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INDEX NUMBERS OF INDUSTRIAL PRODUCTION
IN THE LATIN AMERICAN COUNTRIES

Prepared by the ECLA secretariat

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Introduction

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The following text is a dense, repetitive block of characters and symbols, appearing to be a corrupted or heavily redacted document. It contains numerous instances of the words "Introduction" and "Introduction" interspersed with various symbols, numbers, and punctuation marks. The text is largely illegible due to the high density of noise and the lack of clear structure.

INTRODUCTION

Background information

1. Index numbers of industrial production constitute the most satisfactory short-term indicators of changes in the volume or quantum of production of industrial goods, and enable these changes to be evaluated in relation to the targets established for the expansion of production.

2. As indicators of the changes in production volumes registered through time, indexes of industrial production represent a valuable instrument for analysis of the behaviour pattern of the industrial sector, whether in a specific study of the sector itself, or in relation to the evolution of other sectors and other economic variables, a matter which is of particular interest in an economic study in view of the importance of industry for the acceleration of the region's economic development.

3. The extent to which these indexes are applicable depends entirely upon their representativeness as indicators of the fluctuations in industrial production, which, in the last analysis, is related to the data and the methodology used in their computation.

4. In 1950, the United Nations Statistical Office published a document ^{1/} expounding the relevant basic concepts and recommending the methodology to be applied in the construction of indexes of this type. Some years later, the Statistical Office once again stressed how essential it was for countries to have such indicators at their disposal, ^{2/} and included index numbers of industrial production among the most important of the statistical series required in order to evaluate over-all economic growth and define the objectives and achievements of the industrial sector under development plans. Similarly, the United Nations Statistical Commission, at its thirteenth session in 1965, when considering its work programme

1/ Index Numbers of Industrial Production, Studies in Methods, Series F, N° 1, United Nations publication, 1950.XVII.4.

2/ See Statistical Series for the Use of Less Developed Countries in Programmes of Economic and Social Development, Statistical Papers, Series M, N° 31, United Nations publication, Sales N°: 59.XVII.10.

included among its top-priority projects assistance in giving effect to existing standards for the improvement of national and international statistics, and index numbers of industrial production were among the items mentioned.

5. With a view to preparing the present document for the Seminar on Industrial Statistics, ECLA sent out a questionnaire to various countries of the region, inquiring as to the availability of indexes of industrial production and the methods and procedures followed in their calculation. The replies obtained, and the comparison of these with existing international recommendations, form the basis of the analysis and comments presented in the following sections.

Objectives

6. The aim of the present document is to serve as a guide for discussion of the topic by the participants in the Seminar. It consists essentially of three sections, the first of which reviews the main uses to which indexes of industrial production are put, and formulates a few considerations on the methods to be applied in calculating them and the problems that arise in practice; in the second, some account is given of the current situation in the various Latin American countries that compute these indexes, and of the limitations of the results obtained; while the last section presents, by way of conclusions, and as possible subjects for discussion, a list of suggested measures to improve the indexes and increase their comparability.

INDEXES OF INDUSTRIAL PRODUCTION

Main uses

1. In recent years, the use of economic indicators has been considerably expanded in the Latin American countries. To the continuing requirements in respect of research on the structure and operation of the economy, whose long-term changes can only be assessed on the basis of aggregate and sectoral data, must be added those deriving from planning efforts and from endeavours to rationalize economic policy, which demand a steady and up-to-date flow of information on short-term changes as well.
2. Needless to say, of outstanding importance in this body of data are those relating to the industrial sector. Manufacturing industry contributes a large and growing proportion of the domestic product and absorbs a sizable contingent of the active population; furthermore, it is a sector called upon to play one of the most dynamic roles in the development process, and is subject to continual changes in its internal structure, through the incorporation of new lines of production and the frequent modifications of its composition by branches of industry or levels of technology. Usually too, it is one of the sectors of activity in which short-term fluctuations are sharpest, because of its sensitiveness to the factors that affect the balance of payments and/or the internal-demand situation.
3. If indexes of production by branch of industry are related to the changes registered in other variables - for example, the use of man-power or the growth of investment - new indicators will be obtained which will bring to light highly interesting phenomena, and will reveal the changes that have taken place in the productivity of labour and capital in the various major groups of industries.
4. It is also of interest in a study of this type to assess the changes that occur in the structure of the industrial sector, i.e., changes in each branch of industry's share in the total, for which purpose the value added in each of the major groups considered is extrapolated on the basis of the corresponding quantum index number.

