeria							
Primary	...	64.6	62.1[e]	...	4.1[f]	53.0	
Secondary	...	9.6	11.3	...	8.4	17.5	
Manufacturing	...	4.8	5.7	...	8.8	9.3	
Tertiary	...	25.8	26.6	...	5.5	29.4	

TABLE 41 *(continued)*

Country or area and sector	Share of GDP (average) 1953–1955	1959–1961	1966–1968	Average annual growth rates 1953–1955 / 1959–1961	1959–1961 / 1966–1968	Contribution ratio 1953–1955 / 1966–1968
Sudan						
Primary	58.3	57.8	...	4.6	...	55.6
Secondary	11.0	11.0	...	4.8	...	11.1
Manufacturing	4.3	4.6	...	6.7	...	6.2
Tertiary	30.7	31.2	...	5.2	...	33.3
Tunisia						
Primary[g]	...	26.5[h]	20.6	...	-0.7[i]	5.0
Secondary[j]	...	23.9	26.2	...	5.1	36.4
Manufacturing	...	13.3	15.4	...	6.0	24.5
Tertiary	...	49.6	53.2	...	4.7	68.6
Uganda						
Primary	61.0[h]	62.3	60.0[i]	3.9	3.5	58.1
Secondary	13.5	10.7	11.4	1.2	5.3	7.4
Manufacturing	8.1	6.8	7.7	0.2	6.4	7.0
Tertiary	25.5	27.0	28.6	4.5	5.1	34.5
United Republic of Tanzania						
Primary[k]	...	60.9	59.7	...	3.9	54.6
Secondary	...	5.3	6.6	...	9.0	12.2
Manufacturing	...	3.4	4.4	...	10.3	8.9
Tertiary	...	33.8	33.7	...	4.3	33.3

Sources: Based on the *Yearbook of National Accounts Statistics, 1970*, vols. I and II (United Nations publication, Sales No. 72.XVII.3); and other material supplied by the United Nations Statistical Office.

[a] See table 38, foot-note *a*, for sources and definitions.
[b] 1961–1963 and 1965–1967.
[c] 1962–1964.
[d] Growth rates between 1961–1964 and 1966–1968.
[e] 1964–1966.
[f] Growth rates between 1959–1961 and 1964–1966.
[g] Excluding fishing, which is included in the secondary sector.
[h] 1954–1956.
[i] 1965–1967.
[j] Excluding the basic metals, which are included in the primary sector.
[k] 1960–1962 and 1965–1967.

TABLE 42. SECTORAL SHARE OF GDP AT VARIOUS LEVELS OF *PER CAPITA* GDP

Per capita GDP 1966–1968 (dollars)	*Number of countries*	*Share of GDP*			
		Primary sector	*Secondary sector*	*Manufacturing*	*Tertiary sector*
		Percentage			
Less than 100	7	55.1	13.7	8.4	31.3
100–200	7	36.2	21.4	15.2	42.4
200–300	9	34.7	20.8	15.3	44.5
More than 300	13	29.0	24.0	16.9	47.0

Sources: Based on *Yearbook of National Accounts Statistics, 1970*, vols. I and II (United Nations publication, Sales No. 72.XVII.3); and other material supplied by the United Nations Statistical Office.

An increase is also shown in the contribution of the tertiary sector, but whereas, by analogy with the situation in the developed market economies, the contribution of manufacturing may be expected to increase considerably more with increasing income, that of the tertiary sector would reach a limit at about 50 per cent of GDP.

The relation between income and the share of manufacturing in GDP does not identify the causal connexion. It is well known, however, that increasing income results in a more than proportional increase in the demand for manufactures, so that if this demand is met from domestic sources, the share of manufacturing in GDP rises. In table 43, 30 of the above 36 countries for which information is available are divided into 15 high-growth and 15 low-growth countries. Their characteristics are indicated in this table.

The countries with the highest growth rates in manufacturing output were evidently those with the highest growth rates in total output. It also appears that the rate of growth of manufacturing relative to that of GDP was much higher in the high-growth countries than in the low-growth countries. As a natural consequence, as shown in table 43, the change in sectoral structure associated with the increasing importance of manufacturing was much greater in the high-growth than in the low-growth countries.

Since the main purpose of development is to raise income levels, an important feature of structural change is the extent to which the various sectors generate increases in productivity. This is shown in table 44 for 20 countries for which this information is available. Although it is extremely difficult in the developing countries to obtain reliable data on employment, and such figures may contain larger errors than those for output, they are sufficient to indicate the average position. On the average, there was an increase of 3.8 per cent per annum in agricultural output and a corresponding increase of 1.5 per cent in employment, giving an average rate of increase in agricultural productivity of 2.3 per cent per annum. Corresponding rates of increase in output, employment and productivity in the other sectors were 7.3, 3.8 and 3.5 per cent respectively in industry, and 5.8, 4.4 and 1.4 per cent in the services. It follows that a given increase in GDP is obtained from the manufacturing sector with fewer labour resources than from other sectors. This is particularly so in the higher-income countries. In the long term this is highly desirable, although in the short term the provision of employment opportunities in developing countries should also be taken into consideration.

TABLE 43. CHARACTERISTICS OF HIGH-GROWTH AND LOW-GROWTH COUNTRIES

(Percentage)

Sector	Rate of growth	
	High-growth countries 1959–1961 1966–1968	*Low-growth countries* 1959–1961 1966–1968
Manufacturing	10.6	4.9
Primary	3.6	3.1
Tertiary	6.6	4.4
GDP	6.1	3.9

	Share of GDP			
	1959–1961	*1966–1968*	*1959–1961*	*1966–1968*
Primary	43.6	38.8	34.5	32.6
Secondary	15.8	19.9	22.2	22.9
Manufacturing	10.7	13.4	15.9	16.6
Tertiary	40.6	41.3	43.3	44.5

Source: Tables 39, 40 and 41.

TABLE 44. GROWTH OF OUTPUT AND EMPLOYMENT FOR THE MAJOR SECTORS IN SELECTED DEVELOPING COUNTRIES

(Average annual growth rate, by percentage)

Region and country	Period	Growth rate of output			Growth rate of employment		
		Agriculture	Industry[a]	Services[b]	Agriculture	Industry[a]	Services[b]
Africa[c]							
Egypt	1960–1967	3	5	6	3	5	4
Asia							
Malaysia	1955–1957 and 1960–1962	6	...	5	0	3	3
	1960–1962 and 1964–1966	4	12	6	0	3	4
Pakistan	1959–1961 and 1965–1967	3	9	7	1	9	...

Region and country	Period	Growth rate of output			Growth rate of employment		
		Agriculture	Industry[a]	Services[b]	Agriculture	Industry[a]	Services[b]
Philippines	1959–1961 and 1965–1967	4	4	5	1	1	3
Republic of Korea	1959–1961 and 1965–1969	5	14	7	1	11	7
Syrian Arab Republic	1961–1968	4	6	8	1	3	1
Latin America							
Argentina	1960–1969	2	5	3	1	1	3
Bolivia	1960–1969	2	8	5	1	3	4
Brazil	1960–1969	4	6	5	1	3	5
Chile	1960–1969	2	6	4	1	2	4
Colombia	1960–1969	4	6	6	2	3	6
Costa Rica	1960–1969	5	8	7	3	3	5
Dominican Republic	1960–1969	1	5	4	2	3	6
Ecuador	1960–1969	3	5	6	2	2	5
El Salvador	1960–1969	3	8	6	2	3	4
Guatemala	1960–1969	4	7	5	4	7	5
Honduras	1960–1969	4	9	4	2	4	5
Mexico	1960–1969	4	8	7	2	4	5
Nicaragua	1960–1969	4	8	9	3	3	7
Panama	1960–1969	6	11	7	2	4	3
Paraguay	1960–1969	3	6	5	2	4	5
Peru	1960–1969	2	6	6	2	2	5
Uruguay	1960–1969	2	1	1	1	1	3
Venezuela	1960–1969	6	4	5	1	5	5

Sources: Based on consultant paper, by Seiya Yano, "Industrialization and structural change in Asian economies", prepared for UNIDO, March 31, 1970; *Yearbook of National Accounts Statistics, 1970*, vols. I and II (United Nations publication, Sales No. 72.XVII.3); *Economic Survey of Latin America, 1970* (United Nations publication, Sales No. 72.II.G.1); and *Yearbook of Labour Statistics, 1969* (Geneva, International Labour Office, 1969).

[a] For Asian countries, including only manufacturing (ISIC 2, 3); otherwise, including mining, manufacturing and basic services.

[b] Including all activities of commerce, communication and transportation, the sector is identical to the tertiary sector in the previous tables.

TABLE 45. GROSS FIXED CAPITAL FORMATION AS PERCENTAGE OF GDP AND INCREMENTAL CAPITAL OUTPUT RATIO FOR SELECTED DEVELOPING COUNTRIES

Region and country or area	*Period*	*Gross fixed capital formation as percentage of GDP*	*Incremental capital output ratio*
Africa			
Congo	1966–1968	19	5.6
Ethiopia	1961–1967	12	2.6
Ghana	1960–1969	15	6.8
Kenya	1964–1969	17	2.5
Libyan Arab Republic	1962–1968	26	1.0
Malawi	1964–1968	13	2.4
Mauritius	1960–1966	19	3.6
Morocco	1960–1969	12	3.2
Nigeria	1960–1966	12	2.7
Sierra Leone	1963–1968	13	2.3
Southern Rhodesia	1965–1969	14	3.2
Sudan	1960–1965	13	3.3
Tunisia	1960–1969	23	5.6
United Republic of Tanzania	1964–1969	15	2.5
Zaire	1966–1968	15	4.5
Zambia	1964–1968	22	2.2
Asia			
Cyprus	1960–1969	20	3.2
India	1960–1969	20	2.4
Iran	1960–1969	17	1.9
Pakistan	1963–1967	15	2.8
Philippines	1960–1969	18	3.7
Republic of Korea	1960–1969	21	2.3
Republic of Viet-Nam	1960–1968	10	3.0
Sri Lanka	1963–1969	15	2.9
Thailand	1960–1969	20	2.4
Latin America			
Argentina	1960–1969	19	4.8
Bolivia	1960–1969	14	2.3
Brazil	1960–1968	16	3.6
Chile	1960–1969	15	3.3
Colombia	1960–1969	18	3.7
Dominican Republic	1960–1968	12	4.1
Ecuador	1960–1964	13	3.0
El Salvador	1960–1968	13	2.0

Region and country or area	*Period*	*Gross fixed capital formation as percentage of GDP*	*Incremental capital output ratio*
Guatemala	1960–1969	12	2.3
Honduras	1960–1969	15	2.7
Jamaica	1960–1968	20	4.3
Mexico	1960–1967	16	2.4
Nicaragua	1960–1969	16	2.2
Panama	1960–1969	18	2.3
Paraguay	1962–1969	14	3.2
Peru	1960–1969	16	3.3
Puerto Rico	1960–1969	25	3.3
Venezuela	1960–1969	18	3.1

Source: Based on *Yearbook of National Accounts Statistics, 1970*, vols. I and II (United Nations publication, Sales No. 72.XVII.3).

Note: Percentage distribution of gross fixed capital formation is the weighted average for the period. Incremental capital output ratio is calculated by the formula

$$C = y \Big/ \frac{I}{Y}$$

where: y = growth rate of GDP; C = incremental capital output ratio; I = gross fixed capital formation; Y = GDP.

The figures for incremental capital output ratio given here may differ from those in table 30, covering the periods 1960–1962, 1965–1967 and 1967–1969, since the rates of growth of GDP shown in table 30 reflect to a greater extent the fluctuations in GDP.

Corresponding sectoral inputs of capital in relation to output could be compared, using incremental capital output ratios, but data from which these ratios could be calculated are scant. Table 45 gives data for the economy as a whole in a number of developing countries, from which an average of about 3.1 is obtained. Few developing countries give this information for the manufacturing sector alone, but for the countries that do, it would appear that the incremental capital output ratio in manufacturing is slightly below that for the economy as a whole.[2] Thus, it may be concluded that this sector not only uses labour more efficiently, but also capital resources.

More countries (table 46) give the share of machinery and equipment in capital formation, and this may be used as a rough indication of whether investment in manufacturing is above or below average. For example, table 46 indicates that this share in 1966–1968 was much higher in Latin America, at 48.6 per cent, than in Asia, at 39.1 per cent. Since total capital formation as a percentage of GDP was virtually the same in both regions, capital formation in manufacturing was probably also at a higher level in Latin America than in Asia. This higher level of investment would only result in a higher rate of growth, however, if the capital output ratios in manufacturing in the two regions were similar. However, as growth was higher in Asia than in Latin America, it would seem that this ratio was considerably lower in Asia.

[2] See *World Economic Survey, 1969–1970* (United Nations publication, Sales No. 71.II.C.1), table 32.

TABLE 46. GROSS FIXED CAPITAL FORMATION AS A PERCENTAGE OF GDP AND INVESTMENT IN MACHINERY AND EQUIPMENT AS A PERCENTAGE OF GROSS FIXED CAPITAL FORMATION

Region and country or area	*Period*	*Gross fixed capital formation as percentage of GDP*	*Machinery and equipment as percentage of gross fixed capital formation*
Africa			
Ethiopia	1965–1967	13.5	30.8
Ghana	1966–1968	12.3	33.2
Kenya	1967–1968	18.7	52.6
Libyan Arab Republic	1966–1968	24.6	31.7
Mauritius	1966–1968	17.0	38.9
Morocco	1966–1968	14.3	36.9
Sierra Leone	1966–1968	14.9	46.3
Southern Rhodesia	1966–1968	13.4	45.1
Tunisia	1965–1967	29.6	35.2
United Republic of Tanzania	1965–1967	16.8	47.5
Zambia	1966–1968	23.4	47.0
Asia			
Cyprus	1966–1968	20.6	41.8
Indonesia	1966–1968	8.0[a]	45.5[a]
Iran	1965–1967	17.4	34.3
Iraq	1966–1968	16.4	34.8
Jordan	1966–1968	17.0	24.6
Khmer Republic	1965–1967	16.1	27.6
Lebanon	1966–1967	23.1	33.5
Malaysia	1964–1966	19.2	33.3
Philippines	1966–1968	18.8	48.7
Republic of Korea	1966–1968	26.9	48.3
Singapore	1966–1968	15.4	48.3
Sri Lanka	1966–1968	14.8	22.2
Syrian Arab Republic	1966–1968	19.9	56.9
Thailand	1965–1967	24.5	47.1
Latin America			
Argentina	1966–1968	20.5	55.1
Bolivia	1966–1968	20.4	51.5
Chile	1966–1968	19.0	43.5
Colombia	1965–1967	17.1	43.9
Costa Rica	1965–1967	23.2	54.9

Region and country or area	Period	Gross fixed capital formation as percentage of GDP	Machinery and equipment as percentage of gross fixed capital formation
Dominican Republic	1966–1968	14.3	36.8
El Salvador	1965–1967	13.2	59.8
Guatemala	1966–1968	12.3	61.9
Jamaica	1965–1967	20.3	47.0
Nicaragua	1966–1968	18.8	62.3
Panama	1966–1968	22.1	49.3
Paraguay	1966–1968	15.5	52.2
Puerto Rico	1966–1968	24.7	30.3
Venezuela	1966–1968	17.0	31.9

Source: Based on *Yearbook of National Accounts Statistics, 1969*, vol. I (United Nations publication, Sales No. 71.XVII.2).

[a] Gross domestic capital formation.

II. STRUCTURAL CHANGE WITHIN THE MANUFACTURING SECTOR IN THE DEVELOPING COUNTRIES, THE DEVELOPED MARKET AND THE CENTRALLY PLANNED ECONOMIES

Structural change within the manufacturing sector must be analysed from several points of view and at various levels of disaggregation. The aim of this chapter is mainly to throw light on the general tendency or pattern of the change that has occurred in the past one and a half decades in the three economic groupings. For the purpose of the discussion, the manufacturing sector is broken down into the main branches of industry at the two-digit level of the ISIC classification.[3] Structural change is examined from three major aspects, namely, the relative share of output, the structure of employment and the relative productivity of labour. Investigation from other standpoints and at more detailed levels is undertaken in the following chapters. Some of the main findings of this chapter follow.

First, with regard to the per-employee level of output in the manufacturing sector as a whole, the gap between the developed market and the centrally planned economies, which was clearly evident in the middle of the 1950s, had nearly disappeared by 1970, owing to the remarkable progress made in productivity by the centrally planned economies. There exists, however, a noticeable difference in the relative shares of the various sectors, both for output and employment, reflecting differences in consumption and investment patterns with regard to demand, and in comparative advantage with regard to supply.

Secondly, although the developing countries over the period 1955 1970 attained a higher growth in manufacturing output than the developed market economies, there still existed a considerable difference in the per-employee level of output as well as in the output and employment structure. In 1969, the level of output per employee in the developing countries was only $900, which was less than one sixth of that in the other economic groupings. Further, the share of light industry was still 54 per cent of total output and 71 per cent of total employment in the manufacturing sector of the developing countries. Moreover, the gap in per-employee output had been increasing, since the increase in the rate of labour productivity was lower in the developing countries, owing to the dominance of labour-intensive methods and inefficiency in production. It should be noted, however, that a lower increase in productivity relative to output was accompanied by

[3] In this and the following chapters, ISIC refers to the latest revision of the *International Standard Industrial Classification of All Economic Activities* (ST/STAT/M.4/Rev.2/Add.1).

an increase in employment, of as much as 3.9 per cent annually, which must have helped somewhat to mitigate the unemployment problem.

Thirdly, there existed a wide difference among the developing regions in the productivity level and in the industrial structure. In the most recent year for which data are available, the level of manufacturing output per employee in Asia was still one fourth of that in Latin America. In 1970, in Asia, the share of light industry in manufacturing output was 60.6 per cent and its share of employment was 72.3 per cent. In Latin America, its shares of output and employment were 47.6 per cent and 64.5 per cent respectively. Although Asia attained a slightly higher growth in manufacturing output than Latin America over the period under review, the gap in labour productivity between the two regions was not reduced.

Finally, the structure of relative productivity,[4] and, to some extent, comparative advantage, have undergone dynamic change in the process of industrialization. A significant alteration in the structure of relative productivity occurred especially in the centrally planned economies and in the developing countries. A usual pattern of change has involved the tendency of relative productivity to decrease in light industry and to increase in heavy industry. This pattern implies that light industry loses its comparative advantage and heavy industry gains comparative advantage as industrialization proceeds. In the developing countries, however, the dual character of the economy has affected the structure of relative productivity to a large extent and has acted to obscure this tendency. In industries where production has been carried out largely in small-scale cottage factories with inferior equipment, labour has tended to have a lower relative productivity, even if the industries have had a latent comparative advantage from the standpoint of resource endowment.

Relative shares of output and employment

Industrial structure is like a polyhedron with many facets; it must be examined from several points of view. The most familiar concept of industrial structure is one in terms of value added. The relative share of each branch of industry in the manufacturing sector as a whole in terms of value added is taken to reflect the industrial structure. This concept has been adopted for some time in economic analyses, and the present analysis follows suit up to a point. Later in this chapter, other aspects of the industrial structure and the causes of change in the relative shares of the various industries are investigated.

Table 47 shows the percentage distribution of 10 major industry groups in the manufacturing sector as a whole in the developing countries, the developed market and the centrally planned economies for 1955, 1960, and the most recent year for which data were available. Figure I shows the relative share of value added by these major industry groups in the light and heavy manufacturing sectors, for the three economic groupings.

[4] The relative productivity of labour is defined here as the percentage ratio of value added per employee in the industry concerned to the average value added per employee in the manufacturing sector as a whole.

TABLE 47. DISTRIBUTION OF VALUE ADDED BY MAJOR GROUP OF MANUFACTURING INDUSTRY

(Percentage)

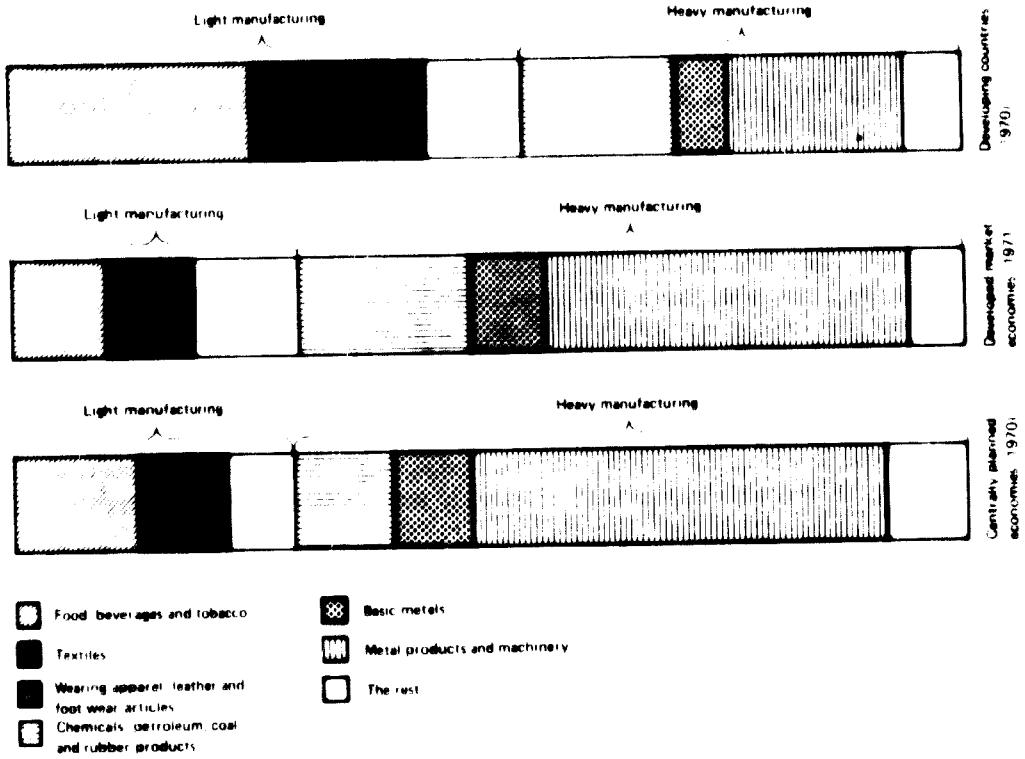
Industry	*ISIC*	*Developing countries*			*Developed market economies*			*Centrally planned economies*		
		1955	*1960*	*1970*	*1955*	*1960*	*1971*	*1955*	*1960*	*1970*
Total manufacturing	3	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Light manufacturing	31–33, 342, 355 and 356, 39	67.3	61.7	54.3	36.5	35.6	31.0	49.3	42.0	30.2
Heavy manufacturing	341, 351–354, 36–38	32.7	38.3	45.7	63.5	64.4	69.0	50.7	58.0	69.8
Food, beverages and tobacco	31	30.5	28.5	24.8	12.7	12.3	10.7	19.8	17.2	13.0
Textiles	321	17.3	15.1	12.8	6.1	5.8	4.8	7.8	6.3	4.4
Wearing apparel, leather and foot-wear articles	322–324	7.2	6.3	5.6	5.1	5.1	3.5	6.6	5.9	4.8
Wood products, furniture	33	3.9	3.8	3.6	4.2	3.9	3.4	4.8	4.9	3.8
Paper, printing and publishing	34	4.2	4.5	4.8	8.3	8.5	7.8	3.2	2.7	2.4
Chemicals, petroleum, coal and rubber products	35	13.6	14.6	16.3	10.7	12.7	17.7	7.3	8.0	10.2
Non-metallic mineral products	36	5.2	5.2	5.7	4.5	4.5	4.2	5.5	7.0	6.8
Basic metals	37	4.4	5.3	5.5	10.3	8.9	7.9	9.4	8.9	7.8
Metal products and machinery	38	10.9	14.1	18.6	36.4	36.7	38.5	30.4	34.8	43.8
Other manufacturing	39	2.8	2.6	2.2	1.7	1.7	1.5	5.1	4.3	3.0

Sources: Based on *The Growth of World Industry, 1970 Edition*, Vol. I (United Nations publication, Sales No. 72.XVII.4); and *Monthly Bulletin of Statistics* (May 1972) (United Nations publication).

Note: The value added for the respective years is estimated by multiplying production index numbers by value added in 1963.

So far as the shares of light and heavy industries[5] are concerned, the developed market and the centrally planned economies continued to have nearly the same structure in the most recent years shown in the table and in figure I. Light industry had a share of less than one third of the whole manufacturing sector, or 31 per cent in the developed market economies and 30.2 per cent in the centrally planned economies. By contrast, in the developing countries, light industry still had a share of more than one half, or 54.3 per cent, in 1970.

Figure I. Relative share of value added by major group of manufacturing industry



When viewed at the ISIC two-digit level, the difference in industrial structure between the developed market and the centrally planned economies becomes clear. In the developed market economies, the paper and printing industry (ISIC 34) and the chemicals and petroleum products industry (ISIC 35) had a greater share than they had in the centrally planned economies. By contrast, the structure of the manufacturing sector in the centrally planned economies indicated a relatively larger share for the food industry (ISIC 31), the non-metallic mineral products industry

[5] According to the ISIC classification, light industry includes: food, beverages and tobacco; textiles, wearing apparel, leather and foot-wear; wood products and non-metallic furniture; printing and publishing; rubber and plastic products; and miscellaneous manufacturing. Heavy industry includes: pulp and paper; chemicals, petroleum and coal products; non-metallic mineral products; basic metals; and metal products and machinery.

(ISIC 36) and the metal products and machinery industry (ISIC 38). This fact may reflect the difference between consumption and investment patterns in the two economic groupings.

In the developing countries, in 1970, the largest industry was the food industry, which had a share of as much as 24.8 per cent, followed by the metal products and machinery industry with a share of 18.6 per cent, the textile and wearing apparel industry (ISIC 32) with a combined share of 18.4 per cent, and the chemicals and petroleum products industry with a share of 16.3 per cent. The food and textile industries had considerably more weight than they had in the other two economic groupings, while the metal products and machinery industry had a share that was less than one half of that in the developed countries.

It is usually maintained that the share of light industry decreases and that of heavy industry increases with industrial progress. This view may be confirmed either by a comparison that is world-wide or by a time-series analysis in one country or region. Table 47 also shows the change in the percentage share of each branch of industry at the ISIC two-digit level for the developing countries, the developed market and the centrally planned economies since 1955. The share of light manufacturing decreased in all three economic groupings. The decrease is especially significant in the developing countries and in the centrally planned economies. In the former, the share was reduced from 67.3 to 54.3 per cent, and in the latter, from 49.3 to 30.2 per cent over the period 1955–1970. In the developed market economies, the change was relatively small; the share of light manufacturing fell only slightly from 36.5 to 31 per cent over this period.

In the developing countries, the share of the food industry, which is the largest industry in terms of value added, decreased sharply, from 30.5 per cent in 1955 to 24.8 per cent in 1970. The textile and wearing apparel industry, which was once the second largest, was also significantly reduced in importance; its share decreased from 24.5 to 18.4 per cent over the period. The share of the metal products and machinery industry, which was only 10.9 per cent in 1955, increased to 18.6 per cent in 1970, and this industry took the place of the second largest. The share of the chemicals and petroleum products industry also increased notably, from 13.6 to 16.3 per cent over the same period.

In the developed market economies, the largest change in percentage composition occurred in the chemicals and petroleum products industry, where its share increased from 10.7 per cent in 1955 to 17.7 per cent in 1971. In the centrally planned economies, the metal products and machinery industry had the greatest increase in share, from 30.4 to 43.8 per cent over the period 1955–1970.

Industrial structure may also be expressed in terms of employment. This approach to an analysis of industrial structure has been used frequently in economic writing. Table 48 indicates the percentage distribution of employment by major group of industry at the ISIC two-digit level in the developing countries, the developed market and the centrally planned economies, for 1955, 1960, and the most recent year for which data were available. Figure II shows the relative share of employment of these major industry groups, for the three economic groupings.

According to the conventional division of the manufacturing sector between heavy and light industry, more than 70 per cent of the total manufacturing labour force was employed by light industry in the developing countries as a whole in 1969, whereas in the other two economic groupings, in 1970, less than one half of the manufacturing labour force was employed by light industry.

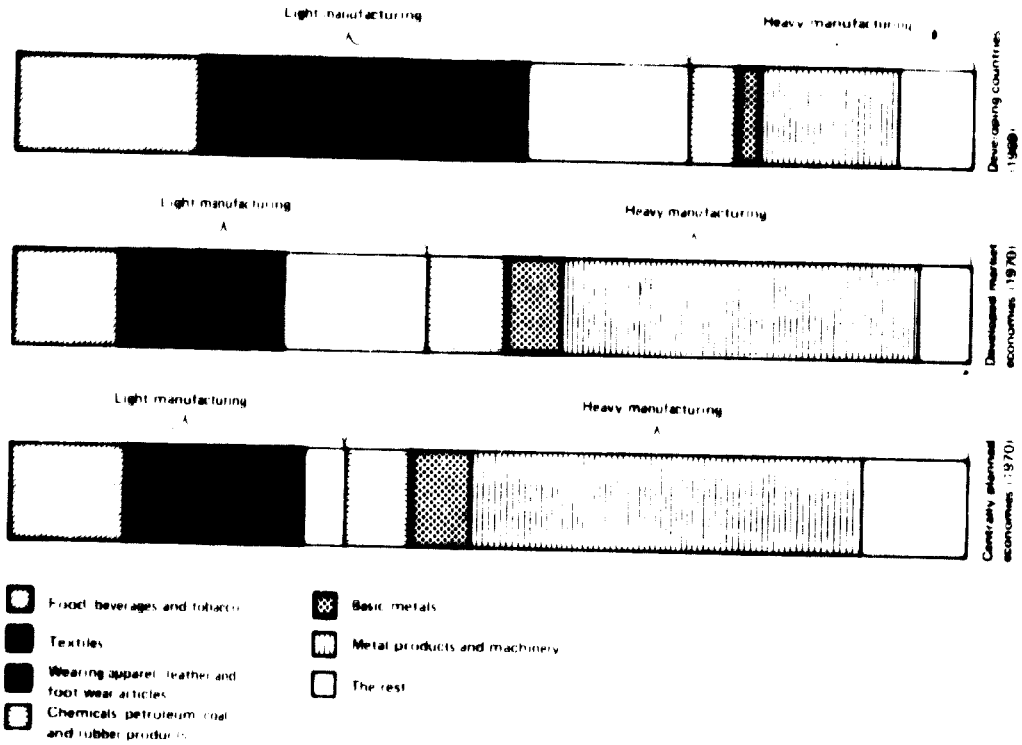
TABLE 48. DISTRIBUTION OF EMPLOYMENT BY MAJOR GROUP OF MANUFACTURING INDUSTRY

(Percentage)

Industry	*ISIC*	*Developing countries*			*Developed market economies*			*Centrally planned economies*		
		1955	*1960*	*1969*	*1955*	*1960*	*1970*	*1955*	*1960*	*1970*
Total manufacturing	3	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Light manufacturing	31–33, 342, 355 and 356, 39	77.6	74.5	70.9	48.3	46.2	43.7	44.5	43.7	34.8
Heavy manufacturing	341, 351–354, 36–38	22.4	25.5	29.1	51.7	53.8	56.3	55.5	56.3	60.2
Food, beverages and tobacco	31	20.2	20.1	18.9	11.9	11.7	11.0	12.9	12.3	11.6
Textiles	321	29.5	26.3	22.1	10.8	9.6	7.6	11.8	10.8	8.9
Wearing apparel, leather and foot-wear articles	322–324	11.7	11.3	12.7	10.3	9.8	9.9	10.0	10.2	10.1
Wood products, furniture	33	8.8	9.8	10.0	7.3	6.9	6.4	6.2	6.1	5.1
Paper, printing and publishing	34	2.9	2.9	2.9	6.7	6.9	7.0	2.8	2.5	2.4
Chemicals, petroleum, coal and rubber products	35	4.6	4.6	5.0	7.8	7.9	8.2	5.5	5.7	6.4
Non-metallic mineral products	36	7.8	8.4	9.0	4.7	4.6	4.2	6.9	7.8	7.5
Basic metals	37	1.6	1.8	2.1	6.6	6.5	6.0	6.7	6.6	6.1
Metal products and machinery	38	9.4	11.4	13.7	31.8	33.9	37.2	35.4	36.2	40.3
Other manufacturing	39	3.5	3.4	3.5	2.1	2.2	2.5	1.8	1.8	1.7

Source: Based on *The Growth of World Industry, 1970 Edition*, Vol. I (United Nations publication, Sales No. 72.XVII.4).
Note: The employment for the respective years is estimated by multiplying employment index numbers by employment in 1963.

Figure II. Relative share of employment by major group of manufacturing industry



At the ISIC two-digit level, the difference in the structure of industrial employment between the developed market and the centrally planned economies is not so significant as it is when measured by value added, except for the paper and printing and the non-metallic mineral products industries. Paper and printing enjoyed a larger share of industrial employment in the developed market economies, and non-metallic mineral products had a larger share in the centrally planned economies, which reflected the differences in consumption and investment patterns.

In the developing countries as a whole, the textile and wearing apparel industry had a share of manufacturing employment of as high as 34.8 per cent in 1969, followed by the food industry with a share of 18.9 per cent, the metal products and machinery industry with a share of 13.7 per cent, and the wood products industry (ISIC 33) with a share of 10 per cent. By comparison with the other two economic groupings, the difference in employment structure was most outstanding in the cases of the textile and the metal products and machinery industries.

The change in the structure of manufacturing employment over time must also be investigated as an important aspect of structural change in the manufacturing sector. As would be expected, the share of the light manufacturing sector of employment was decreasing and that of heavy manufacturing was increasing in all three economic groupings after 1955, as shown in table 48. The change was not so great, however, as in the case of manufacturing value added, because the increase in labour productivity was relatively low in light industry, with the result that the share of employment decreased less than the share of value added.

In the developing countries as a whole, light industry's share of employment decreased from 77.6 per cent in 1955 to 70.9 per cent in 1969, whereas that of heavy industry increased from 22.4 to 29.1 per cent over the same period. This change is far smaller than the change that is evident when the industrial structure is analysed in terms of value added. At the ISIC two-digit level, the share of the textile industry (ISIC 321) was reduced most significantly, from 29.5 to 22.1 per cent, whereas that of the metal products and machinery industry increased remarkably, from 9.4 to 13.7 per cent. It is interesting to note that for two of the light manufacturing industries, namely, wearing apparel and wood products, the share of employment increased slightly in the developing countries. This means that employment opportunity was expanding in the two industries at a higher rate of growth than in the manufacturing sector as a whole, owing to their labour-intensive method of production. This feature is discussed in more detail later in this part of the *Survey*.

Increase in production, employment and labour productivity

Changes in the industrial structure are caused by a non-uniform growth among the various branches of industry. Needless to say, an industry that attains a higher rate of growth than the average increases its share and *vice versa*. In this section, past trends in growth in various manufacturing industries are investigated and are related to changes in their industrial structures.

Table 49 indicates the growth trends[6] of production, employment and labour productivity since 1955 in the manufacturing sector, at the ISIC two-digit level, for the developing countries, the developed market and the centrally planned economies. The following are the main findings from this table.

First, production in the entire manufacturing sector expanded at annual growth rates of 6.8 per cent in the developing countries, 5.8 per cent in the developed market economies, and 9.1 per cent in the centrally planned economies. The growth trend is higher in heavy industry than in light industry in all three economic groupings. This tendency is especially noteworthy in the developing countries and in the centrally planned economies, where a considerable increase in the share of heavy industry occurred. At the ISIC two-digit level, the chemicals and petroleum products and the metal products and machinery industries registered relatively high rates of growth, while the textile industry lagged behind in all three economic groupings.

In the developing countries, the metal products and machinery industry attained the highest growth rate, or 10.1 per cent annually, followed by the basic metals industry (8.5 per cent), the chemicals and petroleum products industry (7.8 per cent), and the paper and printing industry (7.3 per cent). It should be noted that the wearing apparel and the wood products industries grew much more rapidly, that is, at annual rates of 5.6 and 7.2 per cent respectively, than they did in the developed market economies where their annual rates of increase were only 2.7 and 4.1 per cent respectively.

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[6]Growth trends given in this and the following chapters were calculated by regression analysis; they may therefore differ from the rates given in part one of this *Survey*. As regards the reference period, see the note to table 49.

TABLE 49. GROWTH TRENDS IN PRODUCTION, EMPLOYMENT AND LABOUR PRODUCTIVITY, BY MAJOR GROUP OF MANUFACTURING INDUSTRY

Industry	ISIC	Developing countries			Developed market economies			Centrally planned economies		
		P[a]	E[b]	P/E[c]	P[a]	E[b]	P/E[c]	P[a]	E[b]	P/E[c]
Total manufacturing	3	6.8	3.9	2.7	5.8	1.9	4.0	9.1	3.7	5.3
Light manufacturing	31-33, 342, 355 and 356, 39	5.2	3.3	1.8	4.3	1.3	3.1	5.5	2.8	2.6
Heavy manufacturing	341, 351-354, 36-38	8.8	5.7	2.9	6.5	2.4	4.2	11.4	4.3	6.8
Food, beverages and tobacco	31	5.1	3.2	1.7	4.0	1.2	2.8	6.5	2.9	3.5
Textiles	321	4.6	1.8	2.6	3.9	0.5	4.5	5.2	1.4	3.8
Wearing apparel, leather and foot-wear articles	322-324	5.6	4.9	0.9	2.7	1.7	1.3	6.7	3.3	3.3
Wood products, furniture	33	7.2	4.9	2.4	4.1	1.1	3.1	7.4	2.1	5.2
Paper, printing and publishing	34	7.3	3.5	3.6	5.1	2.1	3.1	7.5	2.8	4.6
Chemicals, petroleum, coal and rubber products	35	7.8	4.5	3.1	8.9	2.3	6.6	12.3	4.8	7.2
Non-metallic mineral products	36	7.2	4.8	2.1	4.9	1.3	3.7	10.6	3.7	6.6
Basic metals	37	8.5	6.2	2.4	4.6	1.1	3.7	8.3	2.8	5.4
Metal products and machinery	38	10.1	6.5	3.4	6.4	2.9	3.6	12.1	4.6	7.2

Sources: Based on *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4), and *Monthly Bulletin of Statistics* (May 1972) (United Nations publication).

Note: Growth trends are calculated by the regression analysis, using the formula $x(t) = x(0)\ (1 + r)^t$ where t indicates time, r is growth rate and x is index number. Growth rates of production, employment and labour productivity in this chapter and the following chapters were calculated in this way and therefore may differ from rates stated in part one of the *Survey*. The time period of observations is as follows:

(1) For the developing countries, the periods are 1955-1970 for production, and 1955-1969 for employment and labour productivity.

(2) For the developed market economies, the periods are 1955-1971 for production, and 1955-1970 for employment and labour productivity.

(3) For the centrally planned economies, the period 1955-1970 is applicable for all items.

[a] Based on production index numbers. [b] Based on employment index numbers. [c] Based on labour productivity index numbers.

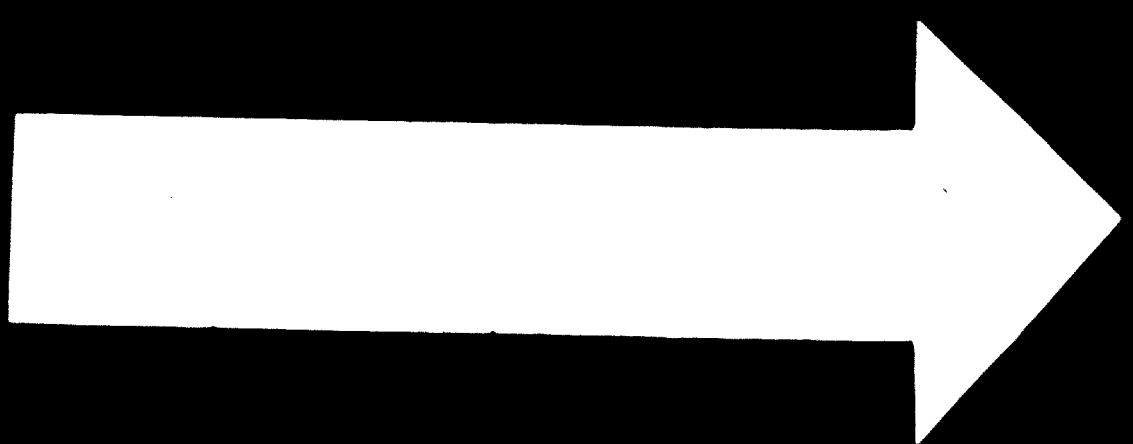
Secondly, employment in the manufacturing sector increased at annual rates of 3.9 per cent in the developing countries, 1.9 per cent in the developed market economies, and 3.7 per cent in the centrally planned economies. The developing countries attained the highest growth in employment among the three economic groupings. As in the case of production, heavy industry showed higher growth rates in employment than light industry in all three groupings, that is, 5.7 per cent *versus* 3.3 per cent in the developing countries, 2.4 per cent *versus* 1.3 per cent in the developed market economies, and 4.3 per cent *versus* 2.8 per cent in the centrally planned economies. In the latter two economic groupings, employment in the chemicals and petroleum products and the metal products and machinery industries showed relatively higher rates of increase, whereas the textile industry lagged behind, especially in the developed market economies

In the developing countries, the highest rate of increase of employment (6.5 per cent annually) was recorded in the metal products and machinery industry, followed by basic metals (6.2 per cent), wearing apparel (4.9 per cent), wood products (4.9 per cent) and non-metallic mineral products (4.8 per cent). At the same time, the textile industry had the lowest employment growth rate, only 1.8 per cent annually, in the developing countries and the lowest rate also in the other two economic groupings.

Thirdly, the information on production and employment gives some idea about the historical movement of labour productivity in various manufacturing industries. As shown in table 49, the manufacturing sector as a whole achieved the highest increase in productivity, or 5.3 per cent annually, in the centrally planned economies, followed by an annual increase of 4 per cent in the developed market economies. The increase in labour productivity was lowest in the developing countries, namely, 2.7 per cent per year.

Labour productivity increased more rapidly in heavy industry than in light industry in all three economic groupings. The centrally planned economies made remarkable progress in labour productivity (6.8 per cent annually) in heavy industry, followed by the developed market economies (4.2 per cent), and the developing countries (2.9 per cent). In light industry, on the other hand, the developed market economies had the highest growth in labour productivity, or 3.1 per cent a year, the centrally planned economies had the second highest, or 2.6 per cent, and the developing countries achieved an annual increase of 1.8 per cent.

In the developing countries, viewed at the ISIC two-digit level, the paper and printing industry registered the highest increase in productivity (3.6 per cent annually), followed by metal products and machinery (3.4 per cent), chemicals and petroleum products (3.1 per cent), textiles (2.6 per cent), basic metals (2.4 per cent) and wood products (2.4 per cent). In each industry group, except for the paper industry, the increase in labour productivity was smaller in the developing countries, however, than in the other two economic groupings. In view of the fact that the increase in the rate of employment was higher among the three economic groupings in every industry except the paper industry, it may be concluded that more labour-intensive methods of production were employed in the developing countries, resulting in the smaller increase in labour productivity. A typical example is the wearing apparel industry, where the increase in production was achieved mainly through an increase in employment rather than in labour productivity, with the result that productivity increased by only 0.9 per cent annually.



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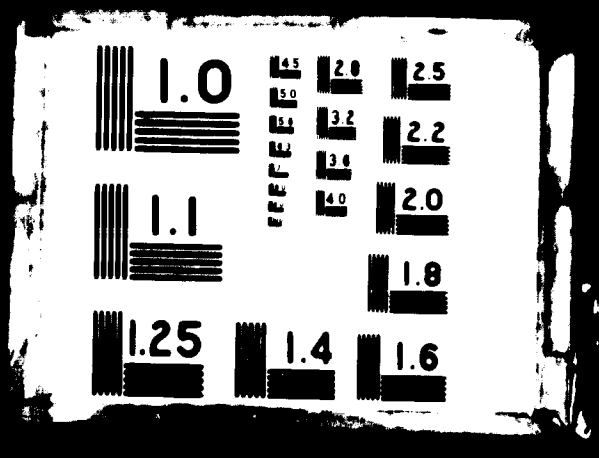

An interregional comparison of the absolute and relative productivities of labour

Information on the absolute and relative productivities of labour may be obtained from statistical data on production and employment. Table 50 indicates the estimated value added (output) per employee by major industry group in the developing countries, the developed market and the centrally planned economies, for 1955, 1960, and the most recent year for which the data were available. It should be noted that these figures are only rough estimates, based on the time-series data of production and employment indices, and on the value added per employee in 1963, which was the most recent year of the world-wide industrial census. Official foreign exchange rates in 1963 may not be suitable conversion factors for a world-wide comparison of manufacturing products. Also, the relative price structure of manufactures changes in the process of industrial development, which makes the comparison of relative productivity difficult over time. However, this table gives a general view of the disparities in productivity among the three economic groupings.

With regard to the absolute productivity in recent years not much difference is discernible between the developed market and the centrally planned economies for the manufacturing sector as a whole nor for any major group of manufacturing industry. In the developing countries, on the other hand, the absolute productivity of labour remained at a much lower level than in the other economic groupings. In 1969, the productivity of labour in the manufacturing sector was about $900, which was less than one sixth of that in the other economic groupings. It is interesting to note that the productivity gap is comparatively small (about one third to one fourth) in the paper and publishing, the chemicals and petroleum products, and the basic metals industries, and relatively large (about one eighth to one tenth) in the wood products and non-metallic mineral products industries. This means that the productivity gap is narrow in industries where production is carried out primarily in large-scale plants using modern methods, and that it is wide in industries where traditional methods of production are still dominant in the developing countries.

An analysis of the relative productivity of labour provides more interesting information on industrial structure from the viewpoint of comparative advantage. According to the time-honoured theory of international comparative advantage, the comparative, not the absolute, cost of production affects the pattern of foreign trade. Needless to say, labour productivity alone cannot determine the cost of production partly because the latter consists not only of the cost of labour but also of the cost of other items such as capital and materials, and partly because the average level of wages varies among industries. However, since remuneration for labour usually makes up a large part of value added, the relative productivity, as defined here,[7] could be regarded as reflecting to some extent the pattern of comparative advantage for major groups of industry in the manufacturing sector, provided that the technology adopted is at the same level among the three economic groupings. It is difficult to judge the level of technology from the available statistical data, which are insufficient to estimate the production function of each industry. However, if the absolute productivity in the manufacturing sector as a whole is at the same level in two economic groupings, it may not be far from the truth to say that the two groupings are at the same level of technology. This is the case for the

[7] For a definition of relative productivity, see foot-note 4, page 111.

TABLE 50. ESTIMATES OF VALUE ADDED PER EMPLOYEE BY MAJOR GROUP OF MANUFACTURING INDUSTRY

(In 1963 constant dollars)

Industry	*ISIC*	*Developing countries*			*Developed market economies*				*Centrally planned economies*			
		1955	*1960*	*1969*	*1955*	*1960*	*1969*	*1970*	*1955*	*1960*	*1969*	*1970*
Total manufacturing	3	590	676	895	3,525	3,870	5,759	5,784	2,682	3,701	5,631	6,097
Light manufacturing	31–33, 342, 355 and 356, 39	512	563	689	2,660	2,996	3,998	4,059	2,983	3,587	4,325	4,609
Heavy manufacturing	341, 351–354, 36–38	859	1,020	1,384	4,332	4,661	7,107	7,135	2,458	3,835	6,520	7,059
Food, beverages and tobacco	31	909	965	1,151	3,737	4,073	5,374	5,533	3,943	5,090	6,489	6,957
Textiles	321	353	391	520	1,982	2,337	3,593	3,642	1,700	2,143	2,860	3,066
Wearing apparel, leather and foot-wear articles	322–324	369	383	413	1,703	2,035	2,156	2,099	1,698	2,104	2,815	2,973
Wood products, furniture	33	266	267	364	1,976	2,165	2,922	2,949	2,005	2,954	4,355	4,668
Paper, printing and publishing	34	867	1,059	1,486	4,341	4,767	6,545	6,473	2,974	3,914	5,705	6,119
Chemicals, petroleum, coal and rubber products	35	1,794	2,158	2,087	4,812	6,282	11,483	11,833	3,413	5,151	9,495	9,884
Non-metallic mineral products	36	400	424	557	3,388	3,881	5,476	5,569	2,037	3,280	5,282	5,673
Basic metals	37	1,685	1,997	2,484	5,423	5,273	8,093	8,071	3,610	4,888	7,590	8,009
Metal products and machinery	38	698	843	1,193	4,006	4,195	6,126	6,062	2,203	3,510	6,199	6,742

Source: Based on *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4).
Note: Labour productivity for the respective years is estimated by multiplying labour productivity index numbers by labour productivity in 1963.

developed market economies and the centrally planned economies. By contrast, in the developing countries, the absolute productivity is very low in each industry, so that the calculated relative productivity cannot very well be related to the pattern of comparative advantage.

Table 51, which is based on table 50, shows the relative productivity of labour in the developing countries, the developed market and the centrally planned economies, for 1955, 1960, and the most recent year for which data were available. The following conclusions may be made from this table.

First, a comparison of the developed market and the centrally planned economies over the period 1955–1970 indicates that the former continued to show a higher relative productivity in heavy industry, and the latter a higher one in light industry. If examined by major groups of industry, the paper and printing and the chemicals and petroleum products industries continued to show a higher relative productivity in the developed market economies, and the food, wearing apparel and wood products industries indicated a higher relative productivity in the centrally planned economies. It may be concluded from this that the developed market economies have had a comparative advantage, on the average, in the heavy manufacturing sector, and that the centrally planned economies, on the average, have had a comparative advantage in the light manufacturing sector in the past 16 years.

It should be noted, however, that the structure of comparative advantage is subject to dynamic change in the process of industrialization. The theory of comparative advantage tends to overlook this, and, as a result, it sometimes fosters the image of a fixed pattern of international specialization.

A significant change in the structure of relative productivity has occurred during the past one and a half decades in the centrally planned economies; it declined from 111 to 76 in light industry as a whole, whereas it increased from 92 to 116 in heavy industry over the period 1955–1970. In the developed market economies, the relative productivities of the light and the heavy industries remained virtually unchanged over this period. In both economies, the relative productivity declined in the food, wearing apparel and paper and printing industries, and it increased in the chemical and petroleum industry. Both economic groupings showed an opposite change in the relative productivity of the textile and metal products and machinery industries. In the developed market economies, the relative productivity of the textile industry increased from 56 to 65, whereas in the centrally planned economies it decreased from 63 to 50. By contrast, the relative productivity in the metal products and machinery industry increased from 82 to 111 in the centrally planned economies and decreased from 114 to 105 in the developed market economies. These are typical examples of the fact that relative productivity is not static but dynamic, that it changes dramatically as an economy develops industrially.

For the developing countries, the relative productivity, as calculated in table 51, could reflect the structure of comparative advantage only to a lesser extent and in some cases in a distorted way, not only because of a lower level of technology in the manufacturing sector as a whole, as reflected in the lower absolute productivity, but also because of the so-called dual character of production in the developing countries. It is well-known that modern and traditional methods of production co-exist within one industry, although to a varying degree according to the industry. Labour shows a comparatively high productivity in industries where a relatively greater part of the activities are performed in large-scale plants using modern technology; whereas lower productivity generally prevails in industries where

TABLE 51. RELATIVE PRODUCTIVITY OF LABOUR BY MAJOR GROUP OF MANUFACTURING INDUSTRY

Industry	*ISIC*	*Developing countries*			*Developed market economies*			*Centrally planned economies*		
		1955	*1960*	*1969*	*1955*	*1960*	*1970*	*1955*	*1960*	*1970*
Total manufacturing	3	100	100	100	100	100	100	100	100	100
Light manufacturing	31–33, 342, 355 and 356, 39	87	83	77	75	77	70	111	97	76
Heavy manufacturing	341, 351–354, 36–38	146	151	155	123	120	123	92	104	116
Food, beverages and tobacco	31	154	143	129	106	105	96	147	138	114
Textiles	321	60	58	58	56	60	63	63	58	50
Wearing apparel, leather and foot-wear articles	322–324	62	57	46	49	53	36	63	57	49
Wood products, furniture	33	45	39	41	56	56	51	75	80	77
Paper, printing and publishing	34	147	157	166	123	123	112	111	106	100
Chemicals, petroleum, coal and rubber products	35	304	319	314	137	162	205	127	139	162
Non-metallic mineral products	36	68	63	62	96	98	96	76	89	93
Basic metals	37	286	295	278	154	136	140	135	132	131
Metal products and machinery	38	118	125	133	114	108	105	82	95	111

Source: Based on *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4).

Note: Relative productivity here is defined as percentage ratio of value added per employee in the industry concerned to the average value added per employee in the manufacturing sector as a whole.

production is largely carried out in small cottage factories using inferior equipment and traditional methods. This dual character tends to obscure the latent structure of comparative advantage[8] "latent" in the sense that, even if the same level of technology is applied, a difference in labour productivity would occur owing to the difference in the endowment of resources among countries.

Table 51 indicates that, in the developing countries, heavy industry had an extremely high relative productivity compared with that in the other two economic groupings. At the ISIC two-digit level, this was true for the food, paper and printing, chemical and petroleum products, basic metals and metal products and machinery industries. On the other hand, the wood products and non-metallic mineral products industries were at a much lower level of relative productivity. In the textile industry, the relative productivity was nearly the same as in the other two economic groupings.

The high relative productivity in the food industry could be regarded as reflecting latent comparative advantage, because it coincides with the present pattern of foreign trade in the developing countries.[9] The extremely high relative productivity in other industries, however, should be considered to result from the intensive introduction of modern technology into these industries under a policy of import substitution.

Structure of production and employment in Latin America and Asia

The observations and findings in the preceding sections are reinforced when Latin America and Asia, which are at different stages of industrial development, are compared.

In Latin America, production in the manufacturing sector as a whole attained an annual growth rate of 6.2 per cent over the period 1955–1970. The growth rate was much higher in heavy industry (8.2 per cent annually) than in light industry (4.6 per cent), which resulted in a significant increase in the share in output of heavy industry, from 38.1 per cent to 52.4 per cent. (See table 52.)

On the other hand, employment in the entire manufacturing sector increased annually at a growth rate of 2.7 per cent over the period 1955–1969. Unlike the growth rates of production in heavy and light industry, employment increased almost at the same rate in both sectors, so that the structure of employment did not change

[8] Another cause contributing to this tendency might be protective measures for infant industries under a policy of import substitution. The relative productivity here is derived from value added per employee. If the price level of a product is kept at a higher level relative to input prices than in other countries, more value added will be originated from its production, under the condition that the input structure is the same.

[9] It would be difficult to prove this statement on a world-wide basis since exports of the food, beverages and tobacco industry are not separable from exports of the entire agricultural sector under the present SITC breakdown. The following two examples, however, provide evidence of the statement's validity. In Argentina, total exports amounted to $1,612 million in 1969, of which $260 million were clearly from the food, beverages and tobacco industry and $404 million could be regarded as partly manufactured food, beverages and tobacco. Exports of the latter two items were much larger than exports in the amount of $221 million of the SITC 5–8 industry groups (chemicals, manufactured goods classified by materials, machinery and transport equipment, and miscellaneous manufactured articles). In Mexico, total exports amounted to $1,430 million in 1969, of which $153 million were clearly from the food, beverages and tobacco industry and, in addition, $232 million could be regarded as partly manufactured food, beverages and tobacco. Exports of food, beverages and tobacco were significantly large by comparison with exports in the amount of $427 million of the SITC 5–8 industry groups from this country.

TABLE 52. PRODUCTION AND EMPLOYMENT BY MAJOR GROUP OF MANUFACTURING INDUSTRY IN LATIN AMERICA

Industry	ISIC	Growth trends in production, employment and labour productivity			Percentage distribution[d]					
					Output			Employment		
		P[a]	E[b]	P/E[c]	1955	1960	1970	1955	1960	1969
Total manufacturing	3	6.2	2.7	3.3	100.0	100.0	100.0	100.0	100.0	100.0
Light manufacturing	31–33, 342, 355 and 356, 39	4.6	2.4	2.0	61.9	56.0	47.6	66.9	65.2	64.5
Heavy manufacturing	341, 351–354, 36–38	8.2	3.2	4.7	38.1	44.0	52.4	33.1	34.8	35.5
Food, beverages and tobacco	31	4.7	4.0	0.6	30.7	28.4	24.4	20.4	23.4	24.9
Textiles	321	3.7	0.3	3.2	13.2	11.0	9.0	16.6	14.1	11.7
Wearing apparel, leather and foot-wear articles	322–324	3.4	2.1	1.1	8.1	6.6	5.1	14.9	13.5	13.6
Wood products, furniture	33	4.9	1.7	3.0	3.6	3.3	2.9	8.7	7.6	7.6
Paper, printing and publishing	34	7.2	2.3	4.6	4.9	5.0	5.5	5.0	4.8	4.8
Chemicals, petroleum, coal and rubber products	35	8.2	2.6	5.4	14.2	15.1	18.1	7.6	7.6	7.3
Non-metallic mineral products	36	5.9	2.9	2.8	4.9	4.8	4.7	5.2	5.4	5.3
Basic metals	37	7.6	3.7	3.8	5.5	6.3	6.6	3.1	3.6	3.6
Metal products and machinery	38	9.4	3.5	5.6	13.0	17.7	22.3	16.6	18.0	19.0

Sources: Based on *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4); and *Monthly Bulletin of Statistics* (May 1972) (United Nations publication).

[a] Based on production index numbers for the period 1955–1970.

[b] Based on employment index numbers for the period 1955–1969.

[c] Based on labour productivity index numbers for the period 1955–1969.

[d] Actual totals may differ slightly because miscellaneous manufacturing is excluded. Output and employment for the respective years are estimated by multiplying index numbers by actual figures from the 1963 census.

as significantly. The faster growth in the production of heavy industry was made possible by the increase in productivity in that sector.

In Asia, as shown in table 53, total manufacturing production expanded at a growth rate of 7.4 per cent per year from 1955 to 1970, which was somewhat higher than the rate in Latin America. The increase was considerably higher in heavy industry (10.1 per cent annually) than in light industry (5.9 per cent annually). As a result, the share of heavy industry in output increased considerably, from 26.2 to 39.4 per cent over the same period.

Unlike Latin America, the increase in production in both heavy and light industries was attained more by an increase in employment than by the rise in productivity so that the increase in employment was much more rapid in heavy industry (6.5 per cent annually) than in light industry (3.2 per cent annually). This caused a considerable change in the structure of employment in Asia; heavy industry increased its share of total manufacturing employment from 18.9 per cent in 1955 to 27.7 per cent in 1969.

At the ISIC two-digit level, Latin America achieved a relatively high annual increase in production over the period 1955 1970 only in some heavy manufacturing industries, such as metal products and machinery (9.4 per cent), chemicals and petroleum products (8.2 per cent), basic metals (7.6 per cent) and paper and printing (7.2 per cent). In Asia, a considerably higher growth was also attained in such light industries as wood products (10 per cent) and wearing apparel (9 per cent), in addition to remarkably high annual growth rates for heavy industry (12.1 per cent annually for metal products and machinery and 11.4 per cent for basic metals).

In terms of value added in the industrial structure (output) the pattern of change was nearly uniform in both regions: the share of the food and textile industries in total manufacturing value added decreased and the share of the metal products and machinery industry increased considerably. Paper, printing and publishing and basic metals increased their shares in both regions. For some industries, however, a difference may be observed between the two regions. The chemicals and petroleum products industry increased its share remarkably in Latin America, while it remained almost unchanged in Asia. On the other hand, the shares of wearing apparel, wood products and non-metallic mineral products showed a slight increase in Asia, but a large decrease in Latin America.

The structure of employment also pointed to nearly the same pattern of change in the two regions; the shares of the food and the manufacturing textile industries in total employment decreased and those of the metal products and machinery industry increased.[10] In some industries, however, the difference in the pattern of change is more obvious and significant than in the case of the structure of output. In Asia, the shares of employment grew remarkably in the wearing apparel, wood products and non-metallic mineral products industries, whereas in Latin America the shares of all of these industries in employment declined. This might reflect differences between the two regions in the stage of industrial development. This point will be discussed in detail in chapter III.

The difference in the stage of development between the two regions is typically evident from the shares of major groups of manufacturing industries in total

[10] In 1969, these industries together had a share of 55.6 per cent of total manufacturing employment in Latin America and 53.5 per cent in Asia, so that they had a dominant effect on the structure of manufacturing employment.

TABLE 53. PRODUCTION AND EMPLOYMENT BY MAJOR GROUP OF MANUFACTURING INDUSTRY IN ASIA

Industry	ISIC	Growth trends in production, employment and labour productivity			Percentage distribution[d]					
					Output			Employment		
		P[a]	E[b]	P/E[c]	1955	1960	1970	1955	1960	1969
Total manufacturing	3	7.4	3.9	3.4	100.0	100.0	100.0	100.0	100.0	100.0
Light manufacturing	31–33, 342, 355 and 356, 39	5.9	3.2	2.6	73.8	68.4	60.6	81.1	76.8	72.3
Heavy manufacturing	341, 351–354, 36–38	10.1	6.5	3.5	26.2	31.6	39.4	18.9	23.2	27.7
Food, beverages and tobacco	31	5.3	2.5	2.6	30.2	27.4	23.5	19.6	18.6	16.6
Textiles	321	4.6	1.4	3.0	24.5	20.7	17.2	35.0	30.2	24.6
Wearing apparel, leather and foot-wear articles	322–324	9.0	5.9	3.5	6.0	6.1	6.7	10.2	10.9	12.8
Wood products, furniture	33	10.0	5.7	4.9	3.8	4.2	4.3	8.8	10.3	10.8
Paper, printing and publishing	34	9.6	4.4	5.2	2.9	3.6	4.0	2.1	2.3	2.3
Chemicals, petroleum, coal and rubber products	35	7.8	5.2	2.5	13.3	14.6	14.9	3.6	3.7	4.4
Non-metallic mineral products	36	9.6	5.4	4.0	4.8	6.0	7.2	8.2	9.5	10.4
Basic metals	37	11.4	7.7	4.1	2.8	3.5	4.2	1.0	1.2	1.6
Metal products and machinery	38	12.1	7.6	4.6	7.7	10.2	14.8	7.5	9.5	12.3

Sources: Based on *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4); and *Monthly Bulletin of Statistics* (May 1972) (United Nations publication).

[a] Based on production index numbers over the period 1955–1970.

[b] Based on employment index numbers over the period 1955–1969.

[c] Based on labour productivity index numbers over the period 1955–1969.

[d] Actual totals may differ slightly because miscellaneous manufacturing is excluded. Output and employment for the respective years are estimated by multiplying index numbers by actual figures from the 1963 census.

TABLE 54. ABSOLUTE AND RELATIVE PRODUCTIVITIES OF LABOUR BY MAJOR GROUP OF MANUFACTURING INDUSTRY IN LATIN AMERICA AND ASIA

Industry	ISIC	Latin America						Asia					
		Absolute productivity (in 1963 dollars)			Relative productivity			Absolute productivity (in 1963 dollars)			Relative productivity		
		1955	1960	1969	1955	1960	1969	1955	1960	1969	1955	1960	1969
Total manufacturing	3	1,358	1,597	2,213	100	100	100	306	364	500	100	100	100
Light manufacturing	31–33, 342, 355 and 356, 39	1,256	1,371	1,669	92	86	75	286	324	424	94	89	85
Heavy manufacturing	341, 351–354, 36–38	1,558	2,013	3,237	115	126	146	436	498	694	143	137	139
Food, beverages and tobacco	31	2,023	1,931	2,187	149	121	99	488	532	710	160	146	142
Textiles	321	1,071	1,242	1,754	79	78	79	223	247	343	73	68	69
Wearing apparel, leather and foot-wear articles	322–324	729	777	841	54	49	38	188	202	280	61	55	56
Wood products, furniture	33	555	690	866	41	43	39	138	147	248	45	40	50
Paper, printing and publishing	34	1,331	1,664	2,496	98	104	113	435	569	862	142	156	173
Chemicals, petroleum, coal and rubber products	35	2,530	3,175	3,545	186	199	241	1,169	1,429	1,692	383	392	339
Non-metallic mineral products	36	1,252	1,409	1,920	92	88	87	186	225	338	61	62	68
Basic metals	37	2,378	2,772	4,265	175	174	193	892	1,063	1,450	292	292	290
Metal products and machinery	38	1,054	1,563	2,590	78	98	117	326	385	593	107	106	119

Source: Based on *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4).

Note: Labour productivity for the respective years is estimated by multiplying labour productivity index numbers by labour productivity in 1963. Relative productivity here is defined as a percentage of value added per employee in the industry concerned to the average value added per employee in the manufacturing sector as a whole.

manufacturing value added and employment in recent years. In 1970, the share of output of the metal products and machinery industry was 22.3 per cent and its share of employment was 19 per cent in Latin America, whereas that industry's shares of output and employment were only 14.8 and 12.3 per cent respectively in Asia. Also, for the chemical and petroleum products industry, the shares of output and employment were 18.1 per cent and 7.3 per cent respectively in Latin America, but only 14.9 and 4.4 per cent respectively in Asia. On the other hand, for the textile industry, the difference was quite considerable. In Asia, the shares of that industry in total manufacturing output and employment were 17.2 and 24.6 per cent respectively, but in Latin America they were as low as 9 and 11.7 per cent respectively.

The difference is far greater and clearer when the two regions are compared from the viewpoint of absolute and relative productivities. As shown in table 54, the average value added per employee in the manufacturing sector was estimated to be more than $2,200 for Latin America in 1969, which is nearly two fifths of that in the developed market or in the centrally planned economies in that year. On the other hand, the estimate for Asia in the same year is only $500, or less than one eleventh of that in the developed countries. The productivity gap between the two developing regions varies from one third to one sixth from industry to industry. The gap is relatively wide in such branches as textiles and non-metallic mineral products, where the co-existence of traditional and modern methods of production may frequently be observed in many developing countries.

Table 54 shows the structure of relative productivity in the two developing regions, for 1955, 1960 and 1969. Relative productivity tended to decline in light industry in both regions; it tended to increase in heavy industry in Latin America but to decrease in Asia. In 1969, Asia had a comparative advantage, on the average, in the light manufacturing sector, and Latin America had a comparative advantage in the heavy manufacturing sector as a whole.

As regards the light industry sector at the ISIC two-digit level, in Latin America a higher relative productivity was registered in the textile industry, and lower ones in the wearing apparel and the wood products industries. In Asia, higher figures were recorded for all heavy industries, except for non-metallic mineral products. As mentioned in the previous section, it should not be concluded that Asia has a comparative advantage in the heavy manufacturing sector. Instead, it might be concluded that the dual character of the economy is more pronounced in Asia than in Latin America, and that a wider productivity gap exists among industries owing to the uneven introduction of modern technology.

III. STRUCTURAL CHANGE AT THE BRANCH LEVEL OF THE MANUFACTURING SECTOR, AND GROWTH AND SIZE ELASTICITIES

One purpose of this chapter is to make a more detailed investigation of structural change within the manufacturing sector at the three-digit level of the ISIC classification. The major groups of manufacturing industry which were discussed in the previous chapter contain several heterogeneous branches within each group, and these follow different paths of development. Owing to the unavailability of data, fewer countries are treated in this chapter than in chapter II. The number covered, however, may be considered adequate for the present analysis, since almost all the larger countries are included in this sample. A second purpose is to shed light on some of the causes that might create differences in sectoral growth and in the industrial structure among countries. The two major factors, namely the level of *per capita* income and the size of the economy, are examined by an analysis of growth and size elasticities. The following are some of the main conclusions.

The first conclusion is concerned with the growth trend of various branches within each major group of industry. In the case of heavy industry, almost all branches within each industry group tend to show a nearly uniform growth rate. One probable reason for this is that each branch is more or less related to the other branches through inter-industry connexions. By contrast, in the case of light industry, where input-output relationships within the manufacturing sector are usually less strong, growth trends vary widely from branch to branch and the result is a non-uniform growth among branches. In general, beverages, wearing apparel, furniture and fixtures, and rubber products have recorded relatively high growth rates, whereas food products, textiles, leather products and wood products, by comparison, have lagged behind.

Secondly, an important conclusion may be derived from country data concerning the effect of the size of an economy on the industrial structure over time. The differences in industrial structure among countries may be attributed not only to differences in the *per capita* income level but also to differences in the size of the economy. Moreover, size has much more influence on the industrial structure of an economy. In countries that have a relatively large population or gross domestic product, the share of heavy industry is comparatively large. One probable reason is that a sizable number of establishments belonging to heavy industry usually require a large market owing to economies of scale, and it is much easier for a larger country to establish this market domestically through policies of import substitution. The same argument applies at the branch level of manufacturing. One of the most interesting examples is the relative position of the textile and wearing apparel branches: the former tends to have a greater share in large countries, and the latter a

greater share in small countries. This could reflect the fact that spinning and weaving processes, which are major production activities in the textile branch, are more subject to the requirements of mass production than the methods usually employed in the wearing apparel branch, which are more labour-intensive.

Finally, an analysis of growth and size elasticities rounds out the above investigations. In this analysis, the growth rate of value added in each industry and branch are related statistically to the growth rate of *per capita* income and that of population. The relationship here between value added and *per capita* income is defined as growth elasticity, and that between value added and size of population as size elasticity; an increase in *per capita* income is regarded as economic growth, and population is used as a surrogate for the size of an economy. Industrial branches with a high growth elasticity expand rapidly according to increases in the level of *per capita* income, whereas those with a high size elasticity have a greater share in the manufacturing sector in larger countries. According to the analysis, the textile, paper and paper products, chemical products, iron and steel basic products, and electrical machinery branches have a high size elasticity (more than 1.35) in developing countries. Branches of industry such as paper and paper products, plastic products, iron and steel basic products, and electrical machinery have a high growth elasticity (more than 2.00) in developing countries.

Growth in production at the branch level of the manufacturing sector

Although the preceding analysis at the ISIC two-digit level certainly gives a broad view of structural change, it is by no means satisfactory for the purpose of the present study, since each major industry group contains several heterogeneous branches, whose patterns of development are expected to differ. A more detailed picture may thus be obtained by an investigation at the ISIC three-digit level, where each industry is broken down into branches with a higher degree of homogeneity. Unfortunately, however, there are no production index numbers aggregated regionally on which an interregional comparison of industrial structure could be based. Regional index numbers of production had therefore to be compiled to make this investigation possible.

A recent issue of *The Growth of World Industry*[11] contains time-series data of production index numbers at the ISIC three-digit level for about 60 countries, which, together with the statistical data for value added in each branch of industry in the 1963 world-wide industrial census, make it possible to construct aggregated index numbers for each region by using the formula for weighted averages. The calculated time-series of production indices are attached as annex II. Although the number of countries included might appear to be small relative to the number of countries in the world, the coverage may be considered large enough for such an analysis, since nearly all the larger countries are included in the calculation of the indices.

Table 55, which is derived from annex II through the regression analysis, indicates growth trends of manufacturing production at the ISIC three-digit level since 1960, for the developing countries, the developed market and the centrally planned economies. Two developing regions, Latin America and Asia, are shown

[11] *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4).