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5. Thus, too, indexes of the quantum of production relating to major groups or groups of industries are used as a frame of reference if a study is to be made of an individual product or industry. Both for micro-economic and macro-economic studies, however, very recent data are needed, for periods of less than a year, a requisite that is not commonly fulfilled by the index numbers calculated in the region.
6. For an economic analysis at a higher level of aggregation, the sector is broken down at most by major groups based on economic uses (capital goods, durable consumer goods, etc.) and production trends in the sector are related to those registered in other sectors, to other macro-economic variables, such as income, consumption, investment, or simply population growth or the flow of bank credit, etc.
7. Apart from the usefulness of indexes of industrial production as an essential part of the data relating to a basic sector of national economies, they are being increasingly turned to account as basic indicators for other purposes. Some of these uses are listed below, purely as illustrative examples.

(a) Estimates of evolution of domestic product at constant prices

8. In this case, the evolution of industrial production is expressed in the form of an index of constant values, which is identical with the gross product of the sector expressed in terms of a given year's prices; i.e., theoretically the index of industrial production shows the changes that have taken place in the gross product of the sector at constant factor costs. It should be recalled here that the index represents an average of volumes of production weighted by the corresponding values added, or, in other words, that total weights in the base year should be equivalent to the gross product of the industrial sector at factor cost.
9. It is absolutely essential nowadays to be able to obtain regular and reasonably up-to-date estimates of the evolution of the domestic product. For both theoretical and practical reasons, most of the Latin American countries prepare these estimates on the basis of measurements at constant prices, which, in their turn, are based on the sectoral composition of the product in given years and its extrapolation by means

/of quantum

of quantum indexes that are applied to each of the major sectors. Thus the quality of the estimates in question largely depends upon the available supply and the reliability of indexes of industrial production, which constitute the basis for projecting the product not only of manufacturing industry but also of certain services sectors for which separate estimates are not prepared.

(b) Industrial programming requirements

10. The first step towards programming for the industrial sector is usually to formulate a projection based on past trends in the index of industrial production, which by a series of approximations is adjusted to the projection of demand for final industrial goods and intermediate products and to the other variables which have a bearing on the programme, so that in the end they are brought into line as far as possible with the predetermined targets and requirements.

11. The region's industrial development has been fundamentally based on import substitution policy. In the case of several countries which have already attained a relatively high degree of industrialization, the possibilities of continued growth on these lines are becoming exhausted, and a way out has been sought through the expansion of demand by means of the formation of a free-trade area and the installation of regional-scale industries (integration industries).

12. In studies and analyses concerned with these two subjects, indexes of industrial production play an important role as an instrument of analysis and a means of determining substitution possibilities in respect of the various manufacturing lines.

13. As already pointed out, the spread of planning efforts has come to constitute yet another source of demand for a comprehensive and punctual supply of statistical information. At the stage when the plans are being drawn up, many of the proposed decisions are based on a diagnosis on the soundness of which their wisdom and efficacy depends. For example, the satisfactory allocation of resources for industrial expansion is contingent both upon forecasts of its future course and upon an accurate evaluation of the evolution of industry in the broad context of development in the past, for which again a sine qua non is the availability of reliable indexes of production.

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14. During the stage of execution of the plans, it is essential for their progress to be regularly followed up on the basis of a continuing flow of appropriate data. Without this periodical evaluation, there is a risk that measures to remedy deficiencies will not be adopted at the right time, or that objectives no longer warranted by the changing economic situation may still be pursued. Requirements of this type not only enhance the need for satisfactory indexes of industrial production to be obtainable, but also underline the ever-increasing necessity for the information they provide to be as up-to-date as possible.

(c) Technical progress: degree of assimilation, and diffusion

15. The development process is tantamount to an increasing assimilation of technical progress, with the resultant steady rise in levels of productivity. The evolution of manufacturing industry, both in absolute terms and in relation to that of other economic activities, constitutes one of the most expressive indicators of the rate of technical progress. But not merely the sector as a whole is involved; de facto, it is composed of branches of industry whose characteristics differ widely, and levels of technology between which there are marked disparities in respect of productivity.

16. For the ends in view here, it is essential to possess aggregate and partial indexes of industrial production, to shed light on the evolution of the sector as a whole and of the most important branches of industry, and to give some idea of the relative growth of its component strata (artisan, small, medium and large-scale industry).