TABLE 55. GROWTH TRENDS OF PRODUCTION AT THE BRANCH LEVEL OF THE MANUFACTURING SECTOR

Branch of industry	*ISIC*	*Developing countries*			*Developed market economies*	*Centrally planned economies*	*Developing countries*			*Developed market economies*	*Centrally planned economies*
		Total	*Latin America*	*Asia*			*Total*	*Latin America*	*Asia*		
		Percentage					*Number of countries included*				
Food products	311–312	4.0	3.8	4.4	3.2	6.2	14	8	6	18	5
Beverages	313	6.8	6.0	8.5[a]	5.4	8.8	12	8	4	17	5
Tobacco	314	5.2	3.0	...	3.2	7.5	13	9	...	21	5
Textiles	321	3.5	3.4	3.5	3.2	4.9	14	8	6	22	7
Wearing apparel, except foot-wear	322	8.8[b]	4.4	10.5[b]	4.1	5.9	9	6	3	17	6
Leather and leather and fur products	323	3.2	3.0	5.2	1.5	3.8	14	9	5	21	5
Foot-wear	324	...	5.7	...	2.1	4.9	...	4	...	20	5
Wood products, except furniture	331	2.4	0.0	15.4[c]	3.1	4.5	10	7	3	16	5
Furniture and fixtures, except metal	332	8.4	12.5	...	5.8	8.6	8	5	...	16	5
Paper and paper products	341	9.1	8.3	9.2	5.7	7.7	15	9	6	22	7
Printing, publishing	342	7.3	8.0	4.5	4.7	7.4	11	7	4	19	6
Industrial chemicals	351	9.8[d]	9.2[d]	10.0[d]	10.5	14.4	14	9	5	14	7
Other chemical products	352	...	...	...	7.0	11.5	...	...	...	11	7
Petroleum refineries	353	7.5[e]	...	11.3[e]	8.2	12.8	3	...	3	8	5

Miscellaneous products of petroleum and coal	354	...	...	...	3.2	4.5	...	...	...	8	6
Rubber products	355	8.1	8.3	8.6	6.3	9.8	14	9	5	19	5
Plastic products	356	...	...	...	14.5	...	...	...	...	9	...
Pottery, china and earthenware	361	8.2	5.1	6.6[f]	3.5	7.8	4	2	7	11	5
Glass and glass products	362	7.6	5.4	...	6.0	10.3	5	3	...	13	5
Other non-metallic mineral products	369	7.0	6.0	...	4.7	8.9	6	4	...	12	7
Iron and steel basic industries	371	9.6	9.4	...	5.5	7.7	5	4	...	15	6
Non-ferrous metal basic industries	372	...	...	...	5.6	8.7	...	...	...	16	6
Metal products, except machinery, etc.	381	10.0	9.8	9.0	6.1	10.0	10	5	5	20	7
Machinery, except electrical	382	10.0	3.7	12.8	7.0	11.4	8	3	5	19	7
Electrical machinery, apparatus etc.	383	11.4	7.5	16.6	7.8	12.1	9	4	5	21	7
Transport equipment	384	7.7	7.9	4.0	7.3	9.7	10	4	6	19	6
Professional, photographic goods etc.	385	...	...	...	6.6	11.1	...	...	...	11	4
Other manufacturing industries	390	...	...	...	5.4	10.2	...	...	...	8	6

Sources: Based on *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4); and basic data of 1963 industrial production prepared by the United Nations Statistical Office.

Note: Growth trends are calculated by the regression analysis, using the formula $x(t) = x(0)(1+r)^t$ where t indicates time, r is growth rate and x is index number. The time period of observation is from 1960 to 1968.

[a] Including tobacco.

[b] Including foot-wear.

[c] Including furniture and fixtures, except metal.

[d] Including other chemical products.

[e] Including miscellaneous products of petroleum and coal.

[f] Including glass and glass products, and other non-metallic mineral products.

separately. For the developing countries, statistical data for some manufacturing branches were not available separately, but were combined with those for other branches. Although the number of countries is not large, as mentioned above, this table gives a basic idea of the growth of industrial branches in each economic grouping and the two developing regions over the period 1960–1968.

The ISIC industry group 31 consists of three branches: food products (ISIC 311 and 312), beverages (ISIC 313) and tobacco (ISIC 314). Although growth of this industry as a whole has lagged behind, the beverage branch attained a relatively high average annual growth rate in all three economic groupings over the period, namely, 6.8 per cent in the developing countries, 5.4 per cent in the developed market economies and 8.8 per cent in the centrally planned economies. The share of this branch is too small, however, to affect the growth rate of the entire industry.

Among the branches within ISIC industry group 32, wearing apparel except foot-wear (ISIC 322) registered the highest growth trend in all economic groupings. The increase in production was especially high in Asia, where wearing apparel combined with foot-wear (ISIC 324) achieved an annual growth rate of 10.5 per cent. This branch was responsible for a remarkably high expansion of the ISIC 322 - 324 industry group in Asia, as mentioned in the preceding chapter, because of its relatively large share in the group. By contrast, the leather and fur products branch (ISIC 323) lagged behind in all economic groupings.

Within the wood products and furniture industry (ISIC 33), the furniture and fixtures branch (ISIC 332) expanded remarkably over the period under review in the three economic groupings. The growth trend recorded was 8.4 per cent per annum in the developing countries, 5.8 per cent in the developed market economies and 8.6 per cent in the centrally planned economies. In Latin America, this branch attained a high growth rate of 12.5 per cent annually and in Asia, although the figure was combined with that for wood products (ISIC 331), it recorded a strikingly high increase of 15.4 per cent per annum.

In the paper and printing industry (ISIC 34), the paper branch (ISIC 341) and the printing branch (ISIC 342) registered a nearly similar growth, except for Asia where the paper branch recorded an annual increase that was twice as large as that for printing.

The ISIC industry group 35 includes six branches: industrial chemicals (ISIC 351), other chemical products (ISIC 352), petroleum refineries (ISIC 353), miscellaneous products of petroleum and coal (ISIC 354), rubber products (ISIC 355) and plastic products (ISIC 356). All branches except miscellaneous products of petroleum and coal achieved remarkable progress. Industrial chemicals was a leading branch in terms of its growth rate in the developed market and the centrally planned economies. The highest growth rate, however, was recorded by plastic in the developed market economies. Although data are not available for this branch in the developing countries, because plastic products are included in most countries in the miscellaneous manufacturing sector, there is evidence that it was also a fast-growing branch in these countries. A separate figure is not available for each branch of group 35 in the developing countries, since data for some branches are combined. Some basic data, however, were accessible. The industrial chemicals branch, combined with other chemicals, attained an annual increase of 9.8 per cent in the developing countries as a whole, and growth rates of 9.2 per cent and 10 per cent in Latin America and Asia respectively. Petroleum refineries, together with miscellaneous products of petroleum and coal, also recorded a high annual growth

rate of 11.3 per cent in Asia, and rubber products registered a rate of more than 8 per cent. These growth rates generally were similar to those in the developed market economies.

In the non-metallic mineral products industry (ISIC 36), which consists of three branches, an almost uniform growth rate of about 8 per cent per annum was recorded for the three branches in the developing countries. In the developed countries, glass products showed the highest rate of growth among the branches of this industry.

In the basic metals industry (ISIC 37), iron and steel (ISIC 371) and non-ferrous metals (ISIC 372) achieved almost the same annual growth rates of about 6 per cent in the developed market and about 8 per cent in the centrally planned economies. In the developing countries, statistical data were available only for iron and steel in Latin America where this branch recorded the relatively high growth rate of 9.4 per cent per annum.

The metal products and machinery industry (ISIC 38), which is one of the largest in the manufacturing sector, comprises five branches: metal products (ISIC 381), non-electrical machinery (ISIC 382), electrical machinery (ISIC 383), transport equipment (ISIC 384) and professional and photographic goods (ISIC 385). All branches attained growth rates of 6 to 8 per cent per annum in the developed market economies, and of 10 to 12 per cent in the centrally planned economies. In the developing countries, metal products, non-electrical machinery and electrical machinery recorded remarkably high growth rates of 10 to 11 per cent annually, while transport equipment, by comparison, lagged behind.

The above findings could be summarized as follows. As stated at the beginning of this chapter, it is observed that nearly all branches of heavy industry tend to show almost uniform growth rates. This would be due partly to the fact that each branch is more or less intimately related to the other branches through inter-industry transactions. By contrast, in light industry, where inter-industry relationships within the manufacturing sector are less strong, growth rates differ widely from branch to branch, and the result is non-uniform growth. Among the branches of light industry, beverages, wearing apparel, furniture and fixtures and rubber products recorded relatively high growth rates, whereas food products, textiles, leather products and wood products, by comparison, lagged behind. This tendency was evident in the three economic groupings.

Structural change at the branch level of the manufacturing sector in selected developing countries

The preceding regional analysis reveals that a somewhat uniform pattern of industrial growth exists regardless of the economic system and stage of development, in the sense that high-growth or low-growth branches nearly coincide among economic groupings and regions. The analysis, however, fails to throw light on growth patterns that have emerged in economies of different sizes, since a regional aggregation hides structural differences between large and small countries. The main purpose of the present section is to examine these differences for selected developing countries.

Table 56 indicates the percentage share of output at the branch level (ISIC three-digit level) of the manufacturing sector for selected Latin American countries

TABLE 56. DISTRIBUTION OF OUTPUT AT THE BRANCH LEVEL OF THE MANUFACTURING

(Percentage

Branch of industry	ISIC	Brazil		Chile		Colombia	
		1960	1968	1960	1968	1960	1968
Food products	311 - 312	17.3	14.4	17.1	16.0	14.4	17.5
Beverages	313	3.0	2.9	4.4	4.2	14.8	13.7
Tobacco	314	1.4	1.4	0.8	0.7	4.3	3.6
Textiles	321	12.1	8.5	11.6	11.6	14.7	12.5
Wearing apparel, except foot-wear	322	3.5	3.2	2.3	1.9	6.0	7.3
Leather and leather and fur products	323	1.0	0.8	1.2	0.9	1.1	1.1
Foot-wear	324	[a]	[a]	2.0	1.5	[a]	[a]
Wood products, except furniture	331	3.5	1.7	2.3	2.2	2.8	1.7
Furniture and fixtures, except metal	332	...	...	0.7	0.6		
Paper and paper products	341	2.6	3.3	3.7	4.3	2.3	3.0
Printing, publishing	342	2.3	2.9	4.0	3.4	2.0	2.4
Industrial chemicals	351	7.7	11.0	2.6	1.4	9.9	9.7
Other chemical products	352			6.4	4.4		
Petroleum refineries	353	...	...	2.2	3.2	2.9	3.1
Miscellaneous products of petroleum and coal	354	...	...				
Rubber products	355	1.8	2.2	2.2	2.5	3.4	2.6
Plastic products	356	...	...	...	...	...	...
Pottery, china and earthenware	361	5.7	5.6	0.5	0.5	6.0	5.5
Glass and glass products	362			0.9	0.7		
Other non-metallic mineral products	369			2.9	2.8		
Iron and steel basic industries	371	12.4	12.1	5.3	5.4	2.6	2.0
Non-ferrous metal basic industries	372			11.3	17.3		
Metal products, except machinery, etc.	381	3.2	2.6	3.9	5.0	10.0	11.5
Machinery, except electrical	382	5.3	7.3	3.1	2.3		
Electrical machinery, apparatus etc.	383	9.3	11.9	2.8	3.5		
Transport equipment	384	...	...	3.7	1.9	...	...
Professional, photographic goods etc.	385	...	...	2.2	1.9		
Other manufacturing industries	390	7.9	8.1	...	...	2.8	2.8
Unclassifiables							
Total manufacturing	3	100.0	100.0	100.0	100.0	100.0	100.0

Source: Based on *The Growth of World Industry, 1970 Edition*, vol. I (United Nations

[a] Included in wearing apparel (ISIC 322).

in 1960 and 1968. On the basis of this table, certain observations may be made concerning an international comparison of output structures and a general pattern of structural change. First, there are obviously wide variations in the output share of each branch from country to country. These variations are caused not only by the difference in *per capita* income level but also by the difference in size of the countries concerned, although size appears to be the more influential factor affecting the industrial structure of an economy. In such countries as Brazil, Chile, Colombia, Mexico and Peru, which are relatively large from the viewpoint of population or gross

SECTOR IN SELECTED DEVELOPING COUNTRIES OF LATIN AMERICA, 1960 AND 1968

Dominican Republic		*Ecuador*		*El Salvador*		*Honduras*		*Mexico*		*Panama*		*Peru*	
1960	*1968*	*1960*	*1968*	*1960*	*1968*	*1960*	*1968*	*1960*	*1968*	*1960*	*1968*	*1960*	*1968*
78.1	59.7	28.6	29.7	35.5	27.7	29.2	33.3	33.0	30.5	30.9	28.7	30.7	27.9
1.7	4.5	15.3	8.5	4.7	2.4	15.4	10.5			15.7	11.2	6.7	8.7
0.8	1.8	1.4	1.3	2.2	1.5	4.2	2.2	1.7	1.0	4.7	2.9	1.8	1.2
3.3	5.0	12.7	10.5	8.2	18.1	2.6	2.6	11.3	10.2	*a*	*a*	14.0	9.5
1.4	1.0	4.8	4.8	14.4	7.0	16.7	17.3	3.9	3.2	10.0	7.7	1.4	1.8
0.4	0.5	1.0	0.5	1.3	0.6	2.2	2.1	1.0	0.7	0.9	0.4	0.9	0.5
1.0	0.8	*a*	*a*	3.2	6.5	*a*	*a*	...	...	*a*	*a*	1.8	1.8
2.0	2.3	2.1	4.3	0.5	0.6	7.6	5.6	2.4	1.5	3.0	2.0	1.9	2.2
0.3	0.8	2.4	1.6	2.0	6.8	1.5	1.3	...	...	4.9	6.1		
0.8	2.8	0.1	1.1	8.6	1.0	0.8	0.9	2.5	2.6	1.5	4.1	2.6	2.9
1.2	2.3	4.5	3.3	...	...	1.7	4.0	2.4	2.7	...	...	2.5	3.4
1.9	2.5	4.0	6.4	2.7	10.0	5.0	4.2	8.8	11.4	3.8	4.0	1.2	1.8
1.6	3.7			1.5	3.5							3.3	5.5
...	...	12.1	10.4	...	...	...	...	6.7	6.3	0.0	6.0	2.6	2.5
...	...			...	...	...	...						
0.7	2.2	0.6	2.3	0.9	0.8	1.1	1.0	1.9	2.3	0.6	0.3	1.2	1.0
...	...	...	...	...	...	...	...	...	..	...	...	...	...
...	...			...	...							0.1	0.1
0.7	1.7	5.9	6.5	...	...	6.8	8.9	4.0	4.1	10.9	9.7	0.8	1.0
2.2	4.5			4.0	2.8							3.2	3.1
0.1	0.1	...	...	...	...	...	...	4.3	5.1	0.0	0.3	16.0	10.9
...	...	...	...	...	...	...	...	...	...	...	...		
0.9	0.7	2.6	4.0	1.8	1.5	3.2	3.5	3.6	4.0	...	...		
...	...	...	...	...	...	...	...	1.3	1.6	...	...	6.4	11.6
0.1	1.4	0.2	0.5	...	...	0.3	0.4	...	...	...	...		
0.6	1.4	...	...	...	...	...	...	3.1	4.6	...	...		
0.1	0.3	1.4	4.0	...	...	0.8	1.3	1.6	1.6	1.0	1.7	1.1	2.6
...	...	0.4	0.4	8.7	9.3	1.0	1.0	6.6	6.7	12.1	15.0	...	...
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Publication, Sales No. 72.XVII.4).

domestic product,[12] the share of heavy industry of total manufacturing output is comparatively large, ranging from 30 to 60 per cent. By contrast, in small countries such as the Dominican Republic and Honduras, light industry has a share of more than 80 per cent. As mentioned at the beginning of this chapter, one probable reason

[12] In 1968, these countries had a population of more than 9 million and a level of GDP of nearly $4 billion or more. On the other hand, in small countries such as the Dominican Republic, Honduras and Panama, the population was less than 4 million and GDP was less than $1.2 billion in that year.

TABLE 57. DISTRIBUTION OF OUTPUT AT THE BRANCH LEVEL OF THE MANUFACTURING

(Percentage

Branch of industry	*ISIC*	*Cyprus*		*Egypt*		*India*	
		1962	*1969*	*1960*	*1968*	*1960*	*1968*
Food products	311–312	15.4	13.8	17.5	12.8	10.4	7.3
Beverages	313	20.7	16.1	2.1	1.9	5.1	5.3
Tobacco	314	3.1	2.1	6.3	5.2		
Textiles	321	2.2	3.0	33.8	21.7	25.7	18.8
Wearing apparel, except foot-wear	322	8.7	9.5	2.2	2.7	7.4	9.3
Leather and leather and fur products	323	0.6	0.6	0.8	0.9	0.5	0.3
Foot-wear	324	6.1	5.7	*a*	*a*	*a*	*a*
Wood products, except furniture	331	2.4	2.2	0.1	0.4	...	7.1
Furniture and fixtures, except metal	332	5.3	5.0	4.8	2.5	4.7	
Paper and paper products	341	0.2	0.3	1.5	4.5	1.4	1.7
Printing, publishing	342	3.7	3.6	1.2	1.4		
Industrial chemicals	351	0.3	0.4	6.8	11.3	6.1	7.7
Other chemical products	352	2.5	2.9				
Petroleum refineries	353	...	...				
Miscellaneous products of petroleum and coal	354	..	...	6.2	4.1	1.1	1.8
Rubber products	355	0.8	0.6	1.4	1.1	1.4	1.8
Plastic products	356	0.2	1.1	...	...	...	..
Pottery, china and earthenware	361	0.3	0.2				
Glass and glass products	362	...	...	1.9	2.2	6.2	6.2
Other non-metallic mineral products	369	118	174				
Iron and steel basic industries	371	...	...	3.2	3.4	5.8	7.2
Non-ferrous metal basic industries	372	...	...				
Metal products, except machinery, etc.	381	5.0	4.8	3.6	5.7	6.4	7.5
Machinery, except electrical	382	2.2	2.4	1.0	2.0	2.1	4.5
Electrical machinery, apparatus etc.	383	0.5	0.7	2.2	6.0	2.1	3.8
Transport equipment	384	7.0	5.5	1.4	2.5	4.4	4.1
Professional, photographic goods etc.	385	0.1	0.0	2.1	7.9	6.9	3.5
Other manufacturing industries	390	1.0	2.1				
Unclassifiables		...	...	...	...	2.3	2.3
Total manufacturing	3	100.0	100.0	100.0	100.0	100.0	100.0

Source: Based on *The Growth of World Industry, 1970 Edition*, vol. I (United Nations

[a] Included in wearing apparel (ISIC 322).

for this fact is that most of the establishments in heavy industry tend generally to require a large market, owing to economies of scale, and it is much easier to establish this market domestically through a policy of import substitution than internationally by measures to promote exports.

Secondly, the share of heavy industry increased in all Latin American countries shown in table 56, but the amount of its share varied from country to country. Generally, the increase was greater in larger countries, whereas proportionate shares of light and heavy industries remained almost unchanged in most of the smaller

SECTOR IN SELECTED DEVELOPING COUNTRIES OF ASIA AND AFRICA

Iran		*Philippines*		*Republic of Korea*		*Southern Rhodesia*		*Sri Lanka*		*Syrian Arab Republic*		*Turkey*	
1962	*1968*	*1960*	*1968*	*1960*	*1968*	*1960*	*1968*	*1960*	*1966*	*1962*	*1968*	*1960*	*1966*
16.4	13.4	29.2	28.4	20.1	12.3	12.1	13.0	24.2	17.9	12.4	8.7	25.8	15.3
0.9	0.7	6.3	8.6	7.6	4.8	12.6	10.6			1.3	0.8	3.1	2.4
...	...	4.6	5.2	4.2	3.0			13.5	9.7	6.6	3.8	5.3	4.0
22.7	15.5	7.0	5.4	23.4	25.1	7.3	9.3	10.4	10.0	22.5	30.9	...	...
2.9	5.0	3.0	1.8	4.8	3.7	6.0	6.8	4.4	5.5			...	...
1.7	1.8	0.4	0.2	1.4	0.6	...	...	0.3	0.4	...	...	...	...
a	*a*	1.0	0.6	*a*	*a*	*a*	*a*	*a*	*a*	...	...	...	...
...	...	4.7	6.2	4.6	6.3	3.7	4.7	1.4	0.9	...	...	...	...
1.5	1.9	0.7	0.7			3.0	2.7	10.1	10.8	...	...	...	...
...	...	1.9	1.6	2.5	2.9	...	...	1.1	1.7	0.7	0.5	1.9	1.9
...	...	5.5	2.0	4.6	3.8			2.7	2.0	...	...	...	...
3.2	3.9	7.5	6.9	5.8	11.2			12.3	13.2	2.1	1.0	...	...
												...	...
...	...							...	...	...	...	...	...
		3.6	8.5	1.7	3.8	21.2	11.6						
...	...							...	...	...	...	...	...
0.6	0.6	3.7	3.7	2.6	1.4	...	...	3.5	6.4	0.5	0.3	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
		0.0	0.0										
6.1	5.9	1.3	1.6	4.1	4.5	7.1	5.7	7.1	6.1	5.4	4.5	3.1	4.8
		2.9	3.6										
...	...	...	...	4.4	4.4			0.1	0.1	...	...	5.6	9.4
...	...	...	...							...	...		
5.5	5.8	3.1	3.9	1.3	1.4	16.2	23.5	3.1	7.3	...	...	...	...
0.8	0.3	2.1	3.4	3.7	3.5			...	...	...	...	...	...
0.7	1.9	1.7	2.4	0.8	1.7			...	...	...	...	...	...
1.7	4.8	1.9	3.4	1.3	4.1	5.0	5.7	...	...	...	...	...	...
...	...	1.5	0.5	1.0	1.2	0.9	0.7	0.3	2.9	...	...	...	...
0.8	1.7									...	...	...	...
34.6	36.7	1.4	1.5	0.3	0.4	5.0	5.6	5.6	5.1	48.4	49.5	55.1	62.3
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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countries. This fact is related to the argument that larger countries are in a more favourable position to take vigorous policy measures for industrialization, centering on the heavy manufacturing sector.

It is interesting to make an international comparison, branch by branch, to test this argument. The relative positions of the textile and wearing apparel branches are opposite. In relatively large countries such as Brazil, Chile, Colombia, Ecuador and Mexico, in 1960 and 1968, textiles had a greater share, whereas in smaller countries such as El Salvador, Honduras and Panama, wearing apparel had a greater share. This

may reflect the fact that spinning and weaving processes, which are major activities in the textile branch, are usually more subject to economies of scale than the production processes of a more or less handicraft nature used in the manufacture of wearing apparel.

The same reasoning is applicable in the branches of heavy manufacturing, where economies of scale appear more appropriate in most establishments. The industrial chemicals branch together with other chemicals had a share of 10 or more per cent in Brazil, Colombia and Mexico, whereas their share of total manufacturing output was only between 4 and 6 per cent in the Dominican Republic, Honduras and Panama. In the basic metals branch combined with metal products, this tendency was more evident. These two branches had shares ranging from 9 to 28 per cent in Brazil, Chile and Mexico, but in smaller countries their shares were negligible. The same observation applies for branches of the machinery and transport equipment industry.

Table 57 gives the same kind of information for a number of developing countries in Africa and Asia, for which statistical data are available. The influence of the size of an economy on its industrial structure is not as clear as it is in the Latin American countries because the statistical data are incomplete; data on many industries are missing for some countries. However, the two observations made above generally apply to these countries. First, in all countries except Southern Rhodesia, the share of heavy industry increased. Secondly, textiles and some of the branches of heavy manufacturing tended to have a large share in the relatively large countries.

Growth and size elasticities of manufacturing output

The preceding statistical analysis of growth trends and the relative shares of the manufacturing branches necessitates an investigation of the causes of differences in sectoral growth and in industrial structure among countries. In this section the two major factors, namely, the level of *per capita* income and the size of an economy, are examined. It is difficult to select a variable for the size of an economy; population is used here as a surrogate. The effects of changes in *per capita* income level and the size of population on the change in value added are defined as growth and size elasticities respectively.

Table 58 shows the growth and size elasticities of manufacturing output (value added), calculated by the multiple regression method at the ISIC two- and three-digit levels, for the developing countries and the developed market economies.[13] The statistical data are derived from the world-wide industrial census in 1963, which is the most recent census year; they include 65 developing countries and 26 developed market economies. Both elasticities vary from industry to industry and between the two economic groupings. The variation between the economic groupings could reflect the difference in their stages of development.

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[13] The formula $X = cY^a P^b$ is used, where X is output (value added), Y is *per capita* GDP and P is population, and c, a and b are coefficients to be estimated by the multiple regression method after converting the above formula into logarithmic form

$$\log X = \log c + a \log Y + b \log P.$$

The coefficients a and b are the growth and size elasticities respectively, since the equation

$$\frac{dX}{X} = a\frac{dY}{Y} + b\frac{dP}{P}$$

is obtained from the logarithmic form by the calculus of infinitesimals.

It is interesting to note that the manufacturing sector as a whole had a size elasticity of nearly unity in both economic groupings. This means that the size of population works as a proportional factor to manufacturing activity as a whole. In other words, the level of *per capita* output in the entire manufacturing sector is not affected by the size of population, but only by the level of *per capita* income. There is no appreciable size effect on manufacturing production as a whole.

On the other hand, growth elasticity for the entire manufacturing sector was much greater than size elasticity, and the level of *per capita* income exerted an obvious effect on manufacturing activities. In the developing countries, as *per capita* GDP increased by 1 per cent, manufacturing output increased by as much as 1.4 per cent. In the developed market economies, a 1 per cent increase in *per capita* GDP is associated with a 1.2 per cent increase in manufacturing output.

It is useful, at the same time, to examine carefully the variations in both growth and size elasticities among industries as well as between the two economic groupings. Such variations indicate which industries are leading or lagging behind in the process of economic growth, as well as which are sensitive or not to the size of population.

The food, beverages and tobacco industry (ISIC 31) as a whole had a size elasticity of less than unity, which means that the output of this industry is not likely to increase as fast as population growth. The growth elasticity for this industry tended to decrease gradually to below unity as the level of *per capita* income increased, as is evident by comparing the growth elasticity for food, beverages and tobacco in the developing countries with that in the developed market economies. The beverage branch (ISIC 313) had the highest growth elasticity among the branches of this industry in both economic groupings. This is the main reason for its higher growth rate, which was mentioned earlier. In the developing countries, the food products branch (ISIC 311 and 312) also showed the high growth elasticity of 1.2.

The textile branch (ISIC 321) had a high size elasticity (among the highest shown in table 58) in both the developing countries and the developed market economies, namely, 1.4 and 1.1 respectively. This means that this branch is more than usually sensitive to the size of population. The appearance of various artificial fibres may have strengthened this tendency. On the other hand, the growth elasticity for textiles was very low, even in the developing countries, and it declined sharply as the level of *per capita* income increased. This branch has lagged behind because of its low growth elasticity.[14]

In the wearing apparel, leather and leather products and foot-wear branches (ISIC 322, 323 and 324), the size elasticity was nearly unity in the developing countries and in the developed market economies, which means that there was almost no effect of size on this industry group. The growth elasticity, however, was as high as 1.5 in the developing countries, which explains the rapid expansion of this group. In the developing countries, the wearing apparel branch (ISIC 322) had the highest growth elasticity, 1.6, followed by the leather and leather products branch (ISIC 323), 1.4, and the foot-wear branch (ISIC 324), 1.2.

The wood products and furniture industry group (ISIC 33) had a size elasticity of less than unity in both economic groupings. This means that output is not likely to grow as fast as population. In the developing countries, however, the growth elasticity was 1.3, a relatively high figure among light manufacturing industries. This

[14] See table 47.

TABLE 58. GROWTH AND SIZE ELASTICITIES OF OUTPUT[a] BY MAJOR GROUP AND BRANCH MARKET

Branch of industry	ISIC	Developing countries		
		Number of countries	Growth elasticity	Size elasticity
Food products	311–312	65	1.2268	0.9363
Beverages	313	65	1.3707	0.7959
Tobacco	314	63	0.9771	0.9997
Textiles	321	60	1.1018	1.4494
Wearing apparel, except foot-wear	322	48	1.6525	0.9541
Leather and leather and fur products	323	53	1.3584	1.0155
Foot-wear	324	47	1.2496	0.8342
Wood products, except furniture	331	60	1.0960	0.9704
Furniture and fixtures, except metal	332	63	1.2365	0.8867
Paper and paper products	341	51	2.1114	1.4400
Printing, publishing	342	64	1.5491	1.0188
Industrial chemicals	351	37	1.5679	1.2183
Other chemical products	352	42	1.7591	1.3541
Petroleum refineries	353	17	1.5441	0.6244
Miscellaneous products of petroleum and coal	354	7	0.3665	0.8796
Rubber products	355	55	1.8162	1.3531
Plastic products	356	10	2.0883	0.8618
Pottery, china and earthenware	361	19	1.4776	1.3022
Glass and glass products	362	28	1.6091	1.3293
Other non-metallic mineral products	369	38	1.5062	1.0492
Iron and steel basic industries	371	25	2.1995	1.5755
Non-ferrous metal basic industries	372	22	1.3880	0.6643
Metal products, except machinery, etc.	381	61	1.6818	1.2261
Machinery, except electrical	382	52	1.9775	1.2341
Electrical machinery, apparatus etc.	383	55	2.2972	1.4138
Transport equipment	384	49	1.7152	1.2470
Professional, photographic goods etc.	385	18	1.8258	1.0022
Other manufacturing industries	390	39	1.6997	1.2339
Total manufacturing	3	65	1.4471	1.0757

Sources: Based on *Yearbook of National Accounts Statistics, 1970*, vols. I and II (United Nations publication, Sales No. 70.XVII.1); and basic data of 1963 industrial production prepared by the United Nations Statistical Office.

[a] For the method of calculation, see foot-note 13, page 140.

I MANUFACTURING INDUSTRY IN THE DEVELOPING COUNTRIES AND THE DEVELOPED CONOMIES, 1963

Developed market economies			*Developing countries*			*Developed market economies*		
Number of countries	*Growth elasticity*	*Size elasticity*	*Number of countries*	*Growth elasticity*	*Size elasticity*	*Number of countries*	*Growth elasticity*	*Size elasticity*
26	0.9447	0.9155						
26	1.0490	0.9588	65	1.1889	0.9320	26	0.9393	0.9403
25	0.7810	1.0479						
26	0.5793	1.1397	60	1.1018	1.4494	26	0.5793	1.1397
21	1.1850	0.8933						
26	0.8300	1.0733	65	1.4925	1.0361	26	0.9218	0.9664
21	0.8469	0.8372						
25	1.1017	0.8864	64	1.2693	0.9545	26	1.0364	0.8164
25	1.1727	0.9198						
25	1.4883	1.1114	64	1.7627	1.1654	26	1.4726	1.0362
25	1.4953	0.9930						
17	1.4079	1.3187						
16	1.0705	1.1157						
15	0.6726	11.4246						
15	0.9628	0.6624	64	2.1001	1.3514	26	1.1548	1.2061
25	1.3543	1.0039						
16	1.5003	1.0373						
18	0.8720	0.9135						
19	1.1233	1.1614	63	1.5100	1.1614	25	0.8600	1.0201
19	1.1504	0.9916						
18	1.4015	1.3069	44	1.6160	1.3880	25	1.3186	1.0750
18	1.4741	1.1679						
26	1.0499	1.0233						
26	1.9178	1.2671						
26	1.5562	1.2898	63	1.9535	1.3047	26	1.4550	1.1660
26	1.4949	1.1576						
18	1.7425	1.5563						
19	1.2039	0.9342	39	1.6997	1.2339	19	1.2039	0.9342
26	1.1824	0.1179	65	1.4471	1.0757	26	1.1824	1.0179

ation, Sales No. 72.XVII.3); *Demographic Yearbook, 1969* (United Nations publication, Sales No.

accounts for its comparatively high growth rate in the developing countries; the growth rate was especially high for the furniture and fixtures branch (ISIC 332), where the growth elasticity was 1.2.

In the paper and printing industry (ISIC 34), although the size elasticity was not much larger than unity, the group registered a very high growth elasticity, namely, 1.8 in the developing countries and 1.5 in the developed market economies. Both the paper and the printing branches had the same levels of growth and size elasticities in the developed market economies. On the other hand, in the developing countries, the paper branch had growth and size elasticities of 2.1 and 1.4 respectively, which explains the rapid progress in this branch, which was mentioned earlier.

The chemicals industry group (ISIC 35) had one of the highest levels of size elasticity, or 1.4 for the developing countries and 1.2 for the developed market economies, reflecting the effect of the size of population on the output of that group. The figure was especially high for the industrial chemicals branch (ISIC 351) in both economic groupings, for the other chemical products branch (ISIC 352) and for the rubber products branch (ISIC 355) in the developing countries, and for the petroleum refineries branch (ISIC 353) in the developed market economies. The chemicals industry also had a high growth elasticity, of 2.1, in the developing countries. The growth elasticity at the branch level was more than 1.5 for all branches in the developing countries, except for miscellaneous products of petroleum and coal. In the developed market economies, industrial chemicals, rubber products and plastic products had high growth elasticities, that is, 1.4 or over.

The size of population did not have much effect on the non-metallic mineral products industry group (ISIC 36), since the size elasticity exceeded unity only slightly in both economic groupings. On the other hand, the growth elasticity of that group was as high as 1.5 in the developing countries, with nearly the same value for the three component branches. The growth elasticity, however, tended to decline sharply as the level of *per capita* income increased, as is evident for the corresponding elasticities for the developed market economies.

In the basic metals industry group (ISIC 37), although growth elasticity in the developed market economies was very high (1.3), the size of population did not affect the level of *per capita* output, since the size elasticity was 1.1. By contrast, in the developing countries, both the level of *per capita* income and the size of population exerted a strong effect on output. This was especially the case for the iron and steel branch (ISIC 371), which had a growth elasticity of as high as 2.2 and a size elasticity of 1.6 in these countries.

The same tendency applied to the metal products and machinery industry group (ISIC 38), except that the size elasticity (1.2) was very high even in the developed market economies. The growth elasticity was one of the highest among the industry groups, namely, 2.0 for the developing countries and 1.5 for the developed market economies. At the ISIC three-digit level, size elasticity was especially high in the developing countries for the electrical machinery branch (ISIC 383), followed by transport equipment (ISIC 384), non-electrical machinery (ISIC 382) and metal products (ISIC 381).

Growth elasticity was not less than 1.7 for all branches in the developing countries. These elasticities, however, tended to decline in the metal products, electrical machinery and transport equipment branches as the level of *per capita* income increased.

IV. ANALYSIS OF SELECTED MAJOR COMMODITIES

The preceding investigation at the branch, or ISIC three-digit, level of the manufacturing sector illustrates in some detail the differences in growth trends among branches of industry as well as the differences in industrial structure between larger and smaller countries. As part of the analysis, the level of *per capita* income and the size of population, which are the two major factors influencing the industrial structure of an economy, were also considered.

Although this kind of examination is certainly useful in gaining an over-all view of the industrial structure and the major factors affecting structural change, the breakdown is not sufficient, in some cases even at the three-digit level, for a satisfactory analysis, especially when the physical quantity of production is concerned. Nearly all industrial development planning is related at the micro-level to specific commodities, measured in physical units: the forecasted quantity of domestic demand, the expected quantity of exports, and the quantity to be produced domestically or to be imported. Any view on these matters requires an analysis at the commodity level. The following three sections are devoted to an investigation of the production of major commodities in the developing countries in the 1960s, and to an analysis of *per capita* apparent consumption of selected major commodities.

Owing to the recent improvement in the availability of statistical data on the production of major commodities for more than 100 countries in the world, an interregional comparison of growth trends in production is possible, and information may also be derived on the share of each region in the production of major commodities. Tables 59 and 61 indicate world production of selected major commodities at the ISIC six-digit level in 1960 and 1969, the percentage share of the developing countries, the developed market and the centrally planned economies in world production for the two years, and the annual growth rate of production between the two years for the world and the three economic groupings.