(d) Productivity and wage policy

17. Wage policy is one of the principal concerns of the public authorities responsible for mapping out economic policy in general. For this purpose, it is recognized that among the principal items of information required are data on the evolution of production per active worker, so that wage increases may be kept proportionate to increments in productivity. Thus, indexes of industrial production represent one of the bases for the determination of wage and salary policy in respect of a large proportion of the active population.

/Remarks on

Remarks on methodology

18. Index numbers of industrial production may be defined as a combination of "...series representing changes in the volume of work done in various sectors of industry, limited to the production of commodities, excluding agriculture and services".^{3/}

19. A great deal has been written on methods of computing indexes of industrial production; in the following paragraphs no attempt is made to reproduce the whole of this methodology, but simply to mention a few points of interest which may serve as guidelines for discussion of the topic.

20. The task of calculating index numbers of industrial production presents both theoretical and practical problems. The latter are generally the more serious, owing to the high cost of obtaining complete data on the industrial sector before technological changes make the indexes computed out-of-date. The worst of these difficulties derives from the dynamics of the technological process. Thus, for example, a product which was of great importance in the base period may cease to be so after a few years, disappearing from the market or giving place to another which, although it serves as a substitute for the commodity included in the index, has not the same characteristics; it is therefore advisable to revise the weights for indexes of industrial production often enough for them to reflect changes in industrial structure and activities.

21. From the theoretical standpoint, the basic problem in the construction of an index of industrial production consists in determining the weight or importance to be assigned to the various industries in the base period, and in selecting the elementary series of quantum indicators needed for the evaluation of current changes. It is impracticable to compile series for all the articles that the industry concerned produces or consumes, and a few products or raw materials must be chosen to represent the whole. Furthermore, data on these products or raw materials should not be gathered from all the establishments classified as pertaining to the industry, but only from a selected group.

^{3/} Index Numbers of Industrial Production, op.cit.

22. Both for operational reasons and, primarily, in order to reduce costs, it is advantageous to base the selection of establishments on random sampling principles. Among the various types of sampling procedures, the most suitable for the purpose under discussion is stratified random sampling, size of establishment (measured in terms of numbers of workers employed, value of capital, value of output, installed power capacity, etc.) being taken as the basis of stratification. This method of selection has several features to recommend it: (a) it ensures that the series selected for a given group of industries will be representative of the whole group; (b) the number of respondents and series that should be selected to this end can be objectively determined; and (c) sampling errors in the index numbers calculated can be measured.

23. The selection of weights and the choice of series should be the object of simultaneous study, since they are correlated, but in practice it is expedient to divide the work into two phases. In the first place, the major groups of industries ^{4/} in the industrial classification are established, and suitable weights are decided upon for each. Attention is then turned to determining the series representative of each major group, and the weighting of these, i.e., the way in which they will be combined within each major group.

24. Various concepts can be taken as the basis for calculating an index of industrial production: gross output, census value added, value added (contribution to gross domestic product) or net output (contribution to net domestic product). Most countries use the census value added, although it is advisable to base the calculation on the concept of value added, which is determined by subtracting the value of inputs from the value of production, as follows:

Value of production (PQ) = product (Q) x price of product (P)

Value of inputs = $\sum u$ = input (u) x price of input (π)

The value added is defined as follows:

$$PQ - \sum u$$

for any given product.

^{4/} At the level of the ISIC two-digit major group.

For the industry as a whole, the value added is defined as follows:

$$\sum P_i Q_i - \sum \pi_i \mu_i$$

To determine, in respect of industrial production, the variation in value added at constant prices in period 1 in relation to period 0, the formula suggested by Geary, Fabricant and others could be applied:

$$I_{01} = \frac{\sum P_{0i} q_{1i} - \sum \pi_{0i} \mu_{1i}}{\sum P_{0i} q_{0i} - \sum \pi_{0i} \mu_{0i}}$$

25. This method of tackling the problem, however, presents serious disadvantages, including the following:

- (a) The outputs Q will generally be confined to principal products, and consumption data too will be limited to the main raw-material inputs. Thus, work in progress (products undergoing processing) cannot be detected;
- (b) All establishments would have to possess a satisfactory costs accounting system;
- (c) It is very difficult to obtain adequate price indexes in each group, for the purpose of valuing new products, raw materials, etc.; and
- (d) The quality of certain products and raw materials may differ substantially from one year to another, and quantity and unit value data for the products in question cannot be used in the formula.