From these tables a general picture may be obtained of the present status of and changes in the relative position of the developing countries in world production of the major industrial commodities, as well as the differences in their growth rates, which are the basic elements affecting structural change. Some of the main conclusions of this chapter follow.

First, the following commodities of light industry achieved a remarkable annual increase in production in the developing countries: tinned or bottled fruits (10.6 per cent), tinned or bottled vegetables (19.7 per cent), non-cellulosic fibres (27.8 per cent) and foot-wear (10.4 per cent). However, the relative share of the developing countries in world production of these items continued to remain at a very low level. On the other hand, the developing countries had a relatively large share of world production of raw sugar, refined sugar, cigarettes, cotton yarn, cotton woven fabrics

TABLE 59. PRODUCTION OF MAJOR COMMODITIES IN LIGHT INDUSTRY IN TH
PLANNED ECONOMIE

Commodity	ISIC	Year	World production	
			Quantity	Unit
Food products	311–312			
Fruits, tinned or bottled	311303	1960	3,433	thousa tons
		1969	5,063	
Vegetables, tinned or bottled	311308	1960	6,806	
		1969	10,318	
Fish, tinned	311403	1960	1,266	
		1969	1,688	
Flour, wheat	311603	1960	98,690	
		1969	111,094	
Biscuits	311791	1960	2,200	
		1969	3,060	
Raw sugar	311801	1960	45,167	
		1969	57,413	
Refined sugar	311802	1960	34,306	
		1969	45,982	
Sugar confectionary	311993	1960	3,777	
		1969	5,429	
Beverages	313			
Distilled alcoholic beverages	313101	1960	25,272	thousa hecto- litres
		1969	36,977	
Ethyl alcohol for all purposes	313102	1960	63,257	
		1969	83,254	
Beer	313301	1960	404	millio hecto- litres
		1969	591	
Mineral waters and soft drinks	313491	1960	133	
		1969	259	
Tobacco	314			
Cigarettes	314001	1960	1,875	thous millio
		1969	2,559	
Tobacco, manufactured	314003	1960	274	thous tons
		1969	224	

DEVELOPING COUNTRIES, THE DEVELOPED MARKET AND THE CENTRALLY
1960 AND 1968

Percentage share of world production			*Average annual growth rates by percentage*				*Number of countries*		
Developing countries	*Developed market economies*	*Centrally planned economies*	*World*	*Developing countries*	*Developed market economies*	*Centrally planned economies*	*Developing countries*	*Developed market economies*	*Centrally planned economies*
3.2	86.1	10.7							
5.4	86.1	15.5	4.4	10.6	3.4	8.8	15	20	7
0.3	83.9	15.8							
1.1	77.1	21.8	4.7	19.7	3.8	8.6	17	21	7
10.8	66.3	22.9							
10.4	58.8	30.8	3.2	2.8	1.9	6.7	18	18	7
12.7	44.5	42.8							
16.1	40.2	43.7	1.3	4.0	0.2	1.6	41	26	7
17.1	57.3	25.6							
19.7	58.2	22.1	3.7	5.3	3.9	2.1	27	18	5
55.7	33.3	11.0							
53.0	35.7	11.3	2.8	2.2	3.6	3.0	64	22	8
19.8	50.4	29.8							
21.9	46.7	31.4	3.3	4.5	2.4	3.9	24	20	7
5.3	57.3	37.4							
5.3	53.8	40.9	4.1	4.0	3.4	5.1	26	18	7
25.0	67.5	7.5							
21.4	67.8	10.8	4.3	2.5	4.4	8.7	27	19	5
15.1	52.4	32.5							
13.3	48.5	38.2	3.1	1.7	2.2	5.0	20	18	7
10.3	73.5	16.2							
9.9	73.5	16.6	4.3	4.0	4.3	4.6	69	27	8
21.9	59.3	18.8							
16.3	67.2	16.5	7.7	4.3	9.2	6.1	28	20	6
21.1	58.7	20.2							
22.9	57.0	20.1	3.5	4.5	3.2	3.5	68	26	8
21.7	75.0	3.3							
16.1	81.7	2.2	-2.2	-5.4	-1.3	-6.4	34	26	6

TABLE 59

Commodity	ISIC	Year	World production: Quantity	World production: Unit
Textiles	321			
Cotton yarn, pure and mixed	321101–321102	1960	7,482	thousand tons
		1969	8,723	
Flax yarn	321103	1960	459	
		1969	474	
Jute yarn	321104	1960	663	
		1969	634	
Wool yarn, pure and mixed	321106–321107	1960	1,881	
		1969	2,114	
Yarn of man-made staple	321108	1960	710	
		1969	1,444	
Cotton woven fabrics	321109	1960	51,729	million square metres
		1969	55,675	
Woollen woven fabrics	321112	1960	3,123	
		1969	3,391	
Woven fabrics of cellulosic fibres	321114	1960	8,068	
		1969	9,886	
Woven fabrics of non-cellulosic fibres	321115	1960	627	
		1969	3,961	
Knitted fabrics	321301	1960	296	thousand tons
		1969	860	
Foot-wear	324			
Foot-wear, total	324001–324004	1960	2,143	million pairs
		1969	3,353	
Wood products, except furniture				
Sawnwood, coniferous and broad leaved	331101–331102	1960	311	million cubic m
		1969	370	

Source: Based on *The Growth of World Industry, 1969, Edition*, vol. II (United Nations publication

Note: World production here corresponds to the aggregate figure described as "total" in the abov for missing years.

(continued)

Percentage share of world production			*Average annual growth rates by percentage*				*Number of countries*		
Developing countries	*Developed market economies*	*Centrally planned economies*	*World*	*Developing countries*	*Developed market economies*	*Centrally planned economies*	*Developing countries*	*Developed market economies*	*Centrally planned economies*
23.0	54.3	22.7	1.7	5.5	−0.5	2.1	39	23	8
32.1	44.5	23.4							
0.9	34.7	64.4	0.4	−11.4	−4.0	2.3	4	14	7
0.3	23.1	76.6							
6.2	85.9	7.9	−0.5	4.0	−0.9	−0.6	7	16	4
9.2	82.9	7.9							
4.8	69.0	26.2	1.3	7.4	0.2	2.5	18	25	7
8.1	62.8	29.1							
3.4	87.4	9.2	8.2	7.8	8.3	6.9	8	13	2
3.3	88.5	8.2							
42.6	43.1	14.3	0.8	2.7	−2.1	2.5	46	23	8
50.4	33.0	16.6							
4.7	65.4	29.9	0.9	−0.4	0.2	2.6	18	24	8
4.2	61.1	34.7							
17.3	70.9	11.8	2.3	6.2	1.1	2.5	19	20	7
24.2	63.8	12.0							
2.5	92.1	5.4	22.7	27.8	22.4	24.8	6	13	5
3.6	90.2	6.2							
5.4	84.7	9.9	12.6	2.7	13.7	3.5	9	19	8
2.4	93.0	4.6							
6.4	64.5	29.1	5.1	10.4	3.3	7.2	27	21	7
10.0	55.1	34.9							
4.2	55.7	40.1	2.0	5.5	2.6	0.6	22	24	7
5.8	58.7	35.5							

Sales No. 71.XVII.7).
publication. This figure represents the summation of reported production data and also includes estimates

and woven fabrics of cellulosic fibres, but the growth rate of production was very low.

Secondly, in the heavy industry sector, an outstanding annual increase in production in the developing countries was recorded by mechanical wood pulp (13.9 per cent), hydrochloric acid (18.9 per cent), nitrogenous fertilizers (18.9 per cent), cellulosic continuous filaments (23.7 per cent), non-cellulosic staple and tow (26.8 per cent), artificial resins and plastic materials (40.2 per cent), liquified petroleum gas (28 per cent), sheet glass (17.1 per cent), hot-rolled iron strip (15.3 per cent), unwrought aluminium (29.4 per cent), radio sets (20.4 per cent) and passenger cars (17.2 per cent). The share of developing countries in world production was usually small, except for petroleum products. Items with relatively large shares were cellulosic continuous filaments, soap, sheet glass, cement, refined copper, unwrought lead and lead alloys, unwrought tin and tin alloys, radio sets and bicycles.

Thirdly, it is difficult to derive general conclusions from an examination of commodity balances, since such balances are largely affected by such factors as the size of a country, its endowment of natural resources and its international trade policies. However, three observations may be made: first, in the case of resource-based products, there is a tendency for countries to be divided between exporters and importers. Secondly, in the case of bulky products, for which the material inputs are found almost everywhere, or commodities produced by simple technology, there is a tendency towards self-sufficiency. Thirdly, a heavy dependency on imports is observed in the case of commodities whose production requires a relatively sophisticated technology.

Finally, an analysis of *per capita* consumption provides very useful information, since it can give an estimation of the size of the domestic market for specific commodities. The analysis points to four categories of industrial products. The first category comprises commodities that show a very low value of income elasticity at any level of *per capita* income. The second category consists of commodities having a relatively high value of income elasticity at any level of *per capita* income. Soap is a typical example of the former, and artificial resins of the latter. However, a majority of industrial products have a changing income elasticity. The third category includes products with a decreasing income elasticity; nearly all commodities in light industry as well as some in heavy industry belong to this category. The fourth category shows an increasing income elasticity; commodities that are leading products or that are material inputs for producing leading products have this tendency.

Growth in the production of selected major commodities in light industry

Food products (ISIC 311 and 312)

In the case of the food products branch, statistical data are available for eight commodities: tinned or bottled fruits, tinned or bottled vegetables, tinned fish, wheat flour, biscuits, raw sugar, refined sugar and sugar confectionery. The world production of tinned or bottled fruits increased from 3.4 to 5.1 million tons, at an annual rate of 4.4 per cent over the period 1960–1969. In the developing countries, production expanded more rapidly than the world average, namely, at a rate of 10.6 per cent per annum. The share of the developing countries in world production,

however, was still very small, or only 5.4 per cent in 1969. The same tendency applies to tinned or bottled vegetables. The world production of this item was 6.8 million tons in 1960 and 10.3 million tons in 1969; it grew at an average annual rate of 4.7 per cent. The developing countries attained a remarkably higher growth rate in this product, namely, 19.7 per cent per annum. The share of these countries in world production, however, remained at the very low level of 1.1 per cent even in 1969.

In the case of tinned fish, wheat flour, biscuits, raw sugar and refined sugar, the developing countries had relatively larger shares in world production. However, the growth trend of all of these products was very low both for world production and for the production of the developing countries. The world production of tinned fish increased from 1.3 million tons in 1960 to 1.7 million tons in 1969, or at an annual rate of 3.2 per cent. The growth rate in the developing countries was less than this, or 2.8 per cent per annum, with the result that the share of these countries in world production declined slightly, from 10.8 to 10.4 per cent. The world production of wheat flour showed only a slight increase from 98.7 million tons in 1960 to 111.1 million tons in 1969, or an average annual rate of 1.3 per cent. The developing countries achieved an annual growth rate of production of 4 per cent, and their share in world production rose from 12.7 to 16.1 per cent over the period. The world production of biscuits amounted to 3.1 million tons in 1969, which represented an annual growth rate of 3.7 per cent over the period 1960–1969. The production of biscuits in the developing countries expanded at a higher annual rate, or 5.3 per cent, and the share of these countries increased from 17.1 to 19.7 per cent in the period 1960–1969. The production of raw sugar was stationary; the annual rate of increase was only 2.8 per cent for the world and 2.2 per cent for the developing countries. Total production was 57.7 million tons in 1969, of which 53 per cent was produced in the developing countries. The production of refined sugar expanded at a higher rate both in the world and in the developing countries, or 3.3 per cent and 4.5 per cent respectively. Although the developing countries' share increased from 19.8 to 21.9 per cent over the period 1960–1969, it was much less than their share of the production of raw sugar. The production of sugar confectionery increased at annual rates of 4.1 per cent in the world and 4 per cent in the developing countries. The share of the developing countries was stable at the level of 5.3 per cent of world production.

Beverages and tobacco (ISIC 313 and 314)

Statistical data on the production of beverages and tobacco are available for six products: distilled alcoholic beverages, ethyl alcohol for all purposes, beer, mineral water and soft drinks, cigarettes, and manufactured tobacco. The developing countries had relatively large shares in the total world production of these products, ranging from 10 to 25 per cent, but the growth rates for the production of these products in these countries were lower than the corresponding rates in the other economic groupings, except for cigarettes.

The world production of distilled alcoholic beverages increased from 25.3 to 37 million hectolitres over the period 1960–1969, or at an annual growth rate of 4.3 per cent. In the developing countries, production expanded more slowly, at a rate of 2.5 per cent per annum, and as a result, the share of these countries in world production declined from 25 to 21.4 per cent over the period. The production of ethyl alcohol for all purposes was also stagnant during the period, with annual

growth rates of only 3.1 per cent for the world and 1.7 per cent for the developing countries. The world production in 1969 was 83.2 million hectolitres, of which 13.3 per cent was produced in the developing countries. The world production of beer increased from 401 to 591 million hectolitres over the period 1960–1969, or at a rate of 4.3 per cent per annum. Production in the developing countries expanded at nearly the same pace, at a rate of 4 per cent per annum, and their share of production remained almost unchanged at the level of 10 per cent. Mineral water and soft drinks registered the highest growth rate among beverages, especially in the developed market economies. World production increased from 133 to 259 million hectolitres over the period 1960–1969 or at an annual rate of 7.7 per cent. Production in the developing countries, however, did not expand as rapidly, but at a rate of only 4.3 per cent per annum; consequently, the share of these countries in world production declined from 21.9 to 16.3 per cent.

The world production of cigarettes increased at the moderate rate of 3.5 per cent per annum, expanding from 1,875 to 2,559 billion units over the period 1960–1969. Production in the developing countries expanded at a slightly higher rate, or 4.5 per cent annually, and the share of these countries grew from 21.1 per cent of world production in 1960 to 22.9 per cent in 1969. In the case of manufactured tobacco, production declined in all three economic groupings. Total production in the world decreased from 274 thousand tons in 1960 to 224 thousand tons in 1969. The decrease was especially large in the developing countries, where production recorded a negative annual rate of −5.4 per cent; the result was a considerable decline in the share of these countries in world production, from 21.7 per cent in 1960 to 16.1 per cent in 1969.

Textiles (ISIC 321)

The textile industry is one of the largest in the light industry sector, and it plays an important role in industrialization, especially in the earlier stages. The following 10 items are selected from a wide variety of products on the basis of the availability of statistical data: pure and mixed cotton yarn, flax yarn, jute yarn, pure and mixed wool yarn, yarn of man-made staple, cotton woven fabrics, woollen woven fabrics, woven fabrics of cellulosic fibres, woven fabrics of non-cellulosic fibres, and knitted fabrics. In general, the developing countries had relatively high shares of world production of cotton yarn, cotton woven fabrics and fabrics of cellulosic fibres over the period 1960–1969. However, the growth rate of world production of these items was very low in this period.

The world production of cotton yarn registered an annual growth rate of only 1.7 per cent and increased from 7.5 to 8.7 million tons over the period 1960–1969. In the developing countries, production increased at a higher rate, or 5.5 per cent per annum, over the same period, with the result that their share of world production rose significantly from 23 to 32.1 per cent. The same pattern is observed for cotton woven fabrics. World production increased only slightly, from 51.7 to 55.7 billion square metres over the period 1960–1969. Although the developing countries attained an annual growth rate of production of only 2.7 per cent, it was significantly higher than that of world production (0.8 per cent), and resulted in an increase in their share of world production from 42.6 to 50.4 per cent.

The world production of wool yarn and woollen woven fabrics was also stationary, with annual growth rates of production of only 1.3 per cent and 0.9 per cent respectively over the period 1960–1969. In the developing countries, the production of wool yarn grew rapidly, at a rate as high as 7.4 per cent annually, with the result that their share in world production increased considerably, from 4.8 to 8.1 per cent over the same period. On the other hand, the production of woollen woven fabrics in these countries declined slightly, recording a negative annual rate of −0.4 per cent. Flax and jute yarns were stationary in all three economic groupings. In particular, the production of flax yarn was much reduced in the developing countries.

At the same time, the world production of woven fabrics of non-cellulosic fibres, knitted fabrics, and yarn of man-made staple expanded at the remarkable rates of 22.7 per cent, 12.6 per cent and 8.2 per cent per annum respectively. In 1969 the world production amounted to 4 billion square metres of woven fabrics of non-cellulosic fibres, 860 thousand tons of knitted fabrics, and 1.4 million tons of yarn of man-made staple. The production of non-cellulosic fibres in the developing countries grew at an outstanding average annual rate of 27.8 per cent. However, the share of these countries in world production was still at the very low level of 3.6 per cent in 1969. The production of woven fabrics of cellulosic fibres in these countries increased at a considerably higher rate (6.2 per cent per annum) than the rates for the world and the other two economic groupings; and as a result, the share of the developing countries in total world production rose remarkably from 17.3 to 24.2 per cent over the period 1960–1969.

Foot-wear and wood products (ISIC 324 and 331)

Statistical data are available for only two items; all kinds of foot-wear, and coniferous and broad-leaved sawnwood. The production of both items increased more rapidly in the developing countries than in the other economic groupings. The world production of foot-wear increased from 2,143 million pairs in 1960 to 3,353 million pairs in 1969, or at an annual growth rate of 5.1 per cent. The production of these commodities in the developing countries grew at the rapid rate of 10.4 per cent per annum, which resulted in a substantial rise in their share, from 6.4 to 10 per cent over the same period. In the case of coniferous and broad-leaved sawnwood, the world production increased by only 2 per cent annually, and production in the developing countries recorded the moderately higher growth rate of 5.5 per cent per annum. World production was 370 million cubic metres in 1969, of which 5.8 per cent was produced in the developing countries.

Table 60 summarizes the above discussion in a concise way. Commodities are classified into three categories: high-growth commodities are those with an annual growth rate of more than 7.8 per cent, or 50 per cent higher than that for the light manufacturing sector in the developing countries (5.2 per cent) over the period 1955–1970; low-growth commodities are those with an annual growth rate of less than 2.6 per cent, or 50 per cent lower than the rate for the light manufacturing sector in these countries; and medium-growth commodities, or those with a growth rate between 2.6 and 7.8 per cent.

TABLE 60. GROWTH IN THE PRODUCTION OF MAJOR COMMODITIES IN LIGHT INDUSTRY IN THE DEVELOPING COUNTRIES AND THE WORLD, AND THE SHARE OF THE DEVELOPING COUNTRIES IN TOTAL WORLD PRODUCTION, 1960-1969

(Percentage)

Commodity	ISIC	Average annual growth rates		Share of developing countries in total world production	
		Developing countries	World	1960	1969
High-growth commodities					
Woven fabrics of non-cellulosic fibres	321115	27.8	22.7	2.5	3.6
Vegetables, tinned or bottled	311308	19.7	4.7	0.3	1.1
Fruits, tinned or bottled	311303	10.6	4.4	3.2	5.4
Foot-wear, total	324001 4	10.4	5.1	6.4	10.0
Yarn of man-made staple	321108	7.8	8.2	3.4	3.3
Medium-growth commodities					
Wool yarn, pure and mixed	321106 7	7.4	1.3	4.8	8.1
Woven fabrics of cellulosic fibres	321114	6.2	2.3	17.3	24.2
Cotton yarn, pure and mixed	321101 2	5.5	1.7	23.0	32.1
Sawnwood, coniferous and broad leaved	331101 2	5.5	2.0	4.2	5.8
Biscuits	311791	5.3	3.7	17.1	19.7
Refined sugar	311802	4.5	3.3	19.8	21.9
Cigarettes	314001	4.5	3.5	21.1	22.9
Mineral water and soft drinks	313491	4.3	7.7	21.9	16.3
Flour, wheat	311603	4.0	1.3	12.7	16.1
Sugar, confectionery	311993	4.0	4.1	5.3	5.3
Beer	313301	4.0	4.3	10.3	9.9
Jute yarn	321104	4.0	0.5	6.2	9.2
Fish, tinned	311403	2.8	3.2	10.8	10.4
Cotton woven fabrics	321109	2.7	0.8	42.6	50.4
Knitted fabrics	321301	2.7	12.6	5.4	2.4
Low-growth commodities					
Distilled alcoholic beverages	313101	2.5	4.3	25.0	21.4
Raw sugar	311801	2.2	2.8	55.7	53.0
Ethyl alcohol for all purposes	313102	1.7	3.1	15.1	13.3
Woollen woven fabrics	321112	0.4	0.9	4.7	4.2
Tobacco, manufactured	314003	-5.4	2.2	21.7	16.1
Flax yarn	321103	-11.4	0.4	0.9	0.3

Source: Based on table 59.

It is evident from this table that most of the high-growth commodities in the developing countries had a relatively higher growth rate than that for total world production, and that their share in world production increased significantly. This is especially the case for the commodities whose shares were very small in 1960. The same phenomenon may be observed, though to a lesser extent, for medium-growth commodities in the developing countries.

By contrast, most of the low-growth commodities in the developing countries already had a large share of world production in 1960; and they tended to have a lower growth rate than that for total world production, with the result that their share in that total decreased.

Growth in the production of selected major commodities in heavy industry

Paper and paper products (ISIC 341)

Five commodities were selected for investigation on the basis of the availability of statistical data: mechanical wood pulp, wood pulp other than mechanical, newsprint, other printing and writing paper, and paper board and other paper. In general, the share of the developing countries in the world production of these products was still small over the period 1960–1969. The growth rates of these five commodities were higher in the developing countries, however, than in the other economic groupings.

The world production of mechanical wood pulp increased at an annual rate of 3.2 per cent, expanding from 17.8 million tons in 1960 to 23.7 million tons in 1969. In the developing countries, production grew far more rapidly, at an annual rate of 13.9 per cent over the same period. However, the share of these countries in world production was still as low as 4 per cent in 1969. The same pattern applies to wood pulp, other than mechanical. World production increased at an annual rate of 6.7 per cent, from 40.5 million tons in 1960 to 72.5 million tons in 1969. Production in the developing countries expanded rapidly, at a rate of 11.5 per cent annually over the same period, but their share of world production was only 1.5 per cent in 1969.

The world production of newsprint paper registered a moderate growth rate, of 4.4 per cent per annum, increasing from 13.6 to 20 million tons over the period 1960–1969. Production in the developing countries increased much more rapidly, at a rate of 8.3 per cent per annum, over the same period. However, their share remained as low as 2.5 per cent in 1969. Other printing and writing paper recorded the highest growth rate in the world among paper products; the annual growth rate for these commodities was 7.8 per cent, and production increased from 14 million tons in 1960 to 27.5 million tons in 1969. Production in the developing countries increased at the slightly higher rate of 8.3 per cent per annum, with the result that their share of world production rose from 7 to 7.3 per cent over the period. World production of paper board in 1960 was 42.8 million tons and in 1969 it was 71.3 million tons, which meant a growth rate of 5.8 per cent per annum. Production in the developing countries had a lower rate of increase, or 4.6 per cent per annum over the same period; the result was that their share in world production declined slightly, from 5.1 to 4.6 per cent.

TABLE 61. PRODUCTION OF MAJOR COMMODITIES IN HEAVY INDUSTRY IN THE ECONOMIES

Branch of industry and commodity	*ISIC*	*Year*	*World production*	
			Quantity	*Unit*
Paper and paper products	341			
Wood pulp, mechanical	341101	1960	17,843	thousand tons
		1969	23,713	
Wood pulp, other than mechanical	341102	1960	40,528	
		1969	72,486	
Newsprint	341106	1960	13,553	
		1969	20,004	
Other printing and writing paper	341107	1960	14,002	
		1969	27,528	
Paperboard and other paper	341108	1960	42,818	
		1969	71,286	
Industrial chemicals	351			
Calcium carbide	351104	1960	6,128	thousand tons
		1969	7,130	
Caustic soda	351107	1960	9,583	
		1969	20,431	
Hydrochloric acid	351112	1960	1,703	
		1969	3,889	
Soda ash	351118	1960	11,447	
		1969	16,836	
Sulphuric acid	351124	1960	48,695	
		1969	82,237	
Nitrogenous fertilizers	351201	1960	10,731	
		1969	28,086	
Cellulosic continuous filaments	351301	1960	1,140	
		1969	1,918	
Cellulosic staple and tow	351302	1960	1,430	
		1969	2,118	
Non-cellulosic continuous fibres	351303	1960	410	
		1969	2,242	
Non-cellulosic staple and tow	351304	1960	302	
		1969	2,070	
Artificial resins, plastic materials	351395	1960	6,563	
		1969	24,921	

DEVELOPING COUNTRIES, THE DEVELOPED MARKET AND THE CENTRALLY PLANNED 960 AND 1969

Percentage share of world production			*Average annual growth rates by percentage*				*Number of countries*		
Developing countries	*Developed market economies*	*Centrally planned economies*	*World*	*Developing countries*	*Developed market economies*	*Centrally planned economies*	*Developing countries*	*Developed market economies*	*Centrally planned economies*
1.6	90.4	8.0							
4.0	87.2	8.8	3.2	13.9	2.8	4.4	10	23	7
1.0	90.1	8.9							
1.5	89.5	9.0	6.7	11.5	6.6	6.7	9	21	7
1.8	93.2	5.0							
2.5	90.6	6.9	4.4	8.3	4.1	8.2	11	24	7
7.0	80.0	13.0							
7.3	81.6	11.1	7.8	8.3	8.0	6.0	20	24	7
5.1	87.7	7.2							
4.6	87.2	8.2	5.8	4.6	5.8	7.4	20	24	7
1.9	74.7	23.4							
4.6	64.6	30.8	1.7	12.0	0.1	4.8	5	14	6
3.9	81.3	14.8							
4.6	80.8	14.6	8.8	10.9	8.7	8.6	21	17	7
3.4	88.8	7.8							
7.2	87.5	5.3	9.6	18.9	9.4	5.1	14	17	6
8.8	67.4	28.8							
6.3	61.1	32.6	4.4	10.5	3.2	5.8	9	16	7
4.3	79.5	16.2							
6.1	74.3	19.6	6.0	10.3	5.2	8.2	27	21	7
4.8	77.4	17.8							
8.6	64.9	26.5	11.3	18.9	9.1	16.3	17	23	7
8.0	76.9	15.1							
2.4	50.5	17.1	6.0	23.7	1.1	7.5	13	19	8
8.9	74.7	21.4							
6.9	70.8	23.3	4.5	9.3	3.8	5.5	11	19	8
1.7	93.5	4.8							
4.9	88.1	7.0	20.8	36.3	20.0	25.8	14	22	8
1.7	93.1	5.2							
2.1	92.1	5.8	23.8	26.8	23.7	25.4	12	21	8
0.2	91.0	8.8							
1.3	88.7	10.0	16.0	40.2	15.7	17.6	7	21	7

TABLE

Branch of industry or commodity	*ISIC*	*Year*	*World production*	
			Quantity	*Unit*
Other chemical products	352			
Soap	352301	1960	5,396	thousand tons
		1969	5,765	
Washing powder and detergents	352302	1960	3,651	
		1969	7,108	
Petroleum refineries	353			
Distillate fuel oils	353003	1960	190	million tons
		1969	359	
Kerosene	353005	1960	43,516	thousand tons
		1969	61,672	
Liquified petroleum gas	353007	1960	11,341	
		1969	34,924	
Naphthas	353010	1962	14,604	
		1969	52,294	
Residual fuel oils	353013	1960	281	million tons
		1969	589	
Motor spirit (including aviation spirit)	353091	1960	247	million tons
		1969	416	
Miscellaneous products of petroleum and coal	354			
Coke-oven coke	354002	1960	253	million tons
		1969	349	
Glass and glass products	362			
Glass, unworked, in rectangles	362003	1960	594	million square metres
		1969	917	
Other non-metallic mineral products	369			
Cement	369201	1960	317	million tons
		1969	540	
Iron and steel basic industries	371			
Pig iron, steel making and foundry	371001–371002	1960	245	million tons
		1969	408	
Crude steel, ingots and for castings	371005–371006	1960	348	million tons
		1969	579	
Hoop and strip, hot rolled	371012	1960	16,328	thousand tons
		1969	29,811	

(continued)

Percentage share of world production			*Average annual growth rates by percentage*				*Number of countries*		
Developing countries	*Developed market economies*	*Centrally planned economies*	*World*	*Developing countries*	*Developed market economies*	*Centrally planned economies*	*Developing countries*	*Developed market economies*	*Centrally planned economies*
21.8	46.5	31.7							
31.7	36.1	32.2	0.7	5.0	−2.1	0.9	41	22	7
4.1	91.2	4.7							
8.6	82.4	9.0	7.7	16.7	6.5	15.8	22	20	6
20.6	76.9	2.5							
16.9	79.3	3.8	7.3	5.0	7.7	12.2	61	24	7
34.5	62.2	3.3							
33.6	64.2	2.2	4.0	3.7	4.3	−0.6	57	23	7
6.8	92.0	1.2							
20.3	78.6	1.1	13.3	28.0	11.3	12.9	47	23	5
25.6	71.5	2.9							
16.1	80.6	3.3	20.0	12.3	22.1	22.0	20	16	2
42.1	55.8	2.1							
31.8	65.1	3.1	8.6	5.3	10.5	13.2	60	24	6
14.0	84.1	1.9							
14.6	83.5	1.9	6.0	6.6	5.9	5.5	60	23	6
3.0	66.8	30.2							
4.5	63.3	32.2	2.3	6.8	1.7	3.0	12	17	7
4.5	53.8	41.7							
12.1	46.1	41.8	4.9	17.1	3.2	5.0	9	8	7
13.5	59.8	26.7							
16.5	57.0	26.5	6.1	8.6	5.5	6.0	65	27	11
2.7	62.1	35.2							
4.5	65.4	30.1	5.8	11.9	6.4	4.0	17	22	8
2.6	67.3	30.1							
4.1	67.5	28.4	5.8	11.5	5.8	5.1	18	23	8
0.2	70.9	28.9							
0.4	71.6	28.0	6.9	15.3	5.8	10.4	4	19	7

TABLE

Branch of industry and commodity	*ISIC*	*Year*	*World production*	
			Quantity	*Unit*
Iron and steel basic industries (continued)				
Plates	371015–371016	1960	33,886	thousa tons
		1969	64,029	
Wire, plain	371030	1960	9,593	
		1969	15,043	
Wire rods	371031	1960	18,650	
		1969	32,237	
Angles, shapes and sections	371098	1960	70,081	
		1969	101,938	
Non-ferrous metal basic industries	372			
Aluminium, unwrought	372001	1960	5,042	thousa tons
		1969	10,901	
Copper, refined, unwrought	372007	1960	5,028	
		1969	7,214	
Lead and lead alloys, unwrought	372013	1960	3,034	
		1969	4,305	
Tin and tin alloys, unwrought	372015	1960	161	
		1969	174	
Zinc and zinc alloys, unwrought	372016	1960	3,308	
		1969	5,356	
Machinery, except electrical	382			
Refrigerators for household use	382902	1960	12,303	thousa
		1969	26,217	
Electrical machinery apparatus	383			
Wireless receivers (radios)	383201	1960	51,554	thousa
		1969	96,822	
Television sets	383202	1960	20,547	thousa
		1969	44,153	
Transport equipment	384			
Passenger cars, produced and assembled	384301–384302	1960	13,327	thousa
		1969	24,046	
Motor coaches, buses and lorries	384303–384304	1960	3,623	thousa
		1969	6,789	
Bicycles	384401	1960	20,048	thousa
		1969	25,006	

Source: Based on *The Growth of World Industry, 1969 Edition*, vol. II (United Nations publicatio

Note: World production here corresponds to the aggregate figure described in "total" in the abo for missing years.

BLE 61 (continued)

Percentage share of world production			Average annual growth rates by percentage				Number of countries		
Developing countries	Developed market economies	Centrally planned economies	World	Developing countries	Developed market economies	Centrally planned economies	Developing countries	Developed market economies	Centrally planned economies
3.2	67.4	29.4							
5.6	64.9	29.5	7.3	14.0	6.9	7.4	5	19	7
3.2	78.8	18.0							
4.0	69.5	26.5	5.1	7.6	3.7	9.8	12	17	5
2.9	72.8	24.3							
4.8	66.7	28.5	6.3	12.6	5.2	8.2	9	20	6
1.3	65.1	33.6							
2.1	58.8	39.1	4.3	9.9	3.1	6.0	9	21	7
1.8	81.3	16.9							
8.3	77.7	14.0	8.9	29.4	8.4	6.7	9	20	7
17.2	66.9	15.9							
19.3	63.2	17.5	4.1	5.5	3.4	5.2	11	19	6
13.7	69.4	16.9							
13.6	68.9	17.5	4.0	3.8	3.9	4.4	19	19	7
53.3	46.3	0.4							
63.2	36.4	0.4	0.9	2.8	−1.8	−0.3	10	15	3
7.2	72.9	19.9							
6.5	74.9	18.6	5.5	4.3	5.8	4.7	9	18	6
5.1	67.9	7.0							
6.6	73.5	19.9	8.8	12.1	6.6	22.2	17	20	7
3.7	83.9	12.4							
10.3	79.3	10.4	7.3	20.4	6.6	5.2	20	22	7
5.4	81.4	13.2							
6.3	74.0	19.7	8.9	10.7	7.7	13.8	16	21	7
1.4	96.6	2.0							
3.1	94.3	2.6	6.8	17.2	6.5	9.6	19	23	7
5.0	82.5	12.5							
5.3	84.4	10.3	7.2	7.9	7.5	5.0	20	22	7
7.4	69.0	23.6							
11.2	64.9	23.9	2.5	7.3	1.8	2.6	13	19	7

Sales No. 71.XVII.7).
publication. This figure represents the summation of reported production data and also includes estimates

Industrial chemicals (ISIC 351)

The industrial chemicals branch contains many heterogeneous products. From these, the following 11 important products were selected on the basis of the availability of statistical data: calcium carbide, caustic soda, hydrochloric acid, soda ash, sulphuric acid, nitrogenous fertilizers, cellulosic continuous filaments, cellulosic staple and tow, non-cellulosic continuous fibres, non-cellulosic staple and tow, and artificial resins and plastic materials. In general, the share of the developing countries in world production of these products was low, less than 10 per cent except for continuous cellulosic filaments. Growth rates for these products in the developing countries in the 1960s, however, was nearly twice as high as the rates for total world production for almost all items.

The world production of calcium carbide increased slightly, at an annual rate of 1.7 per cent, from 6,128 thousand tons in 1960 to 7,130 thousand tons in 1969. In the developing countries, production expanded far more rapidly, at a rate of 12 per cent per annum, so that their share rose from 1.9 to 4.6 per cent over the same period. The total world production of caustic soda amounted to 20,431 thousand tons in 1969, representing an annual increase of 8.8 per cent from the 1960 level of 9,583 thousand tons. The production of this item in the developing countries also increased rapidly, at a rate of 10.9 per cent annually; the share of these countries in world production was 4.6 per cent in 1969.

The world production of hydrochloric acid recorded an annual rate of growth as high as 9.6 per cent. Total production was 3,889 thousand tons in 1969. In the developing countries, production expanded at the significantly high rate of 18.9 per cent per annum, so that the share of these countries rose sharply from 3.4 per cent in 1960 to 7.2 per cent in 1969. The world production of soda ash grew at only a moderate rate, of 4.4 per cent per annum, increasing from 11.4 million tons in 1960 to 16.8 million tons in 1969. Production of this item in the developing countries expanded more rapidly, at a rate of 10.5 per cent annually, so that their share in world production increased from 3.8 to 6.3 per cent over the period. The world production of sulphuric acid amounted to 82.2 million tons in 1969, representing an annual increase of 6 per cent from the 1960 level of 48.7 million tons. In the developing countries, production increased more rapidly, at a rate of 10.3 per cent per annum, and their share of world production rose from 4.3 per cent in 1960 to 6.1 per cent in 1969.

The world production of nitrogenous fertilizers, one of the major items in the industrial chemicals branch, amounted to 28.1 million tons in 1969, of which 2.4 million tons were produced in the developing countries. The annual growth rate was 11.3 per cent for the world and 18.9 per cent for the developing countries over the period 1960–1969. The higher growth rate in the developing countries resulted in a considerable increase in their share of world production, from 4.8 to 8.6 per cent over the period.