26. For the reasons indicated, this method of calculating an index for industrial production could only be used for annual indexes; for the purpose of calculating monthly or quarterly indexes it is unsuitable because of the time taken to process the data. Accordingly, even among the developed countries there are very few that calculate indexes on the basis of this formula.

27. The formula usually preferred is the following:

$$I_{01} = \frac{\sum P_{0i} q_{0i} \left(\frac{q_{1i}}{q_{0i}} \right)}{\sum P_{0i} q_{0i}}$$

which is a weighted arithmetic mean of quantity relatives.

28. Since the basic inquiry for a series of index numbers of production is a census or a comprehensive survey, the formula presented in the foregoing paragraph is applied on the assumption that the products P_{oi} Q_{oi} represent the values added obtained for each group.

29. The results differ when gross output values are used instead of values added, owing to the changes that take place in the technical coefficients inasmuch as input values are included in the value of output. For example, it may be assumed that an index of production is to be calculated for the following four groups:

Group	Basic inquiry		Production	
	Value of output	Value added	Year 0	Year 1
A	154	37	60	68
B	84	43	12	11
C	102	45	55	62
D	52	19	28	35
<u>Total</u>	<u>392</u>	<u>144</u>		

30. The index number of production for year 1, if output values are used as weights, is 110.1; if, on the other hand, values added are used, the index works out at 108.3.

31. In practice, however, it is not always possible to use values added for weighting indexes. It is true that at the level of major groups, groups and even establishments, this information is available, which is not so when elementary series of indicators have to be combined; in that case, it is very difficult to determine the value added of a product, especially in establishments whose production is diversified.

32. Consequently, the elementary series of indicators are weighted within each group (or sub-group) in accordance with output values, and the partial indexes obtained are weighted, in their turn, by means of values added, in order to obtain sub-group, group and total indexes.

33. Once the weights that are to be used have been decided upon, the next and most important step is to select the products (elementary series of indicators), in such a way that they will be representative of production in each group or sub-group; in all, according to current recommendations, they should not be either too few (under 100) or too numerous (over 500).

34. It has been mentioned that indexes of industrial production are short-term indicators, and are of no use for long-term comparisons on account of the changes that take place in the structure of the sector; this is particularly true in developing countries, where it is precisely on industrialization that planning emphasis is laid. For this reason, international recommendations underline the need to review the indexes every few years and, where necessary, to make the requisite changes in coverage and weighting. Of course, when this procedure is adopted, the series of index numbers of production which are obtained for several successive periods are not strictly comparable, unless they are linked up with one another.

35. When a change is to be made in the index weights, on the basis of structure data obtained through a new census or inquiry, indexes of production should be calculated for the year of the change and in relation to the previous base period, by means, for example, of the Paasche and Laspeyres formulas. If the difference is insignificant, the changes that have taken place in the period are not important, and the new base year can be used to link the two series; otherwise, if the difference is considerable, the possible cause of the emergence of important new products or changes in technology or in demand should be studied, and the two series should be linked through a year in the earlier series close to the new base year, or - a simpler alternative - through the application of the Laspeyres formula in relation to a year equidistant from the two weighting bases.

/Practical problems

Practical problems

36. One of the first problems that arise in connexion with the preparation of a series of index numbers of industrial production relates to the selection of the elementary series of indicators, or products, in such a way that they are representative of the physical output of the groups or sub-groups for which the indexes are to be calculated.

37. These products may be one or several. When a single product is representative of the group or sub-group no special problems arise, and the variation in output can be weighted by the production of the group. It is a different matter when there is more than one product and a variety of situations may arise:

(a) If a group or sub-group comprises more than one major product but the characteristics of those products are homogeneous, they can be merged into a single unit by weighting each one in accordance with its relative importance. This can be done by using the variations in output through a comparison of production values at constant prices, a typical case being the manufacture of wearing apparel;

(b) When there are a number of products with homogeneous production processes in which one raw material predominates, variations in output can be roughly determined from the variations in the consumption of that raw material, always provided that the production technique remains the same. This method can be used for cement and metal products;

(c) When there is a large number of products and also of raw material inputs, the value of production at current prices deflated by a suitable price index can be used as an indicator of variations in output. This method may be the only possible one for certain groups forming part of the ISIC major groups 35 to 38 (manufacture of metal products; machinery (of all kinds) and transport equipment);

(d) When the range of products and inputs is too vast, an approximate and fairly simple indicator can be obtained by using the variations in man-days or man-hours worked. With the aid of this indicator it is possible to determine the variations in production, provided that a significant correlation is found to exist between man-days or man-hours worked and output.