The industrial chemicals branch contains such important items as man-made fibres and artificial resins, which have been leading products in this branch. The world production of artificial resins and plastic materials expanded from 6.6 to 24.9 million tons over the period 1960–1969; this meant an annual increase of 16 per cent. In the developing countries, production increased at a considerably faster rate, or 40.2 per cent per annum, over the period; however, the share of these countries was still as low as 1.3 per cent of world production in 1969. The same pattern may

be observed for non-cellulosic continuous fibres and non-cellulosic staple and tow. Over the period 1960–1969, the world production of non-cellulosic continuous fibres increased by 20.8 per cent annually, from 410 to 2,242 thousand tons, and of non-cellulosic staple and tow, by 23.8 per cent annually, from 302 to 2,070 thousand tons. The developing countries made more rapid progress, with annual growth rates for the two products of 36.3 per cent and 26.8 per cent respectively over the period, but despite this, their share of world production was still at the very low levels of 4.9 per cent and 2.1 per cent respectively.

By contrast, the world production of cellulosic continuous filaments and cellulosic staple and tow recorded only moderate growth rates, especially in the developed market economies. This suggests that these two products had a tendency to even off at a higher level of income. The world production of cellulosic continuous filaments increased at an annual rate of 6 per cent, from 1,140 thousand tons in 1960 to 1,918 thousand tons in 1969. The developed market economies recorded an annual growth rate of only 1.1 per cent. On the other hand, the production of the developing countries expanded rapidly, at a rate of 23.7 per cent per annum, so that their share in world production rose from 8 to 32.4 per cent over the period. The world production of cellulosic staple and tow amounted to 2,118 thousand tons in 1969, which indicates a growth rate of only 4.5 per cent from the 1960 production level of 1,430 thousand tons. In the developing countries, production grew at the faster rate of 9.3 per cent annually, and as a result, these countries increased their share from 3.9 per cent in 1960 to 5.9 per cent in 1969.

Other chemical products (ISIC 352)

Among other chemical products, statistical data were available for only two important items: soap, and washing powder and detergents. The world production of soap was almost unchanged; the amount produced was 5,396 thousand tons in 1960 and 5,765 thousand tons in 1969. In the developed market economies, production declined, by 2.1 per cent annually. On the other hand, production in the developing countries had a tendency to increase; the annual growth rate from 1960 to 1969 was 5 per cent, so that their share in world production increased from 21.8 to 31.7 per cent over the period. Washing powder and detergents, which are to a large extent substitutes for soap, recorded remarkable increases in production both in the world and in the developing countries. World production amounted to 7,108 thousand tons in 1969, having increased at an annual rate of 7.7 per cent from the 1960 production level of 3,651 thousand tons. In the developing countries, the growth rate of production was as high as 16.7 per cent annually over the period, but their share in world production was still comparatively low, or 8.6 per cent in 1969.

Petroleum refineries and coal products (ISIC 353 and 354)

Statistical data on production were available for six petroleum products: distillate fuel oils, kerosene, liquefied petroleum gas, naphthas, residual fuel oils, and motor spirit. Liquefied petroleum gas and naphthas recorded a rapid increase in production in all three economic groupings over the period 1960–1969. In general, the developing countries had a considerable share of production for almost all items, but their growth rates, however, were not as high as in the two other economic groupings.

The world production of distillate fuel oils increased at an annual rate of 7.3 per cent, from 190 million tons in 1960 to 359 million tons in 1969. In the developing countries, production increased at a slower pace, by 5 per cent per annum, with the result that their share in world production declined from 20.6 to 16.9 per cent over the period. The total world production of kerosene recorded an annual growth of 4 per cent; the amount increased from 43.5 to 61.7 million tons over the period 1960–1969. The developing countries had a large share of the world production of kerosene, or more than 30 per cent. However, the growth rate was slightly lower than the world rate, so that the share of these countries in the world total declined slightly, from 34.5 per cent in 1960 to 33.6 per cent in 1969. The world production of liquefied petroleum gas increased considerably from 11.3 million tons in 1960 to 34.9 million tons in 1969, at an annual rate of 13.3 per cent. Production in the developing countries made remarkably rapid progress, growing at an annual rate of 28 per cent; as a result, the share of these countries in total world production increased from 6.8 to 20.3 per cent over the period.

The production of naphthas expanded vigorously, at a rate corresponding to that of the petrochemical industries, especially in the developed market and centrally planned economies. World production registered an annual growth rate of as high as 20 per cent over the period 1960–1969; and it amounted to 52.3 million tons in 1969. The growth rate of production in the developing countries was much lower, or 12.3 per cent per annum, with the result that their share declined notably, from 25.6 per cent in 1960 to 16.1 per cent in 1969. The increases in production of residual fuel oils and motor spirit were more moderate. The world production of residual fuel oils increased by 8.6 per cent per annum, expanding from 281 million tons in 1960 to 589 million tons in 1969; the share of the developing countries in this production was 42.1 per cent in 1960 and 31.8 per cent in 1969. The growth rate in the developing countries was rather low, or 5.3 per cent per annum. Owing to the recent motorization in the developing countries, the production of motor spirit kept pace with that in the other economic groupings. World production expanded by 6 per cent annually, reaching 416 million tons in 1969, of which 14.6 per cent was produced in the developing countries.

In the coal products branch, statistical data were available on the production of only one item: coke-oven coke. World production grew at a very slow rate, or 2.3 per cent, increasing from 253 million tons in 1960 to 309 million tons in 1969. In the developing countries, the increase in production was greater, or 6.8 per cent annually, but their share was still as low as 4.5 per cent in 1969.

Glass products and other non-metallic mineral products (ISIC 362 and 369)

This industrial branch includes many miscellaneous products, of which flat glass and cement are the two most important. The world production of flat glass increased by 4.9 per cent annually, from 594 million square metres in 1960 to 917 million square metres in 1969. The annual rate of increase was much higher in the developing countries, or 17.1 per cent, reflecting rising living standards and urbanization; the result was a remarkable rise in the share of these countries of world production, from 4.5 to 12.1 per cent over the period 1960–1969. The world production of cement amounted to 540 million tons in 1969, or an annual increase of 6.1 per cent from the 1960 production level of 317 million tons. The production

of cement in the developing countries had a slightly higher growth rate, or 8.6 per cent per annum, and as a result, the share of these countries in world production increased from 13.5 to 16.5 per cent over the period.

Iron and steel basic industries (ISIC 371)

The iron and steel industry has for a long time been a key industry in the heavy manufacturing sector; it provides basic materials for the machinery and transportation industry and for construction. In addition to primary products of pig iron and crude steel, it provides many products at different stages of processing. Statistical data on these products are available for the following seven items: pig iron for steel making and foundry, crude steel in ingots and for castings, hot-rolled hoop and strip, plates, plain wire, wire rods, and angles, shapes and sections.

The world production of pig iron grew at an annual rate of 5.8 per cent over the period 1960–1969, increasing from 245 million tons in 1960 to 408 million tons in 1969. In the developing countries, production expanded rapidly, at the high annual rate of 11.9 per cent, but their share in world production was still at the very low level of 4.5 per cent in 1969. The production of crude steel paralleled that of pig iron, as would be expected. World production grew from 348 million tons in 1960 to 579 million tons in 1969, or at a growth rate of 5.8 per cent. The growth rate in the developing countries was 11.5 per cent over the period, but the share of these countries in world production was still only 4.1 per cent in 1969. The production of hot-rolled hoop and strip recorded a higher growth rate than other items, reflecting, among other things, the expansion of the automobile and durable consumer-goods industries. World production grew by 6.9 per cent annually, increasing from 16.3 to 29.8 million tons over the period 1960–1969. The growth was also vigorous in the developing countries, where the annual rate of increase was 15.3 per cent. However, the share of these countries in world production was at the negligible level of 0.4 per cent in 1969. Iron plates also recorded a remarkable increase in production. World production amounted to 64 million tons in 1969, of which 5.6 per cent was produced in the developing countries. The annual increase in production was 7.3 per cent in the world and 14 per cent in the developing countries.

In the case of plain wire, the rate of expansion was moderate, or 5.1 per cent in the world and 7.6 per cent in the developing countries. World production was 15 million tons in 1969, of which 4 per cent was produced in the developing countries. By contrast, the production of wire rods increased much more rapidly. Production in the world and in the developing countries recorded annual rates of increase of 6.3 per cent and 12.6 per cent respectively. World production was 32.3 million tons in 1969, of which 4.8 per cent was produced in the developing countries. The production of angles, shapes and sections was sluggish, especially in the developed market economies, where the annual growth rate was as low as 3.1 per cent over the period 1960–1969. In the developing countries, however, the production of these items increased by 9.9 per cent per annum.

Non-ferrous metal basic industries (ISIC 372)

Statistical data were available on five non-ferrous metals: unwrought aluminium, unwrought refined copper, unwrought lead and lead alloys, unwrought tin and tin alloys, and unwrought zinc and zinc alloys.

Aluminium recorded the highest rate of increase in production among these items. World production increased at an annual rate of 8.9 per cent, from 5 million tons in 1960 to 10.9 million tons in 1969. In the developing countries, the growth rate was much higher, or 29.4 per cent per annum, over the period, and their share in world production rose from 1.8 to 8.3 per cent. The developing countries had relatively large shares of the world production of copper, lead and tin, especially tin. The world production of unwrought refined copper amounted to 5 million tons in 1969, of which 19.3 per cent was produced in the developing countries. The annual increase in the developing countries was 5.5 per cent, which was a slightly higher rate than that of world production. The world production of unwrought lead and lead alloys was 4.3 million tons in 1969, of which the share of the developing countries was 13.6 per cent. Production increased at almost the same rate, about 4 per cent annually, in the three economic groupings. In the case of unwrought tin and tin alloys, the share of the developing countries amounted to 63.2 per cent of world production (174 thousand tons) in 1969. World production was relatively stationary with an annual growth rate of 0.9 per cent; in the developing countries it increased slightly, by 2.8 per cent per annum over the period 1960–1969. Unwrought zinc and zinc alloys recorded an annual increase in production of 5.5 per cent for the world and 4.3 per cent for the developing countries. World production was 5.4 million tons in 1969, of which 6.5 per cent was produced in the developing countries.

Non-electrical machinery, electrical machinery and transport equipment (ISIC 382, 383 and 384)

The machinery industry consists of various heterogeneous products, and it is difficult to measure their quantity meaningfully in a physical unit. Statistical data on production, from which a world-wide comparison could be drawn, are limited. In this analysis, the following six items were selected on the basis of the availability of data: refrigerators for household use, radio sets, television sets, produced and assembled passenger cars, buses and lorries, and bicycles. All items are mass-produced commodities, and there are more similarities among them than among oth machinery products.

The world production of refrigerators for household use amounted to 26.2 million units in 1969, which represented an annual increase of 8.8 per cent from the 1960 production level of 12.3 million units. Production in the developing countries grew more rapidly, by 12.1 per cent per annum, reflecting rising living standards, but their share of world production remained low, or 6.6 per cent, even in 1969.

With regard to electrical appliances, radio sets show a rigorous increase in demand at the earliest stages of economic growth. Production in the developing countries recorded a high annual increase of 20.4 per cent over the period 1960–1969, and amounted to 10 million units in 1969, or 10 per cent of the world production in that year. Contrariwise, the demand for television sets expands rapidly at a later stage of development. World production increased at the relatively high rate of 8.9 per cent annually, from 20.5 million units in 1960 to 44.2 million units in 1969. Although the increase in production of this item in the developing countries was somewhat higher, that is, 10.7 per cent per annum, their share in world production was still at the low level of 6.3 per cent.

With regard to transport equipment, the production of bicycles has a tendency to even off at a higher level of *per capita* income. The world production of bicycles increased only slightly, at an annual rate of 2.5 per cent, which reflected the

relatively stationary situation of production in the developed market economies. In the developing countries, however, bicycles still have a large income elasticity of demand. Production in these countries registered an annual growth rate of 7.3 per cent over the period 1960–1969, and amounted to 2.8 million units in 1969, or 11.2 per cent of the world production in that year. By contrast, there was a vigorous demand in the world for passenger cars in the 1960s, and, as a result, world production increased at an annual rate of 6.8 per cent, expanding from 13.3 million units in 1960 to 24 million units in 1969. In the developing countries, production expanded rapidly, at a rate of 17.2 per cent annually, although a major part consisted of car assembling. The share of these countries in world production increased from 1.4 per cent in 1960 to 3.1 per cent in 1969. In the case of buses and lorries, world production increased at a moderate pace, which was parallel to the rate of growth of public transportation. The annual growth rates of production were 7.2 per cent in the world and 7.9 per cent in the developing countries over the period 1960–1969. World production amounted to 6.8 million units in 1969, of which 5.3 per cent were produced or assembled in the developing countries.

Table 62 gives a concise summary of the above discussion. In the developing countries, the production of high-growth commodities, which are defined here as those that had an annual growth rate of more than 13.2 per cent, or more than

TABLE 62. GROWTH IN THE PRODUCTION OF MAJOR COMMODITIES IN HEAVY INDUSTRY IN THE DEVELOPING COUNTRIES AND THE WORLD, AND THE SHARE OF THE DEVELOPING COUNTRIES IN TOTAL WORLD PRODUCTION, 1960–1969

(Percentage)

Commodity	*ISIC*	*Average annual growth rates*		*Share of developing countries in total world production*	
		Developing countries	*World*	*1960*	*1969*
High-growth commodities					
Artificial resins, plastic materials	351395	40.2	16.0	0.2	1.3
Non-cellulosic continuous fibres	351303	36.3	20.8	1.7	4.9
Aluminium, unwrought	372001	29.4	8.9	1.8	8.3
Liquefied petroleum gas	353007	28.0	13.3	6.8	20.3
Non-cellulosic staple and tow	351304	26.8	23.8	1.7	2.1
Cellulosic continuous filaments	351301	23.7	6.0	8.0	32.4
Wireless receivers (radios)	383201	20.4	7.3	3.7	10.3
Hydrochloric acid	351112	18.9	9.6	3.4	7.2
Nitrogenous fertilizers	351201	18.9	11.3	4.8	8.6
Passenger cars, produced and assembled	384301 2	17.2	6.8	1.4	3.1
Glass, unworked, in rectangles	362003	17.1	4.9	4.5	12.1
Washing powder and detergents	352302	16.7	7.7	4.1	8.6
Hoop and strip, hot rolled	371012	15.3	6.9	0.2	0.4
Plates	371015 6	14.0	7.3	3.2	5.6
Wood pulp, mechanical	341101	13.9	3.2	1.6	4.0

TABLE 62 *(continued)*

Commodity	ISIC	Average annual growth rates		Share of developing countries in total world production	
		Developing countries	World	1960	1969
Medium-growth commodities					
Wire rods	371031	12.6	6.3	2.9	4.8
Naphthas	353010	12.3[a]	20.0[a]	25.6[a]	16.1
Refrigerators for household use	382902	12.1	8.8	5.1	6.6
Calcium carbide	351104	12.0	1.7	1.9	4.6
Pig iron, steel-making and foundry	371001	11.9	5.8	2.7	4.5
Wood pulp, other than mechanical	341102	11.5	6.7	1.0	1.5
Crude steel, ingots and for castings	371005	11.5	5.8	2.6	4.1
Caustic soda	351107	10.9	8.8	3.9	4.6
Television sets	383202	10.7	8.9	5.4	6.3
Soda ash	351118	10.5	4.4	3.8	6.3
Sulphuric acid	351124	10.3	6.0	4.3	6.1
Angles, shapes and sections	371098	9.9	4.3	1.3	2.1
Cellulosic staple and tow	351302	9.3	4.5	3.9	5.9
Cement	369201	8.6	6.1	13.5	16.5
Newsprint	341106	8.3	4.4	1.8	2.5
Other printing and writing paper	341107	8.3	7.8	7.0	7.3
Motor coaches, buses and lorries	384303	7.9	7.2	5.0	5.3
Wire, plain	371030	7.6	5.1	3.2	4.0
Bicycles	384401	7.3	2.5	7.4	11.2
Coke-oven coke	354002	6.8	2.3	3.0	4.5
Motor spirit (including aviation spirit)	353091	6.6	6.0	14.0	14.6
Copper, refined, unwrought	372007	5.5	4.1	17.2	19.3
Residual fuel oils	353013	5.3	8.6	42.1	31.8
Soap	352301	5.0	0.7	21.8	31.7
Distillate fuel oils	353003	5.0	7.3	20.6	16.9
Paper board and other paper	341108	4.6	5.8	5.1	4.6
Low-growth commodities					
Zinc and zinc alloys, unwrought	372016	4.3	5.5	7.2	6.5
Lead and lead alloys, unwrought	372013	3.8	4.0	13.7	13.6
Kerosene	353005	3.7	4.0	34.5	33.6
Tin and tin alloys, unwrought	372015	2.8	0.9	53.3	63.2

Source: Based on table 61.

[a] Figure for 1962 instead of 1960.

1.5 times higher than the rate for the heavy industry sector in these countries (8.8 per cent), expanded much more rapidly than the world production of these items, with a significant increase in their share in world production. To a lesser extent, the same tendency applied to medium-growth commodities, or those with a growth rate between 4.4 per cent and 13.2 per cent in the developing countries. Low-growth commodities in these countries, or those with an annual growth rate of less than 4.4 per cent, tended to have, in most cases, a lower growth rate than that for world production, with the result that the developing countries' share in world production of these items declined. As in the case of light industry, the high-growth commodities in heavy industry, in 1960, had a small share in total world production; those with low growth rates already had large shares of world production; and those with medium growth rates had shares of world production in amounts that lay between the shares of high-growth and low-growth commodities.

Analysis of commodity balance and apparent consumption of selected industrial products

In the previous two sections, an analysis was made of the trends in production of selected major commodities in the world and in the developing countries from 1960 to 1969, and the relative position of these countries in world production. This section explores other fields of investigation at the commodity level, namely, the supply and demand balance and the level of apparent consumption for each commodity.

Because of differences in definitions, it is almost impossible to relate the value of manufacturing output to import and export figures at the ISIC two- or three-digit level in order to determine the supply and demand balance in each industry group. The value of manufacturing output in each industry is usually measured in terms of value added, which originates from the manufacturing activities in that industry, in order to avoid "double accounting". On the other hand, trade statistics are based on the value of commodities at the port, whether in terms of f.o.b. or c.i.f., and that value therefore includes not only the value added by manufacturing but also that by other economic activities. For example, the export value of cotton textiles consists not only of the value added by the cotton textile industry itself, but also of material costs, transportation costs, commercial margins etc. Another example is the export of agricultural commodities, the production of which requires the inputs of manufactured goods. In this case, the value added by manufacturing activities is exported through the agricultural products.

On the other hand, in the case of commodities whose quantity is clearly defined in terms of physical units, such as tons, square metres, litres etc., value added need not be reckoned, and a physical comparison between production and trade for each commodity is possible.

It is not easy to make this comparison, however, because the method of commodity classification differs for production statistics and trade statistics. The production data of manufacturing commodities are usually classified according to the ISIC code, whereas trade statistics are collected on the basis of the SITC code. The two codes are founded on different principles: the ISIC code is based on the physical similarity of production activity, whereas the SITC code reflects the

principle of the vertical division of labour.[15] Therefore, the number of commodities for which the two codes have a one-to-one correspondence is not very large.

Annex III indicates the 44 commodities for which the ISIC six-digit and the SITC four-digit codes correspond exactly. Seventeen of these have been selected for the following analysis, since production and trade statistics on these commodities were available for a relatively large number of developing countries. The commodities are: wheat flour, raw sugar, refined sugar, cotton yarn, newsprint, yarn of synthetic fibres, nitrogenous fertilizers, artificial resins and plastic materials, soap, washing powder and detergents, distillate fuel oils, motor spirit, cement, crude steel, heavy steel plate, plain wire, and unwrought aluminium.

The equation for a commodity balance is as follows:

$$D + M = X + C$$

where D is domestic production, M is imports, X is exports and C is the apparent consumption of a specific commodity. Domestic production and imports make up total supply, and exports plus apparent consumption represent total demand. The term "apparent consumption" is used for C, because it includes not only the directly consumed part (household consumption, government consumption and fixed capital formation) but also the change in stocks of the commodity and that part that is used for producing other commodities (intermediate consumption). The part used for inputs to produce other commodities could be regarded as more or less related to the industrial development of an economy. However, change in stocks sometimes shows erratic movement owing to speculation and other causes, especially in the case of the so-called "strategic" commodities. This kind of change has nothing to do with production processes, and it must be separated from the original data before that data are processed for analytical purposes.

In the following analysis, almost all figures are three-year averages except in the case where sequential data for three years were not available. Although this is not a perfect way of eliminating erratic change in stocks, it may serve as a first approximation.

Table 6.3 indicates the balance between the supply of and the demand for the 17 commodities in the most recent year in the developing countries and in some selected developed countries for which statistical data were available. The column headed "period" indicates a period of three years for which an annual average figure was calculated; "total" indicates total supply or total demand, which are equal, and "percentage" indicates the percentage composition of domestic production and imports in total supply, and of exports and of the apparent consumption in total demand. For example, in the case of Tunisia over the period 1967-1969, the commodity balance of refined sugar was as follows: the annual total supply was 85 thousand tons, of which 42 thousand tons were produced domestically and 43 thousand tons were imported, and that total supply was absorbed by the apparent consumption of 83 thousand tons and by the export of 2 thousand tons. Domestic production made up 49 per cent and imports 51 per cent of the total supply, and, as regards demand for this commodity, 98 per cent was consumed domestically and 2 per cent was exported.

It is difficult to derive a general conclusion from the data included in the balances shown in this table, since dependency on imports and the portion of exports

[15] In the SITC classification, commodities are coded according to the stages of processing.

TABLE 63. BALANCE BETWEEN SUPPLY OF AND DEMAND FOR 17 COMMODITIES IN SELECTED DEVELOPING COUNTRIES AND DEVELOPED MARKET ECONOMIES

Commodity and country	Period	Commodity balance					Percentage[b]			
			Supply		Demand					
		Total[a]	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption
		Thousand tons								
Wheat flour										
Brazil	1966 1968	1,898	1,880	18		1,898	99.1	0.9		100.0
Egypt	1965 1967	1,591	967	624	12	1,579	60.8	39.2	0.8	99.2
France	1967 1969	3,737	3,733	4	547	3,190	99.9	0.1	14.6	85.4
Greece	1967 1969	571	568	3	2	569	99.5	0.5	0.4	99.6
Ireland	1966 1968	247	247		1	246	100.0		0.4	99.6
Libyan Arab Republic	1967 1969	159	30	129		159	18.9	81.1		100.0
Philippines	1964 1966	402	329	73		402	81.8	18.2		100.0
Republic of Korea	1967 1969	743	654	89		743	88.0	12.0		100.0
Spain	1967 1969	3,137	3,134	3	224	2,913	99.9	0.1	7.1	92.9
Tunisia	1967 1969	185	173	12		185	93.5	6.5		100.0
Turkey	1967 1969	1,307	1,307			1,307	100.0			100.0
United Kingdom	1967 1969	3,795	3,712	83	8	3,787	97.8	2.2	0.2	99.8
United States	1965 1967	11,319	11,319		1,287	10,032	100.0		11.4	88.6
Yugoslavia	1967 1969	2,030	2,028	2	2	2,028	99.9	0.1	0.1	99.9
Raw sugar										
Brazil	1967 1969	4,231	4,231		1,042	3,189	100.0		24.6	75.4
Egypt	1967 1969	448	423	25		448	94.4	5.6		100.0
France	1967 1969	2,716	2,319	397	183	2,533	85.4	14.6	6.7	93.3
Greece	1967 1969	121	121			121	100.0			100.0
Ireland	1967 1969	203	145	58		203	71.4	28.6		100.0
Republic of Viet-Nam	1964 1966	100	32	68		100	32.0	68.0		100.0
Spain	1967 1969	574	574			574	100.0			100.0

TABLE 63 *(continued)*

Commodity and country	Period	Commodity balance					Percentage[b]			
			Supply		Demand					
		Total[a]	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption
Raw sugar (continued)		Thousand tons								
Thailand	1966 1968	230	230		22	208	100.0		9.6	90.4
Tunisia	1966 1968	61	5	56		61	8.2	91.8		100.0
Turkey	1967 1969	681	681			681	100.0			100.0
Refined sugar										
Egypt	1966 1968	466	368	98	25	441	79.0	21.0	5.4	94.6
Greece	1965 1967	150	104	46		150	69.3	30.7		100.0
France	1967 1969	776	772	4	376	400	99.5	0.5	48.5	51.5
Republic of Korea	1967 1969	147	146	1	4	143	99.3	0.7	2.7	97.3
Spain	1967 1969	267	16	251		267	6.0	94.0		100.0
Tunisia	1967 1969	85	42	43	2	83	49.4	50.6	2.4	97.6
United Kingdom	1965 1967	936	885	51	311	625	94.6	5.4	33.2	66.8
United States	1967 1969	12.601	8.885	3.716	1	12.600	70.5	29.5	0.0	100.0
Yugoslavia	1967 1969	519	441	78	23	496	85.0	15.0	4.4	95.6
Cotton yarn		Tons								
Egypt	1967–1969	161.795	159.086	2.709	20.605	141.190	98.3	1.7	12.7	87.3
France	1967 1969	268.064	263.914	4.150	8.565	259.499	98.5	1.5	3.2	96.8
Greece	1967 1969	36.762	36.762		5.759	31.003	100.0		15.7	84.3
Ireland	1966–1968	7.917	6.284	1.633	1.209	6.708	79.4	20.6	15.3	84.7
Republic of Korea	1967–1969	84.666	84.666		148	84.518	100.0		0.2	99.8
Republic of Viet-Nam	1964–1966	16.377	8.247	8.130		16.377	50.4	49.6		100.0
Spain	1967–1969	123.683	123.683		9.785	113.898	100.0		7.9	92.1
Thailand	1966–1968	29.937	28.821	1.116		29.937	96.3	3.7		100.0
Turkey	1966–1968	130.333	130.333		44	130.289	100.0		0.0	100.0
United Kingdom	1967 1969	205.539	190.273	15.266	4.956	200.583	92.6	7.4	2.4	97.6
Yugoslavia	1967 1969	97.358	94.590	2.768	7.113	90.245	97.2	2.8	7.3	92.7

Newsprint		Thousand tons								
Brazil	1967 1969	235	118	117		235	50.2	49.8		100.0
France	1967 1969	556	431	125	4	552	77.5	22.5	0.7	99.3
Greece	1967 - 1969	36		36		36		100.0		100.0
Ireland	1966 - 1968	50	8	42		50	16.0	84.0		100.0
Republic of Korea	1967 - 1969	117	69	48		117	59.0	41.0		100.0
Spain	1967 - 1969	172	130	42		172	75.6	24.4		100.0
Turkey	1967 - 1969	64	11	53		64	17.2	82.8		100.0
United Kingdom	1967 - 1969	1,434	746	688	2	1,432	52.0	48.0	0.1	99.9
United States	1967 - 1969	8,584	2,581	6,003	104	8,480	30.1	69.9	1.2	98.8
Yugoslavia	1967 - 1969	76	68	8	14	62	89.5	10.5	18.4	81.6
Nitrogenous fertilizers										
Brazil	1966 - 1968	372	8	364		372	2.2	97.8		100.0
Egypt	1966 - 1968	888	519	369		888	58.4	41.6		100.0
France	1967 - 1969	1,597	1,363	234	721	876	85.3	14.7	45.1	54.9
Greece	1966 - 1968	269	125	144		269	46.5	53.5		100.0
Ireland	1966 - 1968	75	39	36		75	52.0	48.0		100.0
Republic of Korea	1966 - 1968	478	165	313	15	463	34.5	65.5	3.1	96.9
Spain	1967 - 1969	712	438	274	6	706	61.5	38.5	0.8	99.2
Turkey	1966 - 1968	447	33	414		447	7.4	92.6		100.0
United Kingdom	1966 - 1968	1,052	732	320	360	692	69.6	30.4	34.2	65.8
Yugoslavia	1967 - 1969	492	101	391		492	20.5	79.5		100.0
Yarn of synthetic fibres				Tons						
Brazil	1967 - 1969	78,658	76,893	1,765		78,658	97.8	2.2		100.0
Egypt	1967 - 1969	12,904	12,783	121		12,904	99.1	0.9		100.0
France	1967 - 1969	283,590	254,280	29,310	35,111	248,479	89.7	10.3	12.4	87.6
Greece	1967 - 1969	7,295	4,235	3,060	265	7,030	58.1	41.9	3.6	96.4
Republic of Korea	1967 - 1969	36,809	8,686	28,123	306	36,503	23.6	76.4	0.8	99.2
Spain	1967 - 1969	97,938	90,554	7,384	2,413	95,525	92.5	7.5	2.5	97.5
Turkey	1966 - 1968	7,594	3,860	3,734		7,594	50.8	49.2		100.0
United Kingdom	1967 - 1969	532,955	508,769	24,186	37,080	495,875	95.5	4.5	7.0	93.0
United States	1967 - 1969	2,079,419	2,055,320	24,099	30,890	2,048,529	98.8	1.2	1.5	98.5
Yugoslavia	1967 - 1969	32,443	26,831	5,612	783	31,660	82.7	17.3	2.4	97.6

TABLE 63 *(continued)*

Commodity and country	Period	Commodity balance: Supply: Total[a]	Supply: Production	Supply: Imports	Demand: Exports	Demand: Apparent consumption	Percentage[b]: Production	Percentage[b]: Imports	Percentage[b]: Exports	Percentage[b]: Apparent consumption
Artificial resins, plastic materials		*Thousand tons*								
Brazil	1966 1968	110	77	33		110	70.0	30.0		100.0
France	1966 1968	1.230	900	330	258	972	73.2	26.8	21.0	79.0
Philippines	1964 1966	29	15	14		29	51.7	48.3		100.0
Spain	1967 1969	362	252	110	10	352	69.6	30.4	2.8	97.2
United Kingdom	1967 1969	1.461	1.231	230	383	1.078	84.3	15.7	26.2	73.8
Yugoslavia	1967 1969	127	72	55	13	114	56.7	43.3	10.2	89.8
Soap		*Tons*								
Brazil	1966 1968	288.671	287.468	1.203		288.671	99.6	0.4		100.0
France	1967 1969	143.828	134.000	9.028	20.117	123.711	93.7	6.3	14.0	86.0
Greece	1965 1967	22.058	22.058			22.058	100.0			100.0
Philippines	1964 1966	65.518	65.297	221		65.518	99.7	0.3		100.0
Republic of Korea	1968	52.015	51.829	186		52.015	99.6	0.4		100.0
Singapore	1965 1967	13.798	9.857	3.941	3.589	10.209	71.4	28.6	26.0	74.0
Spain	1967 1969	84.236	83.234	1.002	1.313	82.923	98.8	1.2	1.6	98.4
United Kingdom	1967 1969	307.313	307.033	280	26.505	280.808	99.9	0.1	8.6	91.4
United States	1966 1968	503.353	502.000	1.353	11.313	492.040	99.7	0.3	2.2	97.8
Yugoslavia	1965 1967	36.348	35.882	466	1.294	35.054	98.7	1.3	3.6	96.4
Washing powder and detergents										
Brazil	1966 1968	79.315	74.579	4.736		79.315	94.0	6.0		100.0
Egypt	1967 1969	11.006	9.803	1.203	3.275	7.731	89.1	10.9	29.8	70.2
France	1967 1969	430.071	383.667	46.404	39.318	390.753	89.2	10.8	9.1	90.9
Greece	1967 1969	34.611	32.414	2.197	175	34.436	93.7	6.3	0.5	99.5

Philippines	1964	1966	25.154	25.154	[illegible]		25.154	93.0	7.0		100.0
Republic of Korea	1967	1969	7.351	4.314	3.037		7.351	58.7	41.3		100.0
Republic of Viet-Nam		1966	1.744	260	1.484		1.744	14.9	85.1		100.0
Singapore	1965	1967	4.914	161	4.753	2.750	2.344	3.3	96.7	52.3	47.7
United Kingdom	1967	1969	485.490	469.000	16.490	93.062	392.428	96.6	3.4	19.2	80.8
United States	1966	1968	2.376.205	2.351.140	25.065	93.479	2.282.726	98.9	1.1	3.9	96.1
Yugoslavia	1965	1967	54.183	53.109	1.074	5.419	48.764	98.0	2.0	10.0	90.0
Distillate fuel oils			*Thousand tons*								
Brazil	1967	1969	4.659	4.652	7	10	4.649	99.8	0.2	0.2	99.8
Egypt	1967	1969	1.447	871	576	347	1.100	60.2	39.8	24.0	76.0
France	1967	1969	9.683	6.796	2.887	2.847	6.836	70.2	29.8	29.4	70.6
Greece	1967	1969	1.644	1.283	361	66	1.578	78.0	22.0	4.0	96.0
Libyan Arab Republic		1968	314	90	224		314	28.7	71.3		100.0
Philippines	1964	1966	1.031	998	33	253	778	96.8	3.2	24.5	75.5
Republic of Korea		1968	1.055	1.036	19		1.055	98.2	1.8		100.0
Spain	1967	1969	5.927	5.881	46	1.195	4.732	99.2	0.8	20.2	79.8
Thailand	1967	1969	1.160	245	915	7	1.153	21.1	78.9	0.6	99.4
Tunisia		1968	312	312		79	233	100.0		25.3	74.7
Turkey	1967	1969	1.608	1.396	212		1.608	86.8	13.2		100.0
United Kingdom	1967	1969	20.625	16.950	3.675	4.560	16.065	82.2	17.8	22.1	
United States	1967	1969	116.729	114.835	1.894	366	116.363	98.4	1.6	0.3	99.7
Yugoslavia	1967	1969	1.787	1.497	290	163	1.624	83.8	16.2	9.1	90.9
Motor spirit, including aviation spirit											
Brazil	1967	1969	5.666	5.469	197	5	5.661	96.5	3.5	0.1	99.9
France	1967	1969	12.906	12.114	792	2.791	10.115	93.9	6.1	21.6	78.4
Greece	1967	1969	539	456	83	28	511	84.6	15.4	5.2	94.8
Republic of Korea		1968	461	442	19		461	95.9	4.1		100.0
Spain	1967	1969	2.789	2.719	70	888	1.901	97.5	2.5	31.8	68.2
Thailand	1967	1969	462	311	151	11	451	67.3	32.7	2.4	97.6
Turkey	1964	1966	716	713	3	31	685	99.6	0.4	4.3	95.7
United Kingdom	1967	1969	14.560	9.976	4.584	1.279	13.281	68.5	31.5	8.8	91.2
United States	1967	1969	227.482	227.200	282	281	227.201	99.9	0.1	0.1	99.9
Yugoslavia	1967	1969	969	941	28	105	864	97.1	2.9	10.8	89.2