/If this

If this method is used, however, the indexes will have to be rectified on the basis of changes in labour productivity, as the series is otherwise liable to be distorted.

It is best not to employ this method unless the type of production precludes the use of any of the others that have been described. In Chile, it has been adopted to determine variations in the output of chemical and pharmaceutical products.

38. Other indirect methods have occasionally been used to calculate indexes of industrial production, such as sales of electricity to industrial establishments by public utility enterprises. While this method is undoubtedly easy to apply, the use of public electricity sales as an indicator excludes the other sources of energy involved in industrial production. One of the main difficulties is that some industrial units generate their own electricity to meet problems of supply in the public service, with the result that there may be too broad a discrepancy between electricity consumption, which is a sound indicator of industrial production, and public electricity sales.

39. Another problem that often arises concerns the elimination or addition of key products. Conceptually, it is a simple matter to include, replace or eliminate a product, provided that the base of the index can be changed each time, but it is not always possible to do so. When a product that is of little importance for the index is eliminated, the solution is simply to eliminate it in the base year. An alternative method is to estimate the variations in a sub-group in relation to the movement of the rest of the group's output. When a new product is added, the solution may be not to include it the first year, but, if it appears again the following year, to determine its importance in the previous year and change the weighting of the whole group or sub-group for that year. For the second year onwards, the product can then be included in the index.

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40. There are, of course, other problems that arise in the preparation of industrial production indexes, and a variety of solutions have been found for them. Some of them coincide with the solutions described above, while others have had to be specially devised for a particular case.

41. One of the commonest problems that crops up is probably the lack of response from the establishments selected. In such cases, comparable solutions are adopted as for industrial inquiries.

42. There are other aspects that ought to be studied if the representativity of the indexes is to be maintained; of these perhaps the most important are the methods of revising provisional indexes, the index adjustments that have to be made to allow for annual or seasonal variations, etc. and the relation between short-term and annual indexes. All these points have been dealt with in numerous publications, and embodied in summarized form in the recommendations in force.^{5/}

^{5/} Index Numbers of Industrial Production, op.cit.

THE SITUATION IN LATIN AMERICA

Description

1. According to the information at the disposal of the ECLA secretariat, twelve Latin American countries prepare industrial production indexes, i.e.: Argentina, Brazil, Chile, Colombia, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Peru, Uruguay and Venezuela. An index has recently been worked out in the Dominican Republic but is provisional, and its publication had not yet been authorized when the present paper was prepared. Panama prepares an index of gross manufacturing production value. Chile and Mexico each publish two different indexes of industrial production: in the former, they are prepared respectively by the Statistics and Census Office and the Sociedad de Fomento Fabril, and in the latter, by the Bank of Mexico and the Nacional Financiera S.A.
2. All those countries prepare annual indexes; three (Chile, Guatemala and Venezuela) have monthly indexes as well, and two (El Salvador and Mexico) have quarterly indexes, prepared in the latter by the Bank of Mexico.
3. In every case but one, the index is entitled Index of Volume or Quantum of Industrial Production, the exception being Venezuela, where it is entitled Index of Value Added.
4. Although a mere list of the countries that prepare industrial production indexes will not suffice in itself to reveal the situation, it does show that nine countries (Bolivia, Costa Rica, Cuba, Guyana, Haiti, Honduras, Jamaica, Paraguay and Trinidad and Tobago) do not have this kind of indicator, and that it would be desirable for them to begin preparing them, using as a point of departure the latest census or basic inquiry carried out or planned.

Scope

5. The United Nations Statistical Office has recommended that the different industrial activities should be classified in accordance with

/the International

the International Standard Industrial Classification (ISIC) and that the general index of industrial production should include the four major divisions of that classification:^{6/} (a) mining and quarrying; (b) manufacturing; (c) construction; and (d) electricity and gas. The first recommendation is important in relation to the need for establishing an international basis of comparison. Although all the Latin American countries use ISIC, they do not keep strictly to it, and a glance at the index components will reveal disparities in classification. For instance, in Argentina's production index, major group 29 "Manufacture of leather and leather products" includes group 241 "Footwear" as well as groups 291-292 "Tanning, currying and finishing of all kinds of hides and skins" and "Manufacture of leather products except footwear and wearing apparel". This is important because the weighting of the "Footwear" group is about 68.8 per cent within the major group of industries. Another difficulty is illustrated by the Mexican index prepared by the Nacional Financiera, which has, as one of its divisions "Petroleum industry", including "crude petroleum and petroleum products". According to ISIC, the extraction of crude petroleum is one of the groups (130) in division 1 "Mining and quarrying", while the "Manufacture of products of petroleum" forms major group 32 in division 2-3 "Manufacturing".