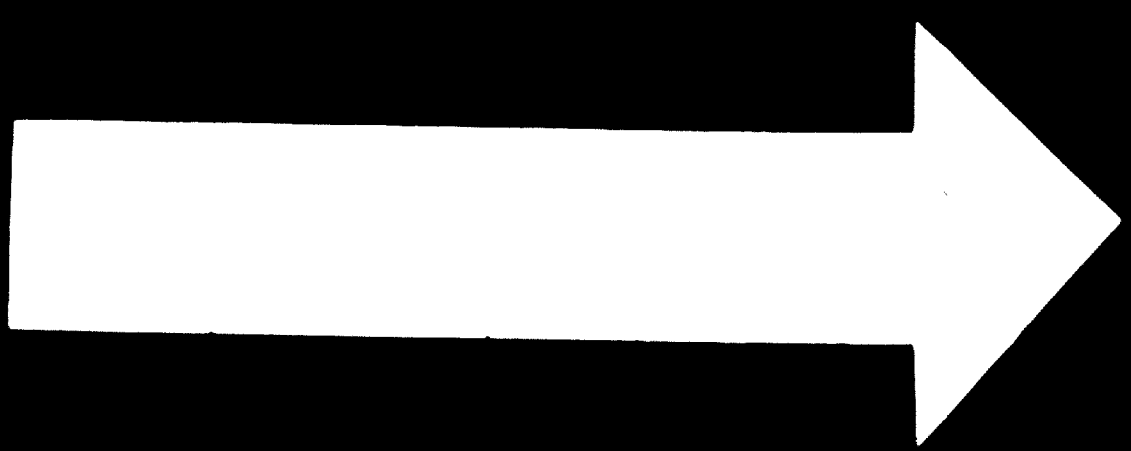

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TABLE 63 *(continued)*

Commodity and country	Period	Commodity balance					Percentage[b]			
			Supply		Demand					
		Total[a]	Production	Imports	Exports	Apparent consumption	Production	Imports	Exports	Apparent consumption
		Thousand tons								
Cement										
Brazil	1967–1969	7,609	7,170	439	8	7,601	94.2	5.8	0.1	99.9
Egypt	1967–1969	3,198	3,171	27	565	2,633	99.2	0.8	17.7	82.3
France	1967–1969	26,091	26,013	78	934	25,157	99.7	0.3	3.6	96.4
Greece	1967–1969	4,197	4,196	1	438	3,759	100.0	0.0	10.4	89.6
Ireland	1967–1969	1,923	1,284	639	250	1,673	66.8	33.2	13.0	87.0
Philippines	1964–1966	1,551	1,448	103	–	1,551	93.4	6.6	–	100.0
Republic of Korea	1967–1969	3,837	3,628	209	105	3,732	94.6	5.4	2.7	97.3
Republic of Viet-Nam	1964–1966	542	133	409	–	542	24.5	75.5	–	100.0
Spain	1967–1969	15,200	14,686	514	58	15,142	96.6	3.4	0.4	99.6
Thailand	1967–1969	2,256	2,103	153	54	2,202	93.2	6.8	2.4	97.6
Tunisia	1968	526	514	12	57	469	97.7	2.3	10.8	89.2
Turkey	1967–1969	5,191	4,921	270	–	5,191	94.8	5.2	–	100.0
United Kingdom	1967–1969	17,952	17,660	292	317	17,635	98.4	1.6	1.8	98.2
Yugoslavia	1967–1969	4,603	3,680	923	153	4,445	79.9	20.1	3.4	96.6
Crude steel										
Brazil	1967–1969	4,372	4,371	1	5	4,367	100.0	0.0	0.1	99.9
Egypt	1966–1968	200	196	4	–	200	98.0	2.0	–	100.0
France	1967–1969	21,007	20,855	152	119	20,888	99.3	0.7	0.6	99.4
Greece	1967–1969	210	210	–	7	203	100.0	–	3.3	96.7
Republic of Korea	1967–1969	378	367	11	2	376	97.1	2.9	0.5	99.5
Spain	1967–1969	5,159	5,131	28	–	5,159	99.5	0.5	–	100.0
Turkey	1967–1969	1,092	1,092	–	–	1,092	100.0	–	–	100.0
United Kingdom	1967–1969	26,185	25,972	213	8	26,177	99.2	0.8	0.0	100.0
Yugoslavia	1967–1969	2,027	2,016	11	10	2,017	99.5	0.5	0.5	99.5

United Kingdom	1967–1969	26,185	25,972	213	8	26,177	99.2	0.8	0.0	100.0
Yugoslavia	1967–1969	2,027	2,016	11	10	2,017	99.5	0.5	0.5	99.5
Plates (heavy), over 4.75 mm										
Brazil	1967–1969	359	356	3	95	264	99.2	0.8	26.5	73.5
France	1967–1969	2,320	1,454	866	334	1,986	62.7	37.3	14.4	85.6
Republic of Korea	1967–1969	163	108	55	–	163	66.3	33.7	–	100.0
Spain	1967–1969	631	539	92	1	630	85.4	14.6	0.2	99.8
Turkey	1967–1969	10	1	9	–	10	10.0	90.0	–	100.0
Yugoslavia	1967–1969	320	161	159	18	302	50.3	49.7	5.6	94.4
Wire, plain										
Brazil	1964–1966	117	107	10	–	117	91.5	8.5	–	100.0
Egypt	1967–1969	20	11	9	–	20	55.0	45.0	–	100.0
France	1967–1969	499	413	86	107	392	82.8	17.2	21.4	78.6
Republic of Korea	1967–1969	30	29	1	–	30	96.7	3.3	–	100.0
Republic of Viet-Nam	1964–1966	16	4	12	–	16	25.0	75.0	–	100.0
Spain	1967–1969	108	99	9	2	106	91.7	8.3	1.9	98.1
United States	1967–1969	3,599	3,121	478	22	3,577	86.7	13.3	0.6	99.4
Yugoslavia	1967–1969	126	106	20	7	119	84.1	15.9	5.6	94.4
Aluminium, unwrought				*Tons*						
Brazil	1968	72,537	41,291	31,246	349	72,188	56.9	45.1	0.5	99.5
France	1967–1969	554,121	441,152	112,969	168,981	385,140	79.6	20.4	30.5	69.5
Greece	1967–1969	80,453	78,741	1,712	63,763	16,690	97.9	2.1	79.3	20.7
Spain	1967–1969	141,045	121,539	19,506	6,359	134,686	86.2	13.8	4.5	95.5
United Kingdom	1967–1969	571,403	229,060	342,343	21,928	549,475	40.1	59.9	3.8	96.2
United States	1967–1969	4,321,491	3,836,424	485,067	221,867	4,099,624	88.8	11.2	5.1	94.9
Yugoslavia	1967–1969	75,838	46,858	28,980	17,309	58,529	61.8	38.2	22.8	77.2

Sources: Based on *The Growth of World Industry, 1969 Edition*, vol. II (United Nations publication, Sales No. 71.XVII.7); and *Commodity Trade Statistics*, Statistical papers, series D, vols. XIII to XIX (1964–1969).

[a] "Total" indicates total supply or total demand.

[b] Percentage is of the total supply (or demand).

vary widely from commodity to commodity and from country to country, reflecting the size, the endowment of natural resources, and the international trade policies of a country. However, the following are some observations that may be made on the data.

First, in the case of resource-based products such as wheat flour, raw sugar, cotton yarn and petroleum products, there is a tendency for countries to separate into two groups: exporting countries and importing countries. Moreover, the degree of dependency on exports in the case of the former or on imports in the case of the latter countries is quite large. In the case of raw sugar, Tunisia imported 91.8 per cent and the Republic of Viet-Nam 68 per cent of apparent consumption, whereas Brazil exported 24.6 per cent of the total production. In the case of distillate fuel oil, Thailand depended on imports for the supply of 78.9 per cent of its requirements, whereas Tunisia exported 25.3 per cent of the country's production.

Secondly, in the case of bulky products such as cement, for which material inputs are found almost everywhere, or in the case of simply processed products such as soap, for which production does not require a high level of technology, there is a tendency for production to be self-sufficient. Dependency on imports is negligible for the supply of soap, and less than 7 per cent for the supply of cement in almost all of the developing countries included in Table 63, except for the Republic of Viet-Nam.

Thirdly, a high degree of dependency on imports is observed in the case of commodities whose production requires a relatively sophisticated technology. Examples are refined sugar, newsprint, nitrogenous fertilizers, artificial resins, steel plate etc. For instance, the Republic of Korea relies on imports for 41 per cent of the total supply of newsprint, for 65.6 per cent of the total supply of nitrogenous fertilizers, for 76.4 per cent of the total supply of synthetic fibre yarn, and for 33.7 per cent of the total supply of heavy steel plate. Brazil is dependent on imports for 49.8 per cent of the total supply of newsprint, for 97.8 per cent of the total supply of nitrogenous fertilizers, for 30 per cent of the total supply of artificial resin, and for 43.1 per cent of the total supply of aluminium. Tunisia depends on imports for 50.6 per cent of the total supply of refined sugar.

From the information available on the commodity balance between demand and supply, an analysis may be made of *per capita* apparent consumption. This analysis is particularly relevant to the formulation of import-substitution policies, since it provides an estimate of the extent of the domestic market. In other words, the analysis may give a general idea of the size of production capacity of manufacturing establishments in cases where the products need to be totally absorbed by the domestic market.

Table 64, which is derived from table 63, shows the level of *per capita* apparent consumption of the same 17 commodities for selected developing and developed countries: three in Africa, five in Asia, one in Latin America, five in Europe that receive United Nations Development Programme (UNDP) technical assistance, and France, the United Kingdom of Great Britain and Northern Ireland and the United States of America. On the basis of this table, two important observations may be made. First, although the level of *per capita* apparent consumption for almost all commodities generally has a tendency to increase according to the increases in the level of *per capita* income, the rate varies from commodity to commodity. In the case of such commodities as wheat flour, raw sugar, cotton yarn, nitrogenous fertilizers and soap, the level of *per capita* apparent consumption does not indicate

TABLE 64. AVERAGE ANNUAL *PER CAPITA* APPARENT CONSUMPTION OVER THE PERIOD 1967–1969
(Thousand grams)

Commodity	*ISIC*	*Brazil*	*Egypt*	*France*	*Greece*	*Ireland*	*Libyan Arab Republic*	*Philippines*	*Republic of Korea*	*Republic of Viet-Nam*	*Singapore*	*Spain*	*Thailand*	*Tunisia*	*Turkey*	*United Kingdom*	*United States*	*Yugoslavia*
Wheat flour	311603	22.2[a]	52.4[b]	63.9	64.4	84.9[a]	88.2	13.0[c]	24.4	...	...	89.9	...	39.7	38.9	68.5	50.9[b]	100.5
Raw sugar	311801	36.1	14.1	50.7	13.8	69.8	...	...	...	6.2[c]	...	17.7	6.4[a]	13.4[a]	20.3	...	...	...
Refined sugar	311802	...	14.3[a]	8.0	17.4[b]	...	...	...	4.7	...	...	8.2	...	17.8	...	11.4[b]	62.6	24.6
Cotton yarn	321101–2	...	4.5	5.2	3.5	2.3[a]	...	...	2.8	1.0[c]	...	3.5	0.9[a]	...	4.0[a]	3.6	...	4.5
Newsprint	341106	2.7	...	11.1	4.1	17.3[a]	...	...	3.8	...	...	5.3	...	...	1.9	25.9	42.2	3.1
Nitrogenous fertilizers	351201	4.3[a]	28.7[a]	17.6	30.9[a]	25.9[a]	...	...	15.6[a]	...	...	21.8	...	...	13.7[a]	12.6[a]	...	24.4
Yarn of synthetic fibres	351301–4	0.9	0.4	5.0	0.8	...	...	...	1.2	...	...	3.0	...	...	0.2[a]	9.0	10.2	1.6
Artificial resins, plastic materials	351395	1.3[a]	...	19.6[a]	...	...	...	0.9[c]	...	...	...	10.9	...	...	..	19.5	...	5.7
Soap	352301	3.4[a]	...	2.5	2.6[b]	...	...	2.0[c]	1.7[d]	...	5.3[b]	2.6	...	...	...	5.1	2.5[a]	1.8[b]
Washing powder and detergents	352302	0.9[a]	0.2	7.8	3.9	...	...	0.8[c]	0.2	0.1[e]	1.2[b]	...	...	...	...	7.1	11.5[a]	2.5[b]
Distillate fuel oils	353003	52.7	34.7	136.9	179.3	...	174.2[d]	24.1[c]	34.6[d]	...	...	146.0	34.2	50.0[d]	47.9	290.6	578.5	80.5
Motor spirit, including aviation spirit	353091	64.2	...	202.6	58.1	...	...	...	15.1[d]	...	...	58.7	13.4	...	22.0[b]	240.2	1,129.5	42.8
Cement	369201	86.2	83.1	504.0	427.0	574.9	...	48.0[c]	122.5	33.6[c]	...	467.2	65.4	100.6[d]	154.8	319.0	...	220.2
Crude steel	371005–6	49.5	6.5[a]	418.4	23.1	...	...	...	12.3	...	...	159.2	...	...	32.6	473.5	...	99.9
Plates (heavy), over 4.75 mm	371015	3.0	...	39.8	...	...	...	...	5.4	...	...	19.4	...	...	0.3	...	...	15.0
Wire, plain	371030	1.5[c]	0.6	7.9	...	...	...	...	1.0	1.0[c]	...	3.3	...	...	...	...	17.8	5.9
Aluminium, unwrought	372001	0.8[d]	...	7.7	1.9	...	...	...	...	...	...	4.2	...	...	...	9.9	20.4	2.9

Sources: Based on *Growth of World Industry, 1969*, vol. II (United Nations publication, Sales No. 71.XVII.7); and *Commodity Trade Statistics*, Statistical papers, series D, vols. XIII to XIX (1964–1969).

[a] 1966–1968. [b] 1965–1967. [c] 1964–1966. [d] 1968. [e] 1966.

wide differences. For example, the *per capita* apparent consumption of wheat flour in some developing countries even exceeds that in France, the United Kingdom or the United States. The same is true for refined sugar, cotton yarn and soap. On the other hand, among such commodities as newsprint, yarn of synthetic fibres, artificial resins, washing powder and detergents, petroleum products and crude steel, there is a large difference in *per capita* apparent consumption. For instance, the *per capita* annual apparent consumption of newsprint in the Republic of Korea was 3.8 kg and in Brazil it was 2.7 kg over the period 1967–1969, whereas that in France, the United Kingdom and the United States was 11.1 kg, 25.9 kg and 42.2 kg respectively over the same period. For crude steel, the annual *per capita* apparent consumption was 12.3 kg in the Republic of Korea and 49.5 kg in Brazil. However, it was as much as 418.4 kg in France and 473.5 kg in the United Kingdom over the period 1967–1969.

Secondly, the increasing rate of *per capita* apparent consumption varies even for one commodity, according to the stage of *per capita* income level. For some commodities the rate increases relatively rapidly at a lower level of *per capita* income, whereas for other commodities, it has a high rate at a higher level of income. In the case of such commodities as refined sugar, cotton yarn and soap, the *per capita* apparent consumption nearly reaches the maximum level at an early stage of economic growth, and thereafter it tends to level off. By contrast, for newsprint, petroleum products, heavy plate and aluminium the *per capita* consumption increases at an accelerated rate as the level of *per capita* income grows.

The following analysis should clarify this point in a more systematic way: where c is the physical quantity of *per capita* apparent consumption and y is the level of *per capita* income. It is evident from table 27 that there is some relationship between these two variables. However, the appropriate function relating apparent consumption to income level varies from commodity to commodity. It would therefore be more useful to apply several kinds of functions to the data, from which the best fitting function would be selected. The following four formulae could cover a wide range of cases:[16]

log-log: $\log c = a + b \log y$

semi-logarithmic: $c = a + b \log y$

log-inverse: $\log c = a - \frac{b}{y}$

log-log-inverse: $\log c = a - \frac{b}{y} + d \log y$

Table 65 indicates income elasticity of *per capita* apparent consumption, calculated on the basis of the formula selected with the highest value of determination coefficient ($\bar{R}^2$). The income elasticity is shown at the *per capita* income levels of $200, $500, $1,000 and $2,000. From this table, commodities may be classified into four groups within the *per capita* income range from $200 to $2,000: commodities with low income elasticity, those with high income elasticity, those with decreasing income elasticity and those with increasing income elasticity.

[16] The same kinds of formulae have been adopted in the analysis of commodity balances for agricultural products. For example, see *Agricultural Commodities–Projections for 1975 and 1985*, vol. II (Rome, Food and Agriculture Organization of the United Nations, 1967). Annex III of this volume shows the shapes of the four curves and a plot diagram for some commodities.

TABLE 65. INCOME ELASTICITY OF *PER CAPITA* APPARENT CONSUMPTION

Commodity	*ISIC*	*Equation*[a]	*Coefficient of determination*	*Number of observations*	*Elasticity at per capita income of*			
					$200	*$500*	*$1000*	*$2000*
Wheat flour	311603	Log-inv	0.427	33	0.89	0.36	0.18	0.09
Raw sugar	311801	Log-inv	0.256	20	0.72	0.29	0.14	0.07
Refined sugar	311802	Log-inv	0.382	23	1.36	0.54	0.27	0.14
Cotton yarn	321101–2	Log-inv	0.247	27	0.46	0.18	0.09	0.05
Newsprint	341106	Log-log-inv	0.857	28	0.36	1.07	1.31	1.43
Yarn of synthetic fibres	351301–4	Log-log-inv	0.689	24	1.42	1.09	0.98	0.92
Nitrogenous fertilizers	351201	Semi-log	0.149	19	0.58	0.38	0.30	0.25
Artificial resins, plastic materials	351395	Log-log-inv	0.810	18	1.44	1.23	1.16	1.13
Soap	352301	Log-inv	0.004	22	0.11	0.04	0.02	0.01
Washing powder and detergents	352302	Log-log-inv	0.925	23	2.15	1.44	1.20	1.08
Distillate fuel oils	353003	Log-log-inv	0.846	27	0.63	1.17	1.35	1.44
Motor spirit, including aviation spirit	353091	Log-log-inv	0.921	19	0.86	1.24	1.37	1.44
Cement	369201	Log-log-inv	0.794	33	1.12	0.73	0.60	0.54
Crude steel	371005–6	Log-log-inv	0.739	24	2.45	1.41	1.07	0.89
Plates (heavy), over 4.75 mm	371015	Log-log-inv	0.806	17	0.66	1.55	1.84	1.99
Wire, plain	371030	Log-log-inv	0.879	21	1.04	1.13	1.17	1.18
Aluminium, unwrought	372001	Log-log-inv	0.639	24	0.29	1.11	1.39	1.52

Sources: Based on *The Growth of World Industry, 1969*, vol. II (United Nations publication, Sales No. 71.XVII.7); *Commodity Trade Statistics*, Statistical papers, series D, vols. XIII to XIX (1964–1969); *Yearbook of National Accounts Statistics, 1970*, vol. II (United Nations publication, Sales No. 72.XVII.3); and *Monthly Bulletin of Statistics* (August 1972) (United Nations publication).

[a] See page 180 for logarithmic equations.

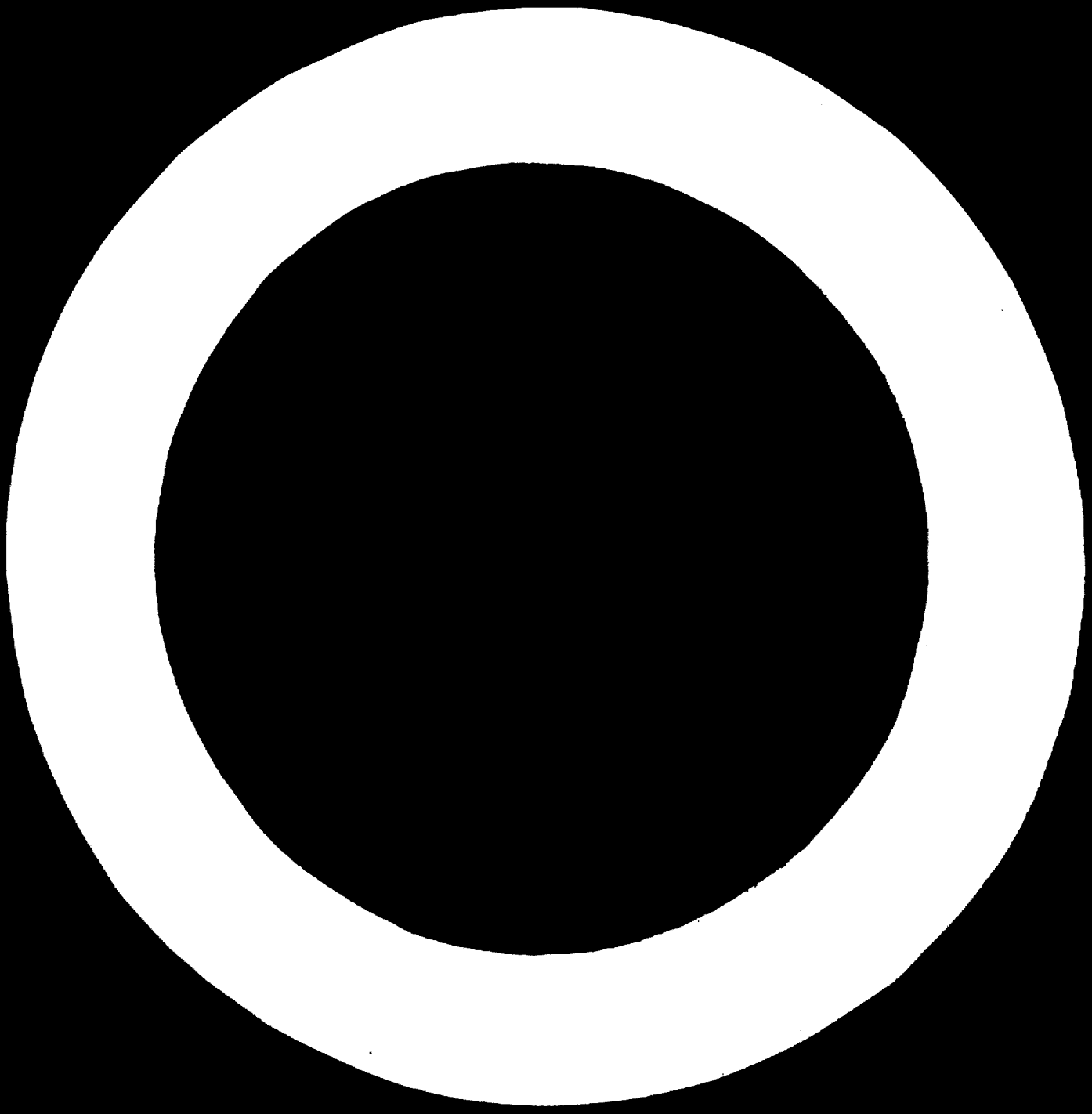
Commodities with low income elasticity are those that show a very low value of income elasticity at any level of *per capita* income. In this case, the level of apparent *per capita* consumption remains almost unchanged, despite an increasing level of *per capita* income. Soap is a typical example of this category; its income elasticity is only 0.11 at the *per capita* income level of $200, and it is still quite low at higher levels of *per capita* income.

Commodities with high income elasticity have exactly the opposite characteristics. They show a relatively high value of elasticity at any level of *per capita* income. Artificial resins and plastic materials, and washing powder and detergents are two examples. The income elasticity of the former is 1.44 at the *per capita* income level of $200, and remains as high as 1.13 at the income level of $2,000. The income elasticity of the latter is 2.15 at the income level of $200 and 1.08 at the income level of $2,000.

The above two categories of commodities, however, are not typical of most commodities. Almost all commodities have an income elasticity that varies from low to high or high to low values. Typical examples of commodities with decreasing income elasticity are products in the light industry sector such as wheat flour, raw sugar, refined sugar and cotton yarn. As *per capita* income increases from $200 to $2,000, the income elasticity of wheat flour decreases from 0.89 to 0.09, that of raw sugar from 0.72 to 0.07, that of refined sugar from 1.36 to 0.14, and that of cotton yarn from 0.46 to 0.05. However, some of the products in the heavy industry sector also show a decreasing income elasticity. These are yarn of synthetic fibres, nitrogenous fertilizers, cement and crude steel. Within a range of *per capita* income between $200 and $2,000, the elasticity decreases from 1.42 to 0.92 for yarn of synthetic fibres, from 0.58 to 0.25 for nitrogenous fertilizers, from 1.12 to 0.54 for cement, and from 2.45 to 0.89 for crude steel.

On the other hand, commodities in the heavy industry sector that are leading products or material inputs for such products have an increasing income elasticity. They are newsprint, distillate fuel oils, motor spirit, steel plates and aluminium. The income elasticity of newsprint is as low as 0.36 at the *per capita* income level of $200, but it increases sharply at the income level of approximately $500, and reaches a figure of as high as 1.43 at the *per capita* income level of $2,000. The same is the case for the other three products. As *per capita* income increases from $200 to $2,000, the income elasticity increases from 0.63 to 1.44 for distillate fuel oils, from 0.86 to 1.44 for motor spirit, and from 0.29 to 1.52 for unwrought aluminium.

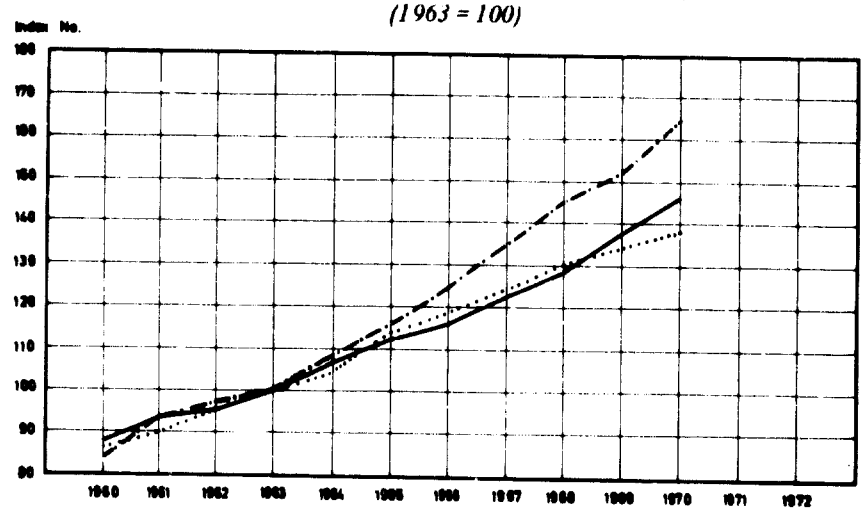
ANNEXES



Annex I

ECONOMIC INDICATORS

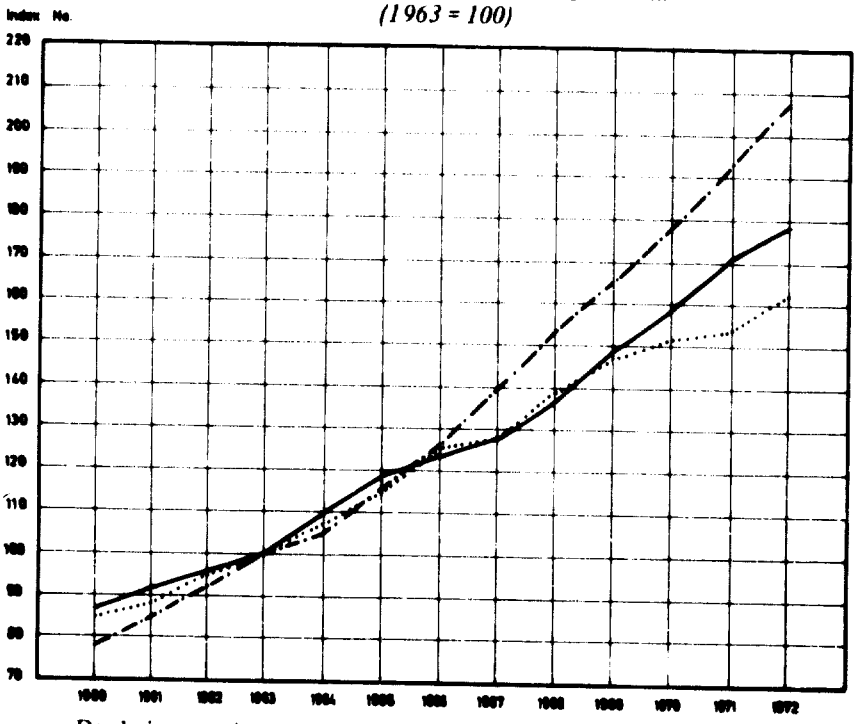
1. Growth of gross domestic product by economic grouping, 1960–1970
(1963 = 100)



——— Developing countries
····· Developed market economies
— · — · — Centrally planned economies (excludes services)

Source: Statistical Yearbook, 1971 (United Nations publication, Sales No. 72.XVII.1).

2. Manufacturing output (ISIC 3) by economic grouping, 1960–1972
(1963 = 100)

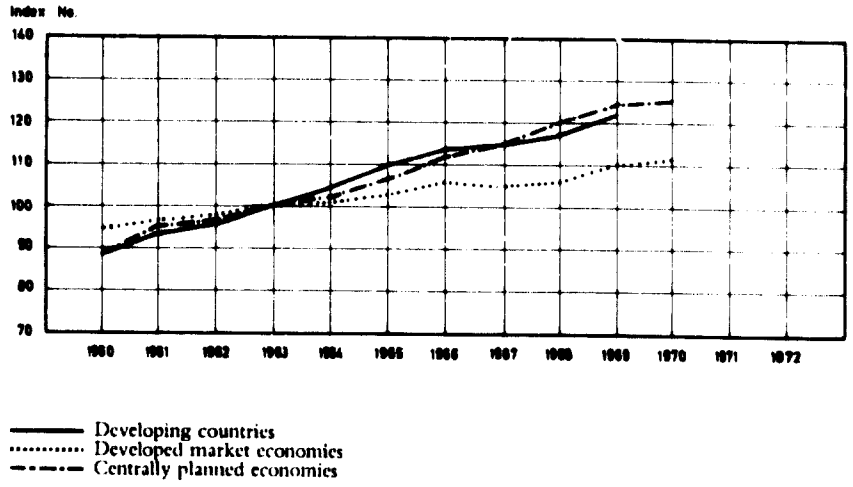


——— Developing countries
····· Developed market economies
— · — · — Centrally planned economies

Sources: Statistical Yearbook, 1971 (United Nations publication, Sales No. 72.XVII.1); and *Monthly Bulletin of Statistics* (February 1973) (United Nations publication).

Note: 1972 preliminary estimates.

3. Manufacturing employment (ISIC 3) by economic grouping, 1960–1970
(1963 = 100)

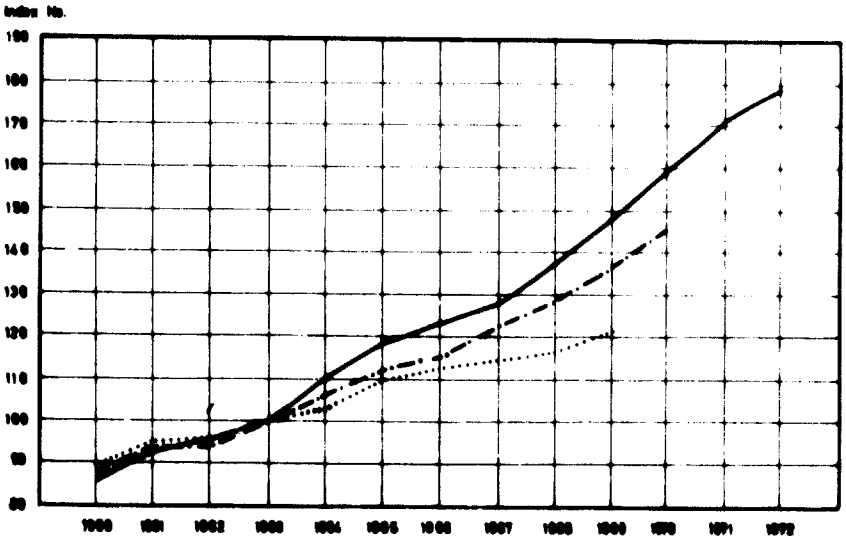


——— Developing countries
····· Developed market economies
–·–·– Centrally planned economies

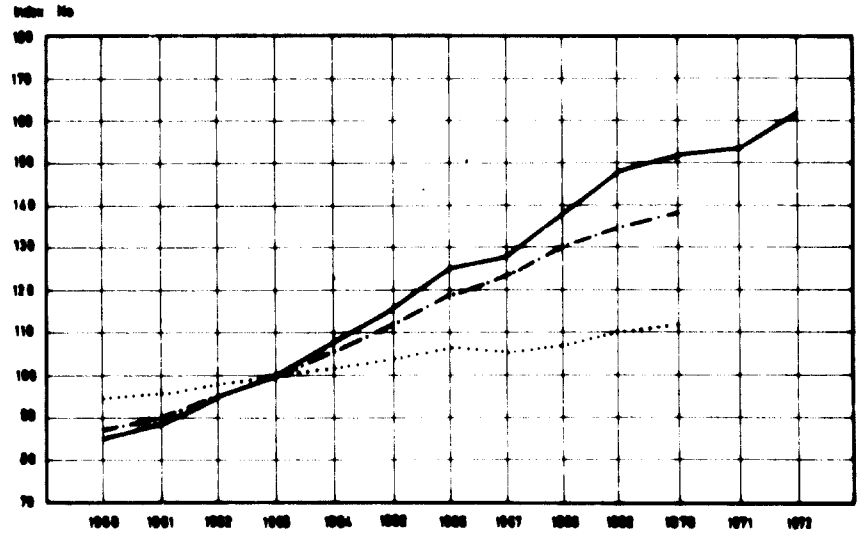
Source: Statistical Yearbook, 1971 (United Nations publication, Sales No. 72.XVII.1).

4. Manufacturing output, employment and GDP, 1960–1972
(1963 = 100)

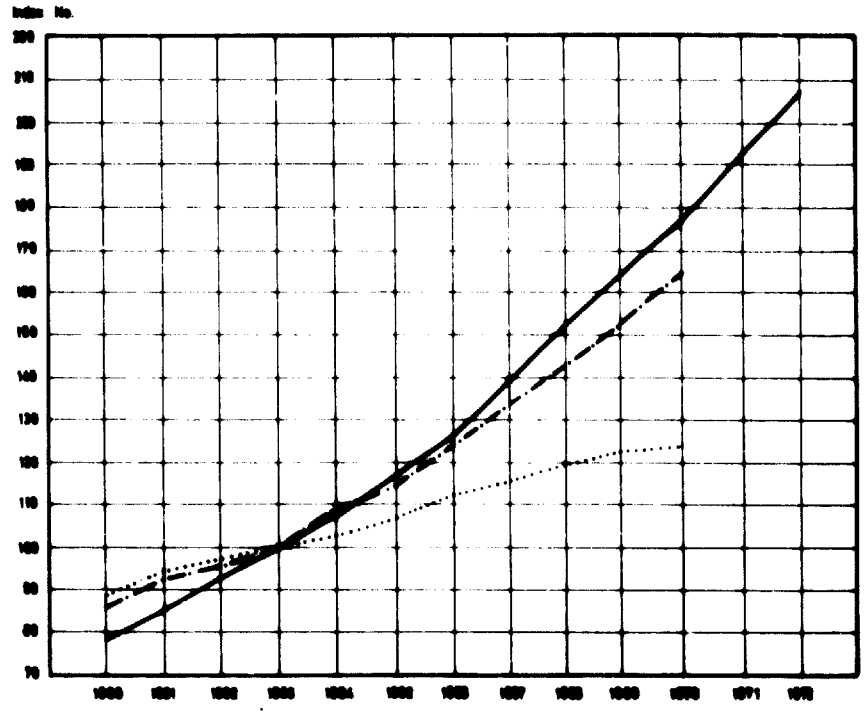
(a) Developing countries



(b) Developed market economies



(c) Centrally planned economies

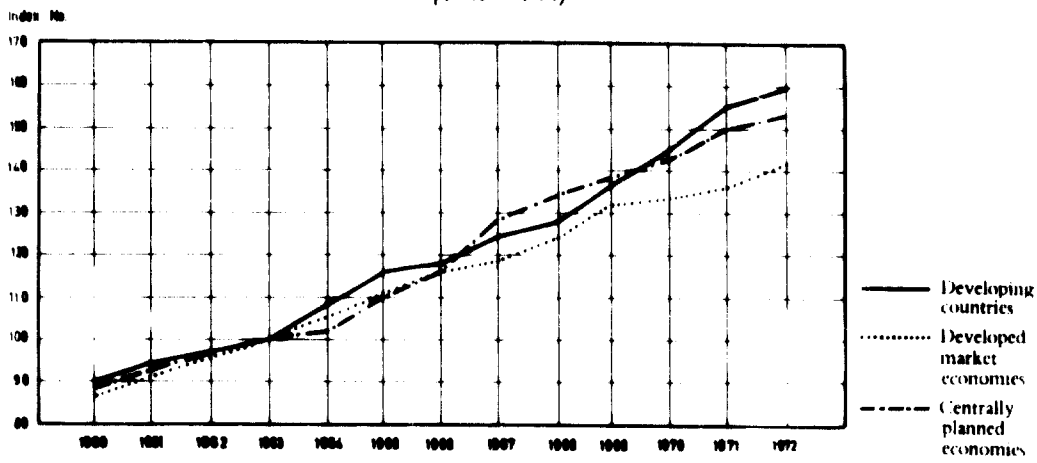


Manufacturing output
Manufacturing employment
GDP

Sources: ***Statistical Yearbook, 1971*** **(United Nations publication, Sales No. 72.XVII.1); and** ***Monthly Bulletin of Statistics*** **(February 1973) (United Nations publication).**

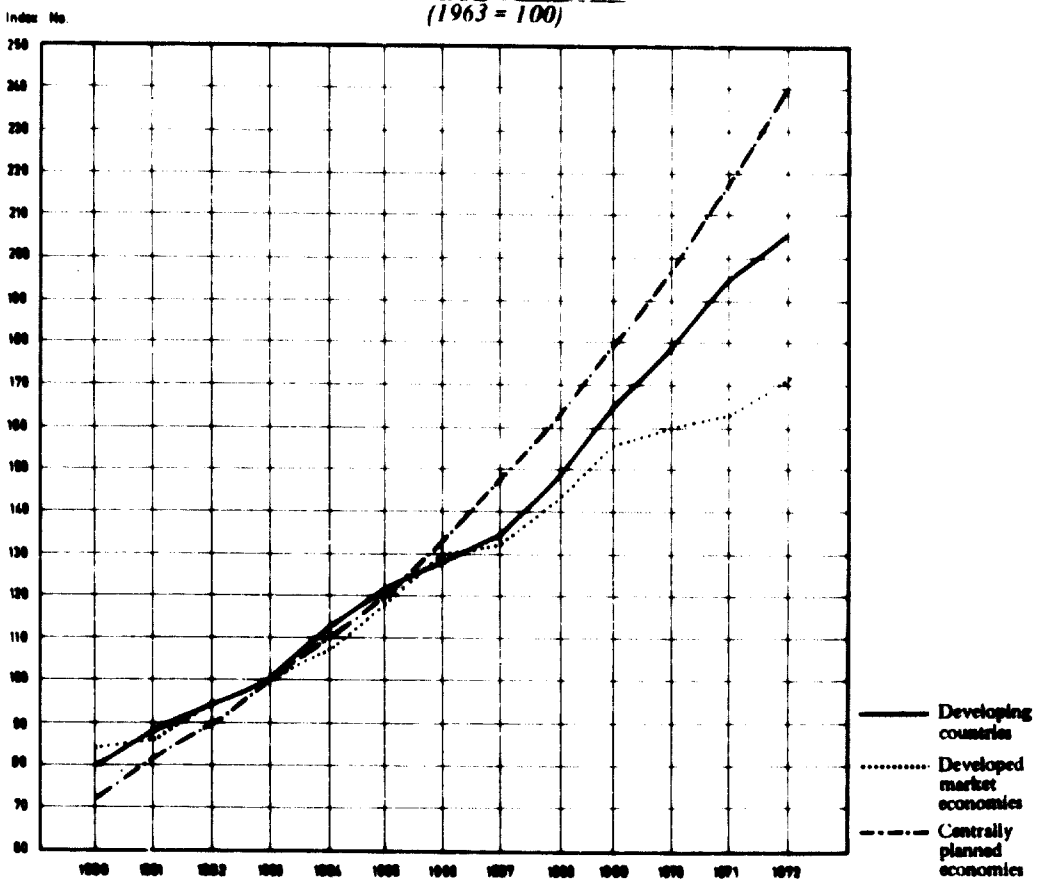
Note: **1972 preliminary estimates.**

5. Light manufacturing output (ISIC 31–33, 342, 355–356, 39) by economic grouping, 1960–1972
(1963 = 100)



Sources: Statistical Yearbook, 1971 (United Nations publication, Sales No.: 72.XVII.1), and *Monthly Bulletin of Statistics* (February 1973) (United Nations publication).

6. Heavy manufacturing output (ISIC 341, 351–354, 36–38) by economic grouping, 1960–1972
(1963 = 100)

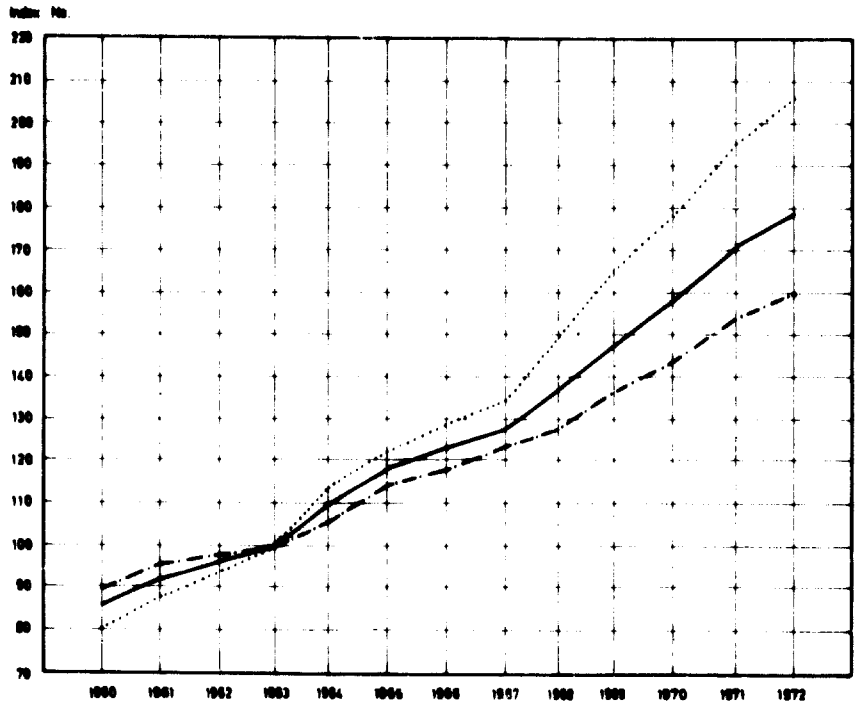


Sources: Statistical Yearbook, 1971 (United Nations publication, Sales No. 72.XVII.1); and *Monthly Bulletin of Statistics* (February 1973) (United Nations publication).

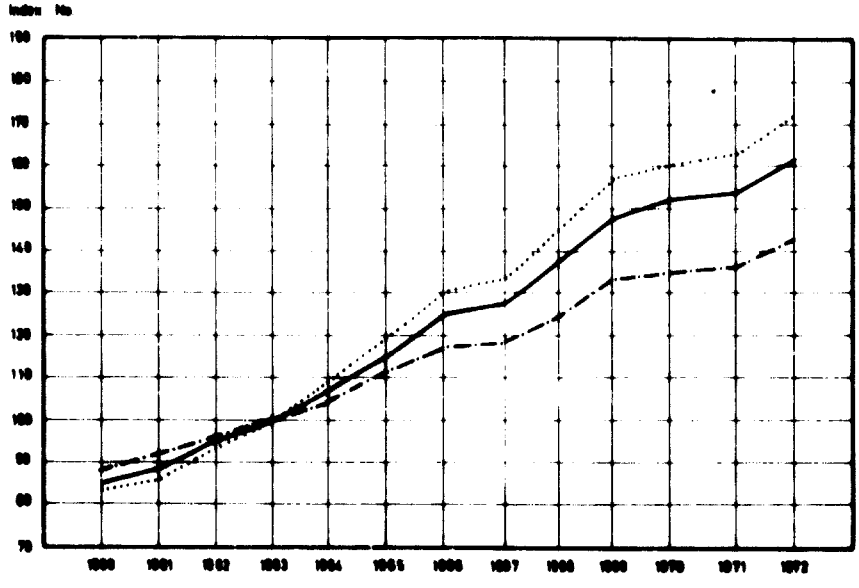
Note: 1972 preliminary estimates.

7. Manufacturing output, 1960-1972
(1963 = 100)

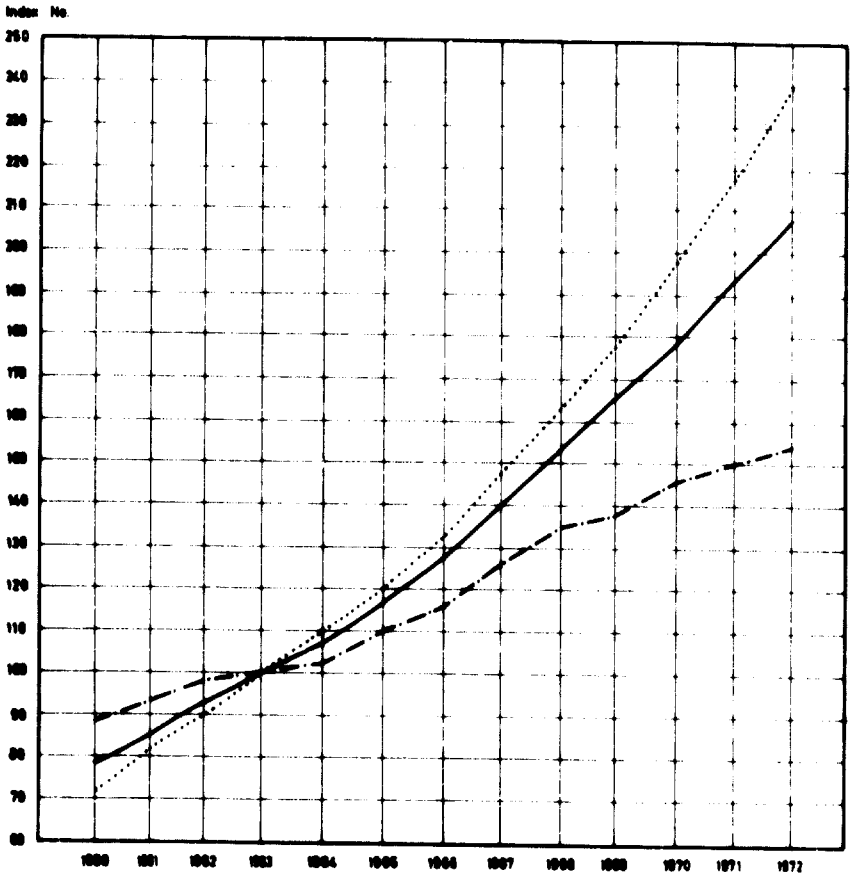
(a) Developing countries



(b) Developed market economies



(c) Centrally planned economies



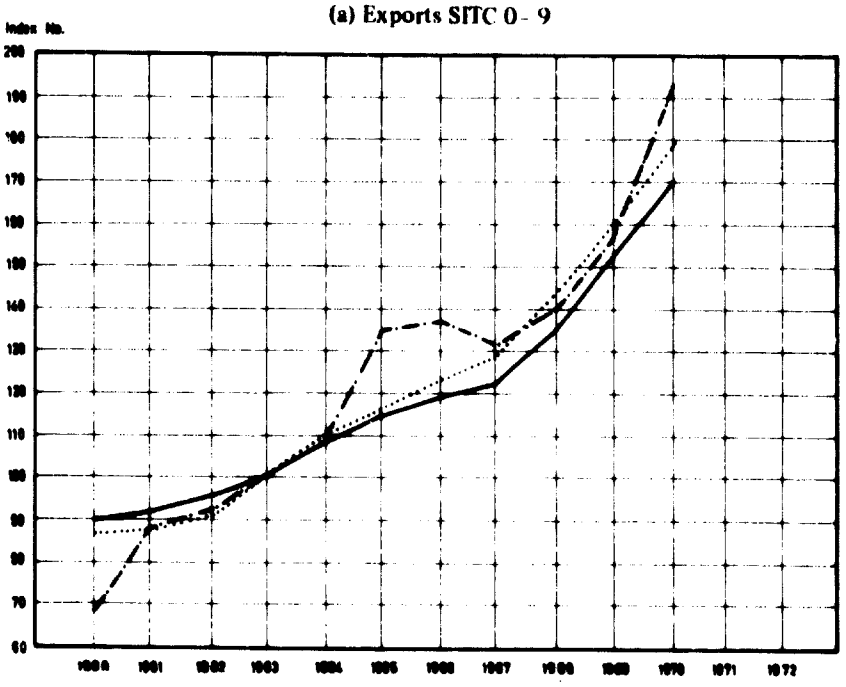
——— Total manufacturing output
····· Heavy manufacturing output
— · — · — Light manufacturing output

Sources: ***Statistical Yearbook, 1971*** **(United Nations publication, Sales No. 72.XVII.1); and** ***Monthly Bulletin of Statistics*** **(February 1973) (United Nations publication).**

Note: **1972 preliminary estimates.**

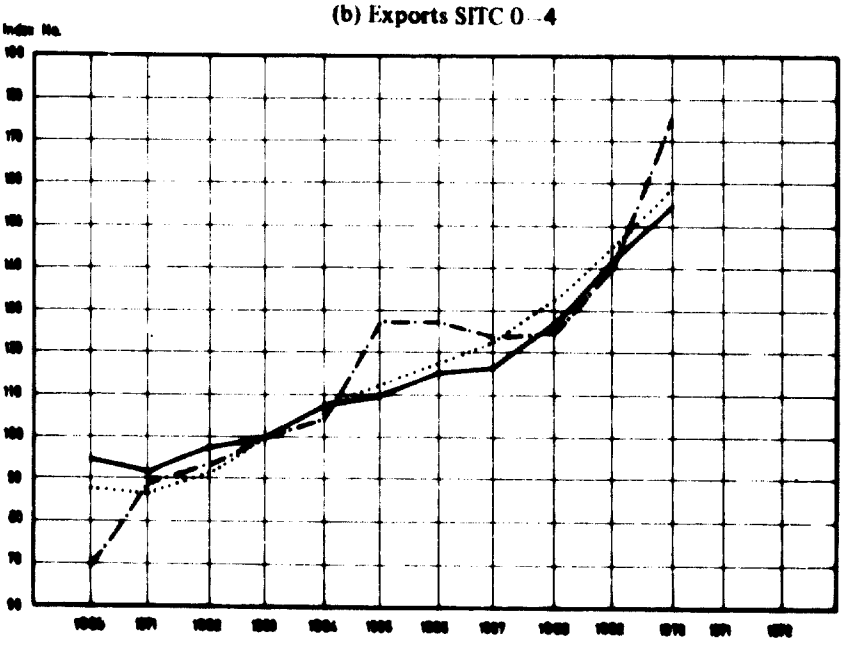
8. Destination of exports from developing countries, 1960–1970
(1963 = 100)

(a) Exports SITC 0–9



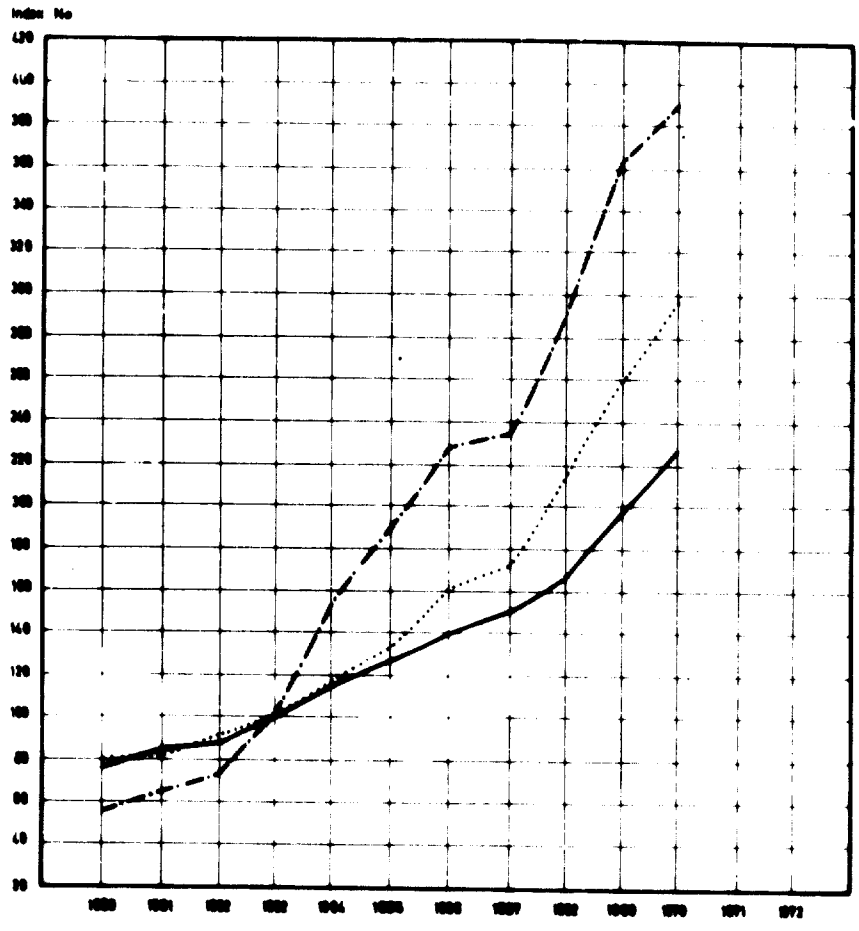
Value (f.o.b.) in 1963: $6.7 billion to developing countries;
$22.8 billion to developed market economies;
$1.4 billion to centrally planned economies.

(b) Exports SITC 0–4



Value (f.o.b.) in 1963: $5.1 billion to developing countries;
$19.5 billion to developed market economies;
$1.3 billion to centrally planned economies.

(c) Exports SITC 5–8



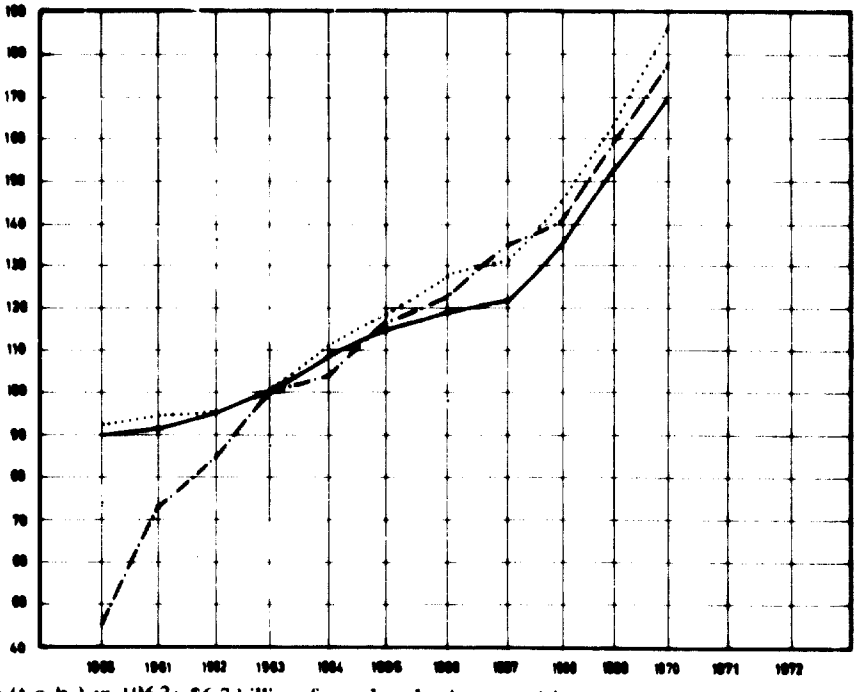
Value (f.o.b.) in 1963: $1.5 billion to developing countries;
$3.2 billion to developed market economies;
$0.1 billion to centrally planned economies.

——— Developing countries
..... Developed market economies
–·–·– Centrally planned economies

Source: Monthly Bulletin of Statistics (July 1972) (United Nations publication).

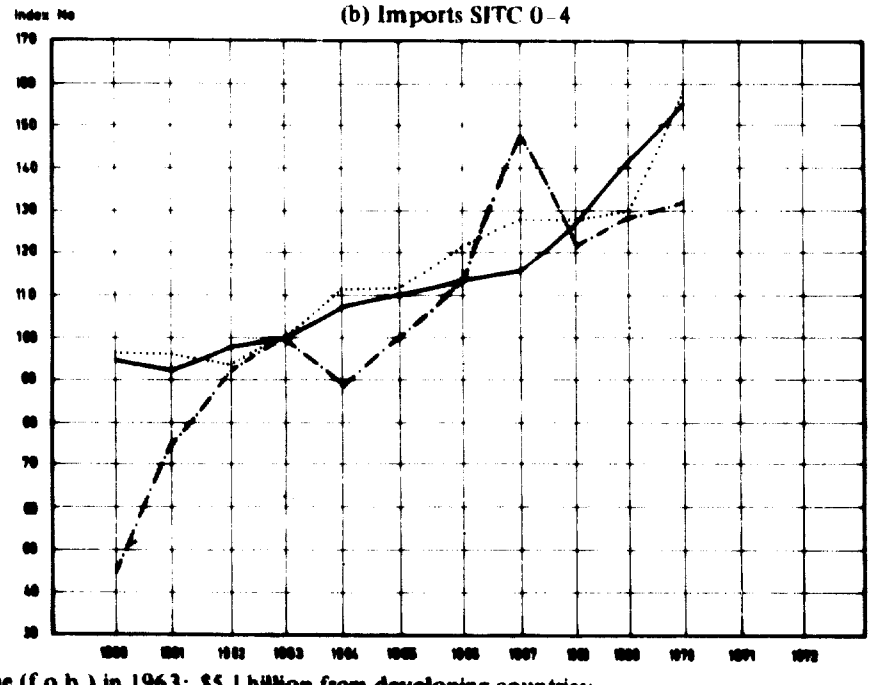
9. Source of imports to developing countries, 1960-1970
(1963 = 100)

(a) Imports SITC 0-9



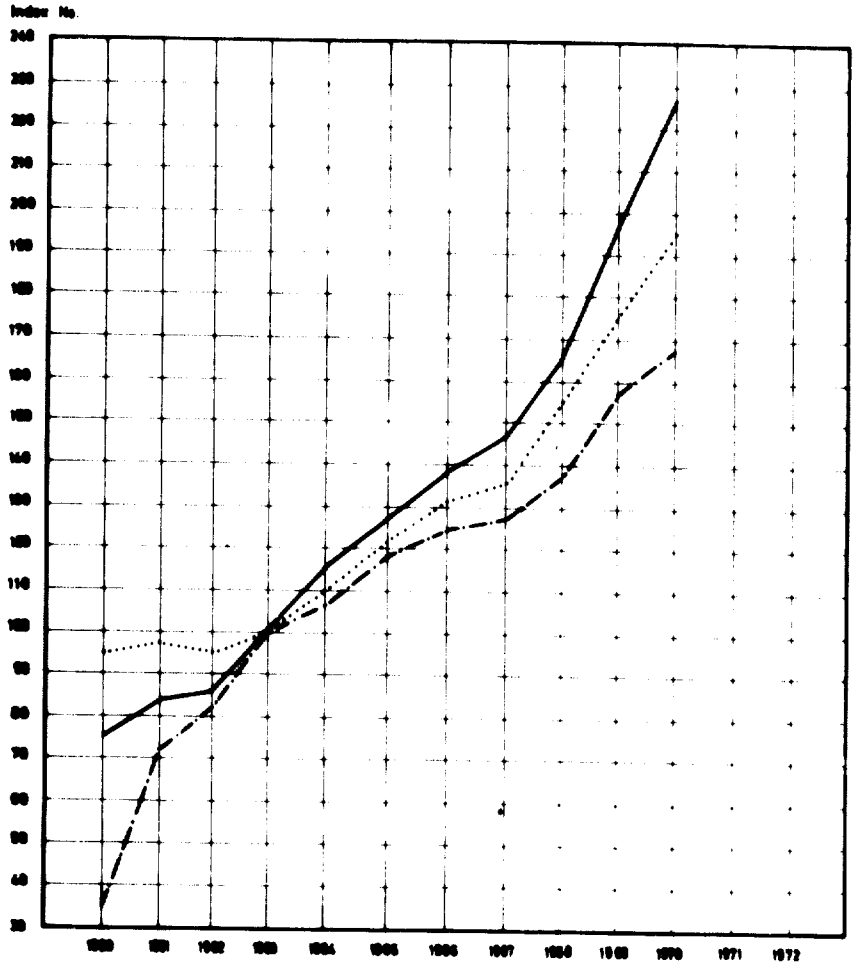
Value (f.o.b.) in 1963: $6.7 billion from developing countries;
$23.0 billion from developed market economies;
$1.8 billion from centrally planned economies.

(b) Imports SITC 0-4



Value (f.o.b.) in 1963: $5.1 billion from developing countries;
$4.7 billion from developed market economies;
$0.5 billion from centrally planned economies.

(c) Imports SITC 5 - 8



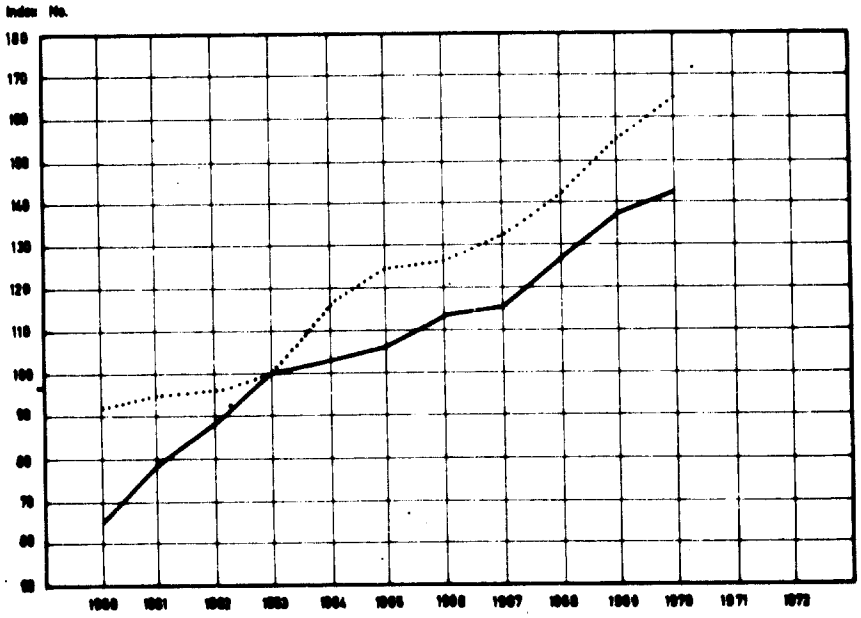
Value (f.o.b.) in 1963: $1.5 billion from developing countries;
$17.3 billion from developed market economies;
$1.3 billion from centrally planned economies.

——— Developing countries
····· Developed market economies
— — — Centrally planned economies

Source: Monthly Bulletin of Statistics (July 1972) (United Nations publication).

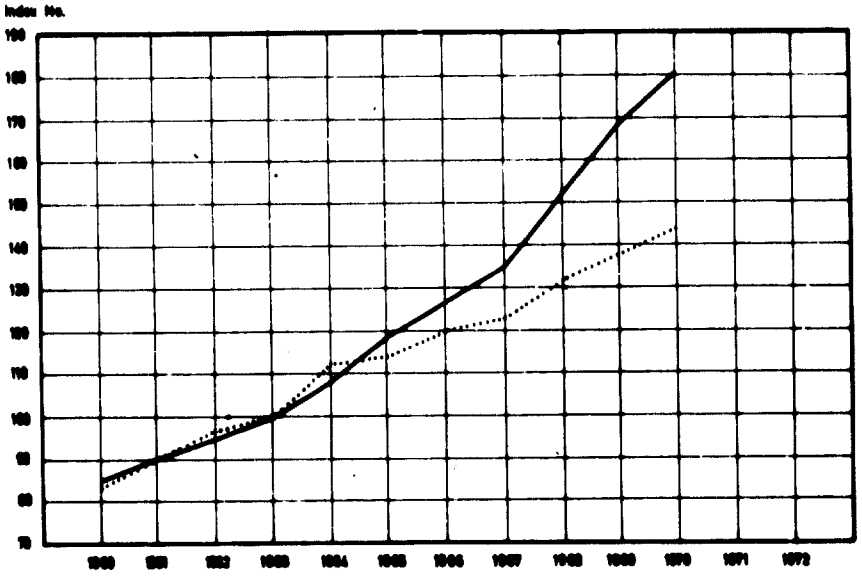
10. Production of selected industrial products, 1960–1970
(1963 = 100)

(a) Pig-iron and ferro-alloys



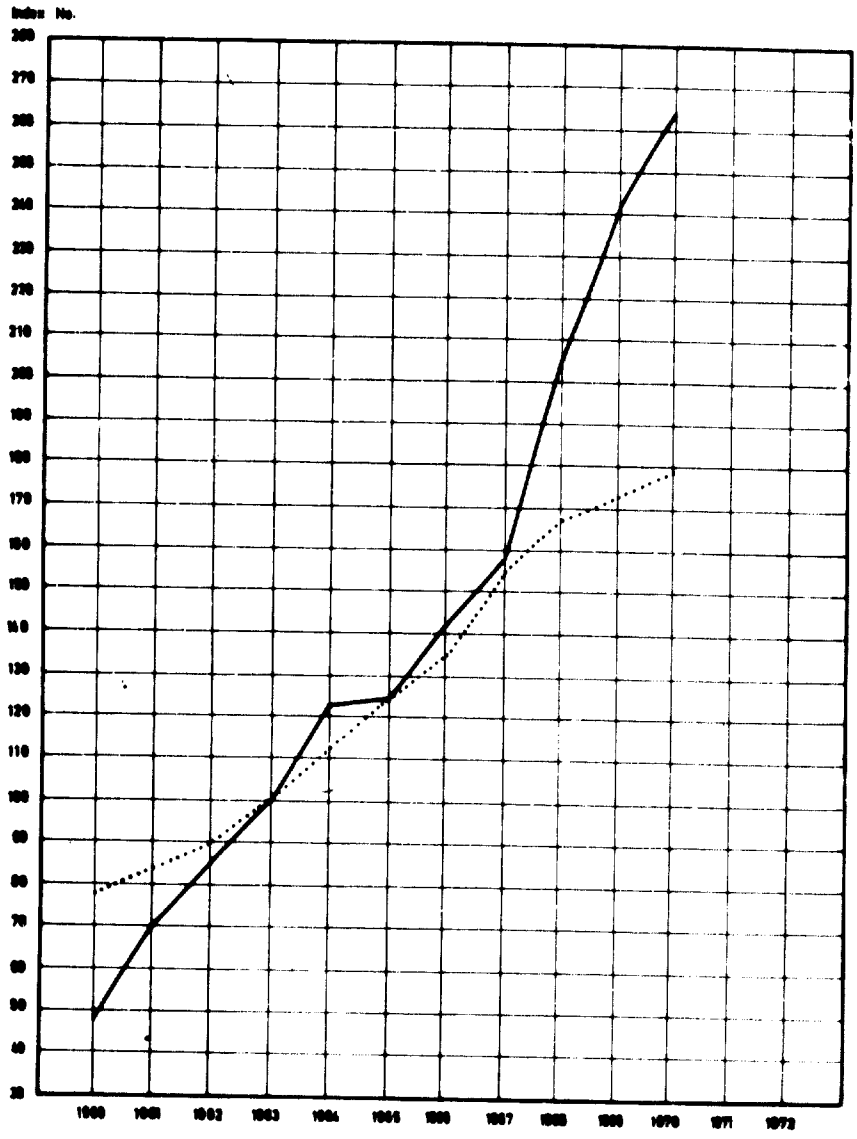
1963 production: 12 million tons in developing countries;
175 million tons in developed market economies.

(b) Cement



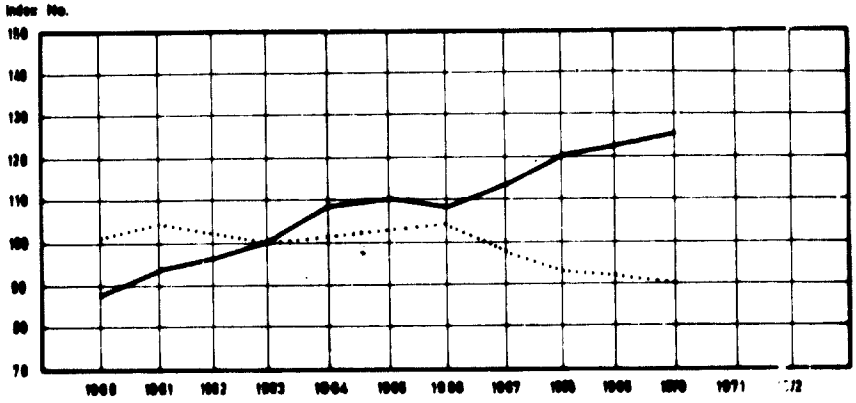
1963 production: 46 million tons in developing countries;
225 million tons in developed market economies.

(c) Nitrogenous fertilizers



1963 production: 1.1 million tons in developing countries;
10.9 million tons in developed market economies.

(d) Cotton yarn



1963 production: 1.6 million tons in developing countries;
4.0 million tons in developed market economies.

——— Developing countries
····· Developed market economies

Source: Statistical Yearbook, 1971 (United Nations publication, Sales No. 72.XVII.1).

Annex II

INDEX NUMBERS OF PRODUCTION AT THE BRANCH LEVEL OF THE MANUFACTURING SECTOR

TABLE 1. INDEX NUMBERS OF PRODUCTION AT THE BRANCH LEVEL OF THE MANUFACTURING SECTOR, FOR THE DEVELOPING COUNTRIES

Branch of industry	*ISIC*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*	*Growth trends*[a]	*Number of countries*
Food products	311–312	88	93	98	100	105	108	114	117	122	4.0	14
Beverages	313	85	91	96	100	105	117	133	131	141	6.8	12
Tobacco	314	89	94	98	100	107	114	120	126	135	5.2	13
Textiles	321	89	93	97	100	107	107	106	111	122	3.5	14
Wearing apparel, except foot-wear	322	68	79	87	100	101	115	124	131	134	8.8	9
Leather and leather and fur products	323	90	94	99	100	104	115	112	113	113	3.2	14
Foot-wear[a b]	324	...	...	...	...	...	...	...	...	...	...	...
Wood products, except furniture	331	95	90	91	100	106	99	102	106	114	2.4	10
Furniture and fixtures, except metal	332	81	75	91	100	117	125	131	136	136	8.4	8
Paper and paper products	341	73	81	90	100	106	114	126	134	150	9.1	15
Printing, publishing	342	82	85	93	100	107	111	122	130	145	7.3	11
Industrial chemicals Other chemical products	351 352	71	84	91	100	110	117	131	138	158	9.8	14
Petroleum refineries Miscellaneous products of petroleum and coal	353 354	92	95	101	100	106	103	126	146	172	7.5	3
Rubber products	355	80	86	92	100	109	115	126	134	153	8.1	14
Plastic products	356	...	...	...	...	...	...	...	...	...	...	...
Pottery, china and earthenware	361	64	69	72	100	99	96	106	113	120	8.2	4
Glass and glass products	362	73	84	94	100	93	109	111	130	142	7.6	5
Other non-metallic mineral products	369	83	90	95	100	108	110	128	137	139	7.0	6
Iron and steel basic industries	371	76	81	91	100	112	113	134	143	155	9.6	5
Non-ferrous metal basic industries	372	...	...	...	...	...	...	...	...	...	...	...
Metal products, except machinery etc.	381	74	83	88	100	111	142	148	143	145	10.0	10
Machinery, except electrical	382	70	80	89	100	114	130	128	136	153	10.0	8
Electrical machinery, apparatus etc.	383	67	82	92	100	113	112	134	146	178	11.4	9
Transport equipment	384	72	82	100	100	114	117	123	123	141	7.7	10
Professional, photographic goods etc.	385	...	...	...	...	...	...	...	...	...	...	...
Other manufacturing industries	390	...	...	...	...	...	...	...	...	...	...	...