6. As regards the second recommendation, the scope of industrial production indexes is limited, in most of the Latin American countries, to manufacturing proper, even though Colombia includes both factory production and artisan or small-scale industry in its manufacturing index, and Argentina calculates artisan activities not covered by the censuses and includes them in its manufacturing index. As table 1 shows, the only indexes to cover the four major ISIC divisions are those of Brazil and Mexico. Mexico adds a fifth division, namely: "Petroleum and Coke"

^{6/} United Nations, International Standard Industrial Classification of all Economic Activities, Statistical Papers, Series M, No. 4.

in the Bank of Mexico index and "Petroleum" in the Nacional Financiera index. Chile prepares a separate index for mining production. Guatemala includes electricity under manufacturing, while Uruguay keeps its construction and electricity indexes separately from that of industrial production. Venezuela has an index of value added in mining, but it is not taken into consideration in the industrial production index.

7. The scope of the indexes obviously reflects the situation of the basic industrial statistics. For instance, it would be very hard for most of the countries of the region to calculate construction indexes because of the difficulty of obtaining significant production series for this industry. Where no such index is prepared, however, it would be desirable to explore the possibility of calculating mining production and electricity production series which would probably be easier to prepare than a manufacturing index.

Coverage

8. It has proved impossible to make a precise evaluation of the coverage of the industrial production indexes in the different countries for want of information. Although the questionnaires sent out asked for at least some indication of the value of the items included on the ~~index as a percentage of the total value of production of (a) all~~ establishments included in its field of application, and (b) all establishments included in current inquiries, most of the countries were unable to reply to this point because of the difficulty of making an assessment of this kind in a short space of time. Consequently, the information given hereafter simply reproduces the replies sent in by the different countries.

9. Argentina's current inquiry covers all industrial establishments in which either workmen or members of the owner's family are engaged or there is power equipment installed with a horsepower of 0.5 or more.

10. In Chile, the index worked out by the Statistics and Census Office covers establishments employing 5 or more workmen and employees, while that of the Sociedad de Fomento Fabril relates to establishments with 10 or more workmen.

Table 1
SCOPE OF INDUSTRIAL PRODUCTION INDEXES

Country	Total industry	Mining and quarrying	Manufacturing	Construction	Electricity and gas
Argentina			x		
Brazil	x	x	x	x	x
Chile (Statistics and Census Office)		x	x		
Chile (Sec. Fomento Fabril)			x		
Colombia			x		
Ecuador			x		
El Salvador			x		
Guatemala	x		x		x
Mexico (Bank of Mexico)	x	x	x	x	x a/
Mexico (Nacional Financiera)	x	x	x	x	x b/
Nicaragua			x		
Peru			x		
Uruguay			x		
Venezuela		x	x		

a/ Including a fifth division: Petroleum and coke.

b/ Including a fifth division: Petroleum.

11. In the Colombian index, there is complete geographical coverage of establishments in which 5 persons or more are engaged, and of establishments with fewer than 5 persons but with a gross annual output equal to or more than 24,000 Colombian pesos. The Bank of the Republic, which is responsible for preparing the index, has indicated that some groups are not specifically included in the index for want of the necessary information to determine their volume of production, but as this is assumed to vary in the same way as the output of the other groups the index is regarded as having a complete coverage.

12. The index prepared in El Salvador relates to the whole country. Its coverage is 90 per cent, while that of the current inquiries, in terms of the establishment universe, is 60 per cent.

13. The information used for the current inquiries of the Bank of Mexico has a different coverage. The data furnished by the statistical office correspond to major establishment samples with a variable coverage, while those obtained directly from the Bank are estimated to cover about 90 per cent of the universe. In the case of the index prepared by the Nacional Financiera, it is assumed that the coverage is complete for all the major divisions, except for certain manufacturing production series supplied by the statistical office, whose coverage is not known.