Sources: Based on *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4); and basic data for 1963 industrial output prepared by the United Nations Statistical Office.

[a] Growth trends are calculated by the regression analysis, using the formula $x(t) = x(0)(1 + r)^t$ where t indicates time, r is growth rate and x is an index number.

[b] Included in wearing apparel (ISIC 322).

TABLE 2. INDEX NUMBERS OF PRODUCTION AT THE BRANCH LEVEL OF THE MANUFACTURING SECTOR, FOR LATIN AMERICA

Branch of industry	*ISIC*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*	*Growth trends*[a]	*Number of countries*
Food products	311/2	89	94	100	100	105	103	112	118	124	3.8	8
Beverages	313	86	92	97	100	106	116	131	127	133	6.0	8
Tobacco	314	91	98	99	100	102	104	107	114	122	3.0	9
Textiles	321	88	92	97	100	107	104	106	111	120	3.4	8
Wearing apparel, except foot-wear	322	88	93	97	100	110	107	117	117	127	4.4	6
Leather and leather and fur products	323	94	99	101	100	104	120	113	115	118	3.0	9
Foot-wear	324	83	94	99	100	103	114	128	136	124	5.7	4
Wood products, except furniture	331	102	96	96	100	107	96	96	99	100	0.0	7
Furniture and fixtures, except metal	332	81	82	100	100	138	150	159	185	183	12.5	5
Paper and paper products	341	78	86	91	100	106	114	125	136	150	8.3	9
Printing, publishing	342	78	84	92	100	108	111	123	134	146	8.0	7
Industrial chemicals	351	71	85	94	100	109	113	129	137	154	9.2	9
Other chemical products	352											
Petroleum refineries	353	...	...	...	...	...	...	...	...	...	...	...
Miscellaneous products of petroleum and coal	354	...	...	...	...	...	...	...	...	...	...	...
Rubber products	355	81	86	93	100	111	114	131	139	152	8.3	9
Plastic products	356	...	...	...	...	...	...	...	...	...	...	...
Pottery, china and earthenware	361	64	69	69	100	99	89	92	92	97	5.1	2
Glass and glass products	362	62	76	86	100	83	94	98	109	100	5.5	3
Other non-metallic mineral products	369	77	82	93	100	104	107	121	119	122	6.0	4
Iron and steel basic industries	371	76	81	91	100	112	112	133	142	154	9.4	4
Non-ferrous metal basic industries	372	...	...	...	...	...	...	...	...	...	...	...
Metal products, except machinery, etc.	381	72	79	85	100	113	120	131	137	149	9.8	5
Machinery, except electrical	382	90	92	93	100	108	105	108	107	127	3.7	3
Electrical machinery, apparatus etc.	383	78	95	103	100	108	98	124	135	163	7.5	4
Transport equipment	384	80	90	107	100	108	109	134	135	161	7.9	4
Professional, photographic goods etc.	385	...	...	...	...	...	...	...	...	...	...	...
Other manufacturing industries	390	...	...	...	...	...	...	...	...	...	...	...

Sources: Based on *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4); and basic data for 1963 industrial output prepared by the United Nations Statistical Office.

[a] See table 1, foot-note *a*.

TABLE 3. INDEX NUMBERS OF PRODUCTION AT THE BRANCH LEVEL OF THE MANUFACTURING SECTOR, FOR ASIA

Branch of industry	*ISIC*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*	*Growth trends*[a]	*Number of countries*
Food products	311/2	88	96	98	100	107	115	121	121	124	4.4	6
Beverages	313	89	94	100	100	113	131	144	141	158	8.5	4
Tobacco	314											
Textiles	321	90	93	96	100	106	108	106	110	123	3.5	6
Wearing apparel, except foot-wear	322	68	78	83	100	101	115	125	134	138	10.5	3
Leather and leather and fur products	323	82	86	93	100	94	99	104	108	114	5.2	5
Foot-wear[b]	324	...	...	...	...	...	...	...	...	...	...	...
Wood products, except furniture	331	80	77	88	100	103	172	159	176	199	15.4	3
Furniture and fixtures, except metal	332											
Paper and paper products	341	74	79	85	100	105	112	124	131	151	9.2	6
Printing, publishing	342	117	107	108	100	107	115	134	136	164	4.5	4
Industrial chemicals	351	74	83	92	100	109	118	130	140	168	10.0	5
Other chemical products	352											
Petroleum refineries	353	85	91	94	100	110	117	148	172	202	11.3	3
Miscellaneous products of petroleum and coal	354											
Rubber products	355	82	88	91	100	112	119	120	131	159	8.6	5
Plastic products	356	...	...	...	...	...	...	...	...	...	...	...
Pottery, china and earthenware	361											
Glass and glass products	362	71	81	90	100	108	119	122	132	131	6.6	7
Other non-metallic mineral products	369											
Iron and steel basic industries	371	...	...	...	...	...	...	...	...	...	...	...
Non-ferrous metal basic industries	372	...	...	...	...	...	...	...	...	...	...	...
Metal products, except machinery etc.	381	75	86	89	100	116	147	153	146	141	9.0	5
Machinery, except electrical	382	57	73	90	100	119	156	152	167	180	12.8	5
Electrical machinery, apparatus etc.	383	62	72	84	100	116	136	155	175	220	16.6	5
Transport equipment	384	63	72	92	100	125	131	111	118	123	4.0	6
Professional, photographic goods etc.	385	...	...	...	...	...	...	...	...	...	...	...
Other manufacturing industries	390	...	...	...	...	...	...	...	...	...	...	...

Sources: Based on *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4); and basic data for 1963 industrial output prepared by the United Nations Statistical Office.

Note: Vertical lines between 1961 and 1962 indicate discontinuity of time series.

[a] See table 1, foot-note *a*.

[b] Included in wearing apparel (ISIC 322).

TABLE 4. INDEX NUMBERS OF PRODUCTION AT THE BRANCH LEVEL OF THE MANUFACTURING SECTOR, FOR THE DEVELOPED MARKET ECONOMIES

Branch of industry	*ISIC*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*	*Growth trends*[a]	*Number of countries*
Food products	311/2	90	94	97	100	103	106	110	113	117	3.2	18
Beverages	313	86	89	94	100	107	111	117	122	130	5.4	17
Tobacco	314	91	94	96	100	106	110	111	112	116	3.2	21
Textiles	321	91	92	97	100	104	107	112	109	117	3.2	22
Wearing apparel, except foot-wear	322	88	90	95	100	106	114	118	115	117	4.1	17
Leather and leather and fur products	323	92	97	98	100	102	101	105	102	106	1.5	21
Foot-wear	324	94	97	99	100	104	108	110	105	112	2.1	20
Wood products, except furniture	331	92	92	96	100	105	109	110	109	116	3.1	16
Furniture and fixtures, except metal	332	88	90	96	100	109	119	126	124	133	5.8	16
Paper and paper products	341	86	91	95	100	108	114	122	125	133	5.7	22
Printing, publishing	342	91	94	97	100	107	112	121	124	128	4.7	19
Industrial chemicals	351	74	80	90	100	111	122	136	146	163	10.5	14
Other chemical products	352	84	87	93	100	106	114	126	132	142	7.0	11
Petroleum refineries	353	81	86	92	100	109	116	128	138	151	8.2	8
Miscellaneous products of petroleum and coal	354	94	98	97	100	106	110	111	115	122	3.2	8
Rubber products	355	85	84	93	100	109	115	122	121	136	6.3	19
Plastic products	356	69	76	90	100	118	135	156	171	201	14.5	9
Pottery, china and earthenware	361	90	95	99	100	111	117	119	112	117	3.5	11
Glass and glass products	362	35	86	94	100	110	115	121	121	132	6.0	13
Other non-metallic mineral products	369	88	91	94	100	110	115	118	118	125	4.7	12
Iron and steel basic industries	371	92	92	94	100	115	122	125	125	134	5.5	15
Non-ferrous metal basic industries	372	86	89	94	100	110	117	125	118	131	5.6	16
Metal products, except machinery, etc.	381	87	89	94	100	109	118	126	126	133	6.1	20
Machinery, except electrical	382	85	89	96	100	110	119	131	135	139	7.0	19
Electrical machinery, apparatus etc.	383	83	87	96	100	108	119	134	137	148	7.8	21
Transport equipment	384	83	83	92	100	105	116	128	128	141	7.3	19
Professional, photographic goods etc.	385	87	91	96	100	106	116	131	135	139	6.6	11
Other manufacturing industries	390	86	90	96	100	107	116	123	124	127	5.4	8

Sources: Based on *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4); and basic data for 1963 industrial output prepared by the United Nations Statistical Office.

[a] See table 1, foot-note *a*.

TABLE 5. INDEX NUMBERS OF PRODUCTION AT THE BRANCH LEVEL OF THE MANUFACTURING SECTOR, FOR THE CENTRALLY PLANNED ECONOMIES

Branch of industries	*ISIC*	*1960*	*1961*	*1962*	*1963*	*1964*	*1965*	*1966*	*1967*	*1968*	*Growth trends*[a]	*Number of countries*
Food products	311/2	84	89	96	100	104	115	120	129	135	6.2	5
Beverages	313	77	84	95	100	106	119	132	140	152	8.8	5
Tobacco	314	88	90	87	100	114	130	131	133	150	7.5	5
Textiles	321	91	95	98	100	105	109	118	127	134	4.9	7
Wearing apparel, except foot-wear	322	87	94	99	100	101	105	115	131	147	5.9	6
Leather and leather and fur products	323	87	93	97	100	102	104	108	115	122	3.8	5
Foot-wear	324	92	96	99	100	105	109	117	127	137	4.9	5
Wood products, except furniture	331	88	92	96	100	106	110	112	119	127	4.5	5
Furniture and fixtures, except metal	332	75	84	94	100	107	115	125	138	152	8.8	5
Paper and paper products	341	83	89	95	100	108	117	127	138	151	7.7	7
Printing, publishing	342	83	89	96	100	107	114	124	134	150	7.4	6
Industrial chemicals	351	66	75	87	100	115	132	150	170	190	14.4	7
Other chemical products	352	71	81	92	100	111	127	139	154	171	11.5	7
Petroleum refineries	353	69	78	91	100	110	130	143	159	181	12.8	5
Miscellaneous products of petroleum and coal	354	87	90	95	100	106	110	115	117	121	4.5	6
Rubber products	355	74	82	91	100	111	120	131	144	157	9.8	5
Plastic products	356	...	...	...	...	...	...	...	...	...	...	...
Pottery, china and earthenware	361	79	87	93	100	108	114	125	135	147	7.8	5
Glass and glass products	362	74	83	93	100	111	123	135	150	163	10.3	5
Other non-metallic mineral products	369	77	86	93	100	109	119	130	142	153	8.9	7
Iron and steel basic industries	371	79	87	94	100	108	117	126	135	143	7.7	6
Non-ferrous metal basic industries	372	77	85	93	100	108	118	128	140	150	8.7	6
Metal products, except machinery, etc.	381	73	83	92	100	111	120	130	144	160	10.0	7
Machinery, except electrical	382	68	79	91	100	109	120	134	150	169	11.4	7
Electrical machinery, apparatus etc.	383	66	77	89	100	111	131	137	150	165	12.1	7
Transport equipment	384	73	81	91	100	107	118	129	141	156	9.7	6
Professional, photographic goods etc.	385	73	81	92	100	107	120	133	155	173	11.1	4
Other manufacturing industries	390	81	87	93	100	111	125	136	155	177	10.2	6

Sources: Based on *The Growth of World Industry, 1970 Edition*, vol. I (United Nations publication, Sales No. 72.XVII.4), and basic data for 1963 industrial output prepared by the United Nations Statistical Office.

Annex III

ANALYSIS OF APPARENT CONSUMPTION AND COMMODITY BALANCE FOR SELECTED COMMODITIES

A. Shapes of functions

B. Correspondence between ISIC and SITC codes

C. Availability of statistics for commodity balances

A. SHAPES OF FUNCTIONS

In this annex, the four functions stated in chapter IV, part two, are illustrated, and plot diagrams are given for some commodities. In the case of wheat flour, the coefficients of the four equations are estimated by the usual regression analysis as follows:

log-log: $\log c = 1.693 + \underset{(0.084)}{0.326} \log y$ $\quad \bar{R}^2 = 0.329$

semi-log: $c = 28.13 + \underset{(4.26)}{12.45} \log y$ $\quad \bar{R}^2 = 0.216$

log-inverse: $\log c = 4.238 - \underset{(37.10)}{178.25} \times \frac{1}{y}$ $\quad \bar{R}^2 = 0.457$

log-log-inverse: $\log c = 6.104 - \underset{(115.06)}{289.68} \times \frac{1}{y} + \underset{(0.242)}{0.247} \log y$ $\quad \bar{R}^2 = 0.446$

These four equations are plotted in figure I. In the case of the log-log function, *per capita* apparent consumption increases sharply as the level of *per capita* income rises. The semi-log function shows a less rapid increase in consumption. In the case of log-inverse function, consumption increases more rapidly at a relatively low level of income, but the rate of increase tends to reduce at a higher level of income. The log-log-inverse curve has a maximum point, before which consumption increases most sharply; it is reduced after this point.

Figure II gives the four curves for the income elasticity of *per capita* apparent consumption, derived from the four equations respectively. The log-log equation has a constant elasticity, and the other three have a decreasing elasticity. Figure III is a plot diagram for cement, and figure IV is a plot diagram for yarn of synthetic fibres. The estimated equations are:

Cement:

$\log c = 2.718 - \underset{(78.17)}{130.00} \times \frac{1}{y} + \underset{(0.212)}{0.472} \log y$ $\quad \bar{R}^2 = 0.794$

Yarn of synthetic fibres:

$\log c = -4.538 - \underset{(212.72)}{111.56} \times \frac{1}{y} + \underset{(0.452)}{0.864} \log y$ $\quad \bar{R}^2 = 0.689$

Figure I. Wheat flour – relation between per capita *apparent consumption and* per capita *income*

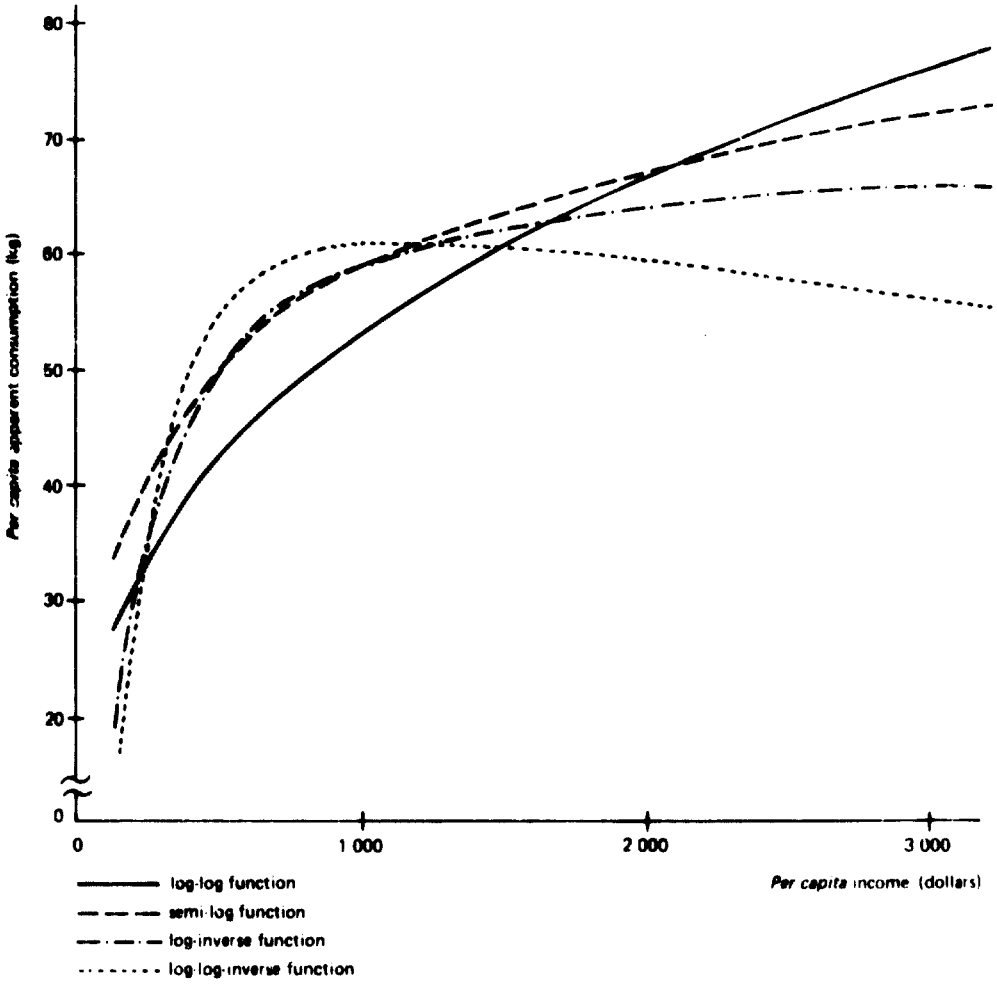


Figure II. Wheat flour – income elasticity of per capita *apparent consumption*

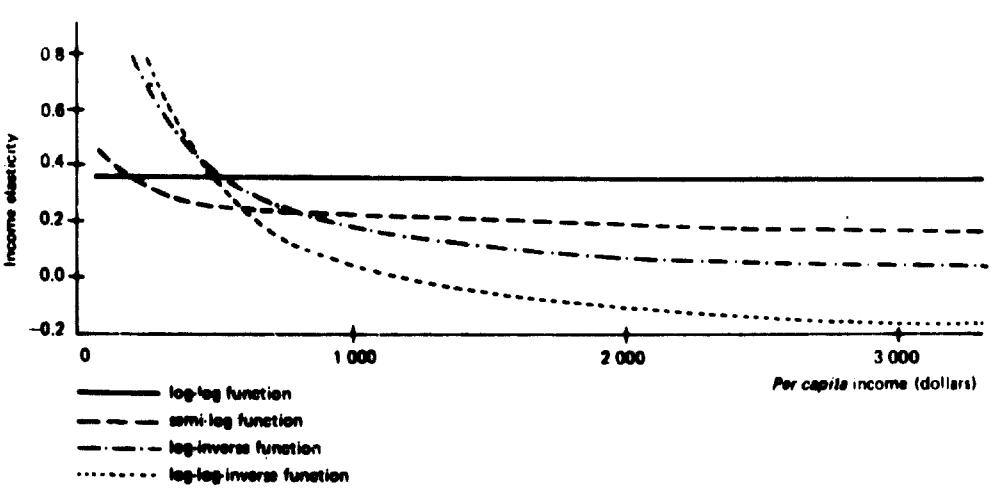


Figure III. Cement – per capita *apparent consumption*

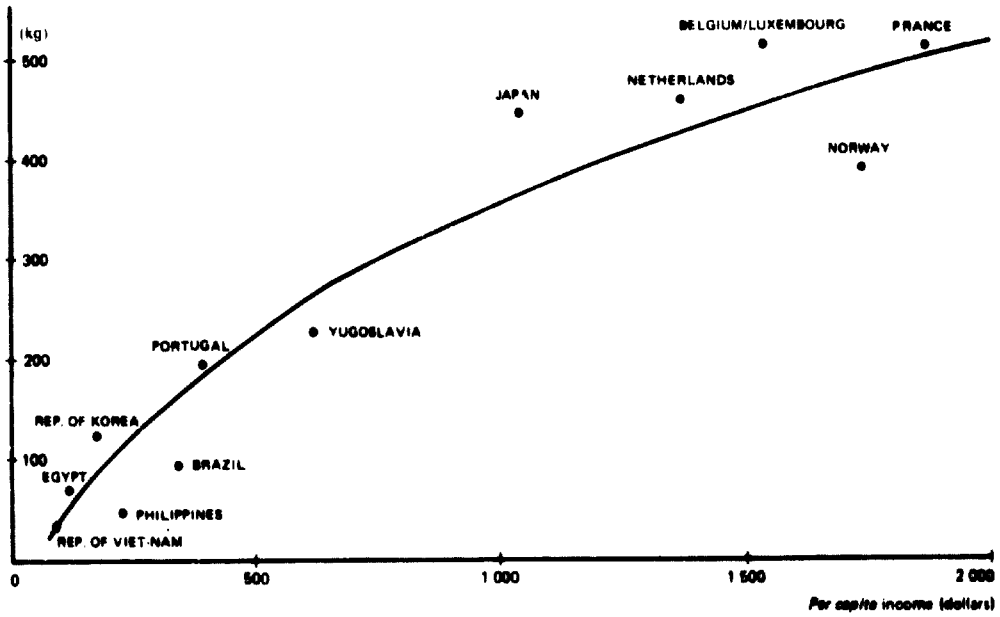
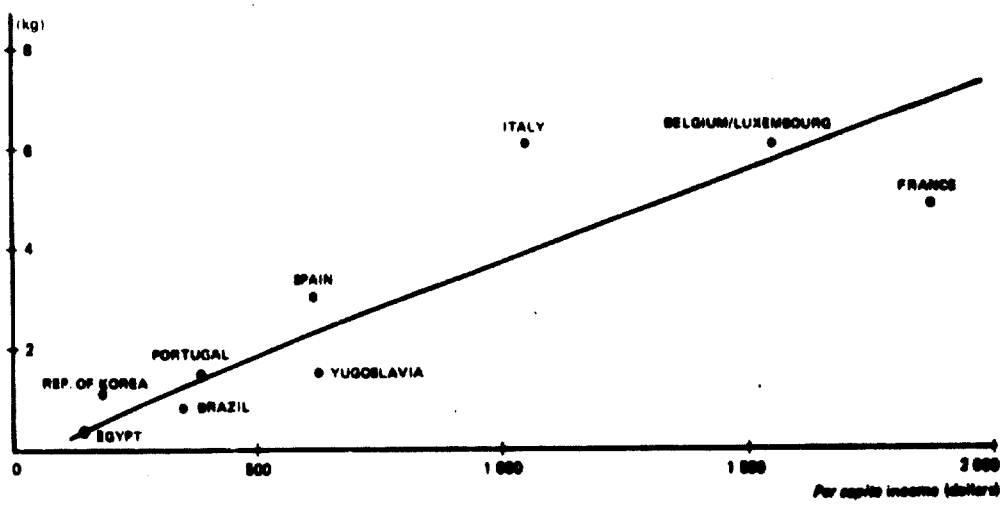


Figure IV. Yarn of synthetic fibres – per capita *apparent consumption*



B. CORRESPONDENCE BETWEEN ISIC AND SITC CODES FOR SELECTED COMMODITIES

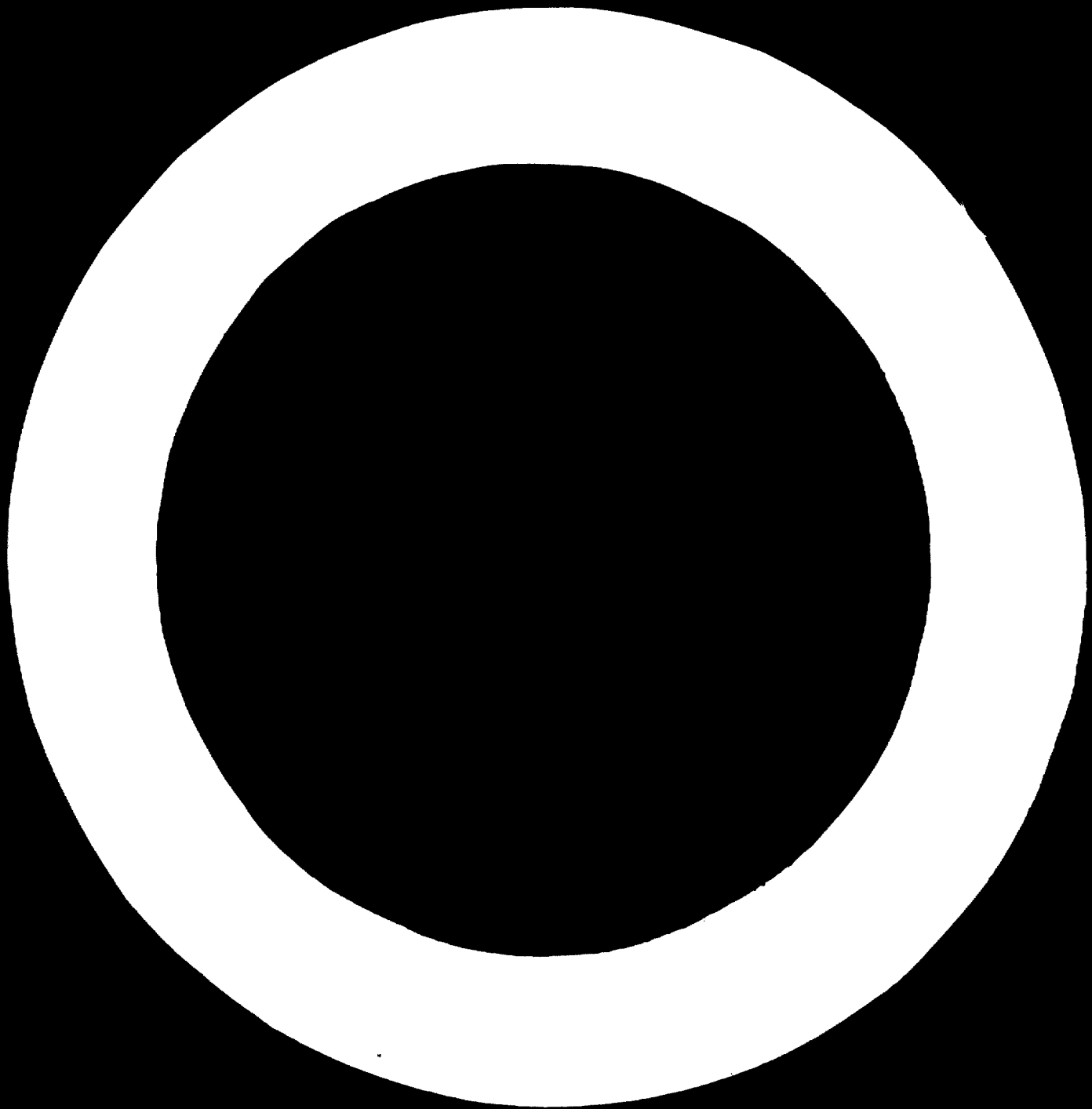
ISIC		*SITC*
311602	Flour, cereal, other than wheat	0470
311603	Flour, wheat	0460
311801	Raw sugar	0611
311802	Refined sugar	0612
313301	Beer	1123
321101	Cotton yarn, pure	6513
321102	Cotton yarn, mixed	
321109	Cotton woven fabrics	6521
321112	Woollen woven fabrics	6532
321301	Knitted fabrics	6537
331101	Sawnwood, coniferous	2432
331102	Sawnwood, broad-leaved	2433
331105	Plywood	6312
341101	Wood pulp, mechanical	2512
341102	Wood pulp other than mechanical	2516, 2517, 2518, 2519
341106	Newsprint	6411
351201	Nitrogenous fertilizers	5611
351204	Potassic fertilizers	5613
351301	Cellulosic continuous filaments	6516
351302	Cellulosic staple and tow	
351303	Non-cellulosic continuous fibres	
351304	Non-cellulosic staple and tow	
351314	Synthetic rubber	2312
351395	Artificial resins, plastic materials	5811, 5812
352301	Soap	5541
352302	Washing powder and detergents	5542
353003	Distillate fuel oils	3323
353091	Motor spirit (including aviation spirit)	3321
362003	Glass, unworked, in rectangles	6643
369201	Cement	6612
371005	Crude steel, ingots	6723
371006	Crude steel for castings	
371015	Plates (heavy), over 4.75 mm	6741
371016	Plates (medium), 3 to 4.75 mm	6742
371019	Sheets, electrical	6743
371021	Sheets under 3 mm, cold-rolled	
371022	Sheets under 3 mm, hot-rolled	
371030	Wire, plain	6770
371031	Wire rods	6731
372001	Aluminium, unwrought	6841
382910	Sewing machines	7173
383201	Wireless receivers (radios)	7242
384301	Passenger cars, produced	7321
384302	Passenger cars, assembled	

Source: Based on *The Growth of World Industry, 1969 Edition*, vol. II (United Nations publication Sales No. 71.XVII.7), pp. 436–439.

C. AVAILABILITY OF STATISTICS FOR COMMODITY BALANCES

Country or area	Commodity	Flour, cereal, other than wheat	Flour, wheat	Raw sugar	Refined sugar	Cotton yarn	Cotton woven fabrics	Woollen woven fabrics	Knitted fabrics	Sawnwood, coniferous	Sawnwood, broadleaved	Plywood	Wood pulp, mechanical	Wood pulp, other than mechanical	Newsprint	Nitrogenous fertilizers	Potassic fertilizers	Yarn of synthetic fibres	Synthetic rubbers	Artificial resins, plastic materials	Soap	Washing powder and detergents	Distillate fuel oils	Motor spirit, including aviation spirit	Cement	Oxide steel	Plates (heavy), over 4.75 mm	Plates (medium), 3 to 4.75 mm	Iron sheets, thin, uncoated	Misc. plate	Misc rods	Aluminium, unwrought	Passenger cars
Africa																																
Egypt		X	X	X	X											X		X				X	X		X	X			X			
Libyan Arab Republic		X																					X									
Tunisia		X	X	X																			X	X	X							
Asia																																
Hong Kong					X	X	X																		X							
Philippines		X								X										X	X	X	X		X							X
Republic of Korea		X		X	X										X	X		X			X	X	X	X	X	X	X		X	X		
Republic of Viet-Nam			X	X	X																	X			X				X			
Singapore																					X	X										
Thailand			X		X																		X	X	X							
Latin America																																
Brazil		X	X										X	X	X	X		X	X	X	X	X	X	X	X	X	X		X	X	X	X
Netherlands Antilles																							X	X								
Trinidad and Tobago																					X				X							
Developed market economies																																
Australia		X	X			X		X							X							X		X	X		X	X		X		
Austria		X	X			X			X				X		X	X		X	X	X	X	X	X		X		X	X	X	X	X	X	
Belgium/Luxembourg			X	X	X	X							X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Canada		X	X		X					X	X		X	X	X			X					X	X		X			X	X	X	X	X
Denmark		X	X	X		X							X	X	X	X		X		X	X	X	X	X	X	X	X	X			X	X	
Finland		X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
France		X	X	X	X	X			X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Germany, Federal Republic of		X	X	X	X	X			X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Greece			X	X	X	X									X	X	X	X			X	X	X	X	X	X			X	X		X	
Ireland			X	X		X	X	X		X	X				X	X						X	X	X	X								
Israel			X		X																	X											
Italy			X	X	X	X			X						X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	
Japan			X	X	X	X			X						X	X		X	X	X	X	X	X	X	X	X			X	X	X	X	X
Netherlands					X	X			X				X	X	X	X		X	X	X			X	X	X	X	X	X	X	X	X	X	
New Zealand			X					X	X		X		X	X	X							X	X		X								X
Norway		X	X			X			X	X			X	X	X	X		X		X	X	X	X	X	X	X			X	X	X	X	
Portugal		X	X	X	X	X			X				X	X	X	X		X		X	X	X	X	X	X	X					X	X	
Spain		X	X	X	X	X			X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Sweden		X	X	X	X	X			X				X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X	X	X	
Switzerland			X	X	X	X							X	X	X	X		X					X	X	X	X				X		X	
Turkey			X	X		X							X	X	X	X		X					X	X	X	X	X	X	X				
United Kingdom of Great Britain and Northern Ireland		X	X	X	X	X			X			X			X	X	X	X	X	X	X	X	X	X	X	X	X			X		X	X	X
United States of America		X	X		X			X	X		X		X	X	X		X	X	X		X	X	X	X	X						X	X	X	X
Yugoslavia		X	X		X	X			X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		

Source: Based on *The Growth of World Industry, 1969 Edition*, vol. II (United Nations publication, Sales No. 71.XVII.7); and *Commodity Trade Statistics, 1963 Edition* to *1969 Edition* (ST/STAT/SER.D).



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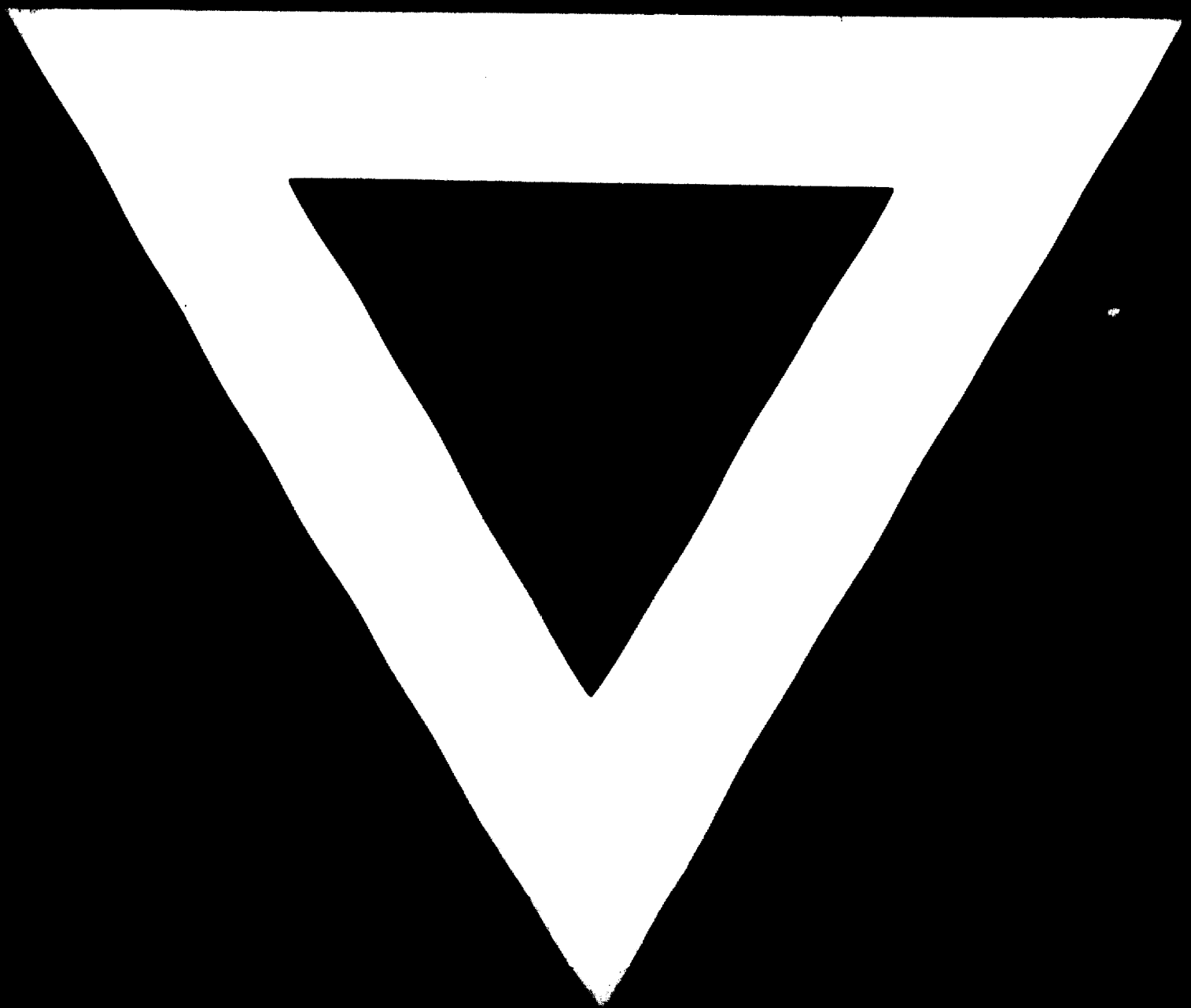

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