14. Nicaragua's index relates to establishments with a value added of 25,000 córdobas or more per annum. Generally speaking, the relation between the total sample and the universe has been maintained at around 90 per cent for value added and 92 per cent for the value of production.

15. In Uruguay, the coverage of the sample in the current inquiries is 50 per cent of the value of production, and the establishments included represent 10 per cent of the total.

16. The data in Venezuela's current inquiries cover the whole country but exclude artisan activities. Some new products have not yet been incorporated into the current sample because the office concerned has been unable to obtain adequate and timely information. The index of value added in mining has a partial coverage since it does not include either stone, clay and sand quarrying and extraction, or small-scale mining. Gypsum quarrying has also been excluded for the last six years.

17. Where no studies have been made on the coverage of industrial production indexes, as regards either weighting or the elementary series of indicators, it seems advisable for the countries to do so in order to obtain a more accurate idea of the indexes' representativity and thus enable the users of this type of indicator to analyse the data and determine their scope and limitations.

Comparison base

18. In order to make index numbers internationally comparable, the United Nations Statistical Office urges countries to revise their series every five years at least and, where necessary, to adopt new weightings. So as to achieve a minimum degree of comparability, it is suggested that the countries should revise their indexes in the same year or, if that is impossible, in a year close to that indicated. To be able to do so, they will naturally have to plan a fairly large sample every five years. It is useful, but not essential, for the base year of the indexes to be the same as the weight base.

19. Table 2 gives the reference years and weights used for the indexes prepared by the different countries.

20. Table 2 shows that only six countries - Argentina, Chile (Sociedad de Fomento Fabril), Peru, Mexico (Nacional Financiera), El Salvador and Uruguay - base their indexes on recent years, the first four on 1960 and the last two on 1961. The benchmark year for the other countries falls somewhere in the fifties. It can also be seen that most of the countries use the same base year for their indexes and for their weightings. Colombia is the only country to take two different years as a weight base, but, as explained later, this does not affect the general index, since the weights are applied to two large and well-defined categories, namely, factory production and artisan or small-scale industry.

Table 2

Country	Index base year	Base year for weightings
Argentina	1960	1953
Brazil	1953	1955-57
Chile (Statistics and Census Office: mining)	1957	1957
Chile (Statistics and Census Office: manufacturing)	1953	1953
Chile (Sociedad Fomento Fabril)	1960	1957
Colombia	1957	1957 ^{a/}
Ecuador	1950	1961
El Salvador	1961	1961
Guatemala	1946	1946
Mexico (Bank of Mexico)	1950	1950
Mexico (Nacional Financiera)	1960	b/
Nicaragua	1953	1953
Peru	1960	1960
Uruguay	1961	1961
Venezuela (manufacturing)	1953	1953
Venezuela (mining)	1957	1957

^{a/} For artisan and small-scale industry: 1953.

^{b/} The weighting-base is the year prior to that of calculation; in other words, the weighting varies from year to year.

21. It is suggested that the weight base should not be less than a year. The use of an average for a period of several years is not very practicable, since the weights are normally available only at intervals and for single years. The only country to take an average for various years as its

/weight base

weight base is Brazil, which uses 1939 for the years prior to 1948, 1949 for the years 1948 to 1954 and the average for 1955-57 for 1955 onwards. The weights are calculated on the basis of value added according to the industrial inquiry for the three-year period 1955-57.

22. The fact that only four indexes are calculated with the aid of recent weights, and that the remaining eleven base their systems of weighting on censuses or inquiries carried out from nine to twenty years ago, is a clear indication of the need to revise the indexes and bring them up to date.

Base inquiry

23. As stated before, the first step to be taken before calculating a series of index numbers of industrial production is to obtain the results of a census or basic inquiry on the structure and activity of industry in a given year. With respect to coverage and scope this body of data constitutes the base inquiry. Table 3 presents the main features of such inquiries in the different countries, in the light of the information available. It should be noted that much of the information is given in greater detail in other papers submitted to the Seminar, in particular those on industrial censuses and inquiries carried out.

Methodology

24. A description is given below of the methods used by the different Latin American countries to prepare their industrial production indexes. With very few exceptions, the indexes are calculated as weighted arithmetic means on the basis of an aggregated formula of the following kind:

$$I = \frac{\sum pq_1}{\sum pq_0}$$

or its equivalent:

$$I = \frac{\sum pq_0 \left(\frac{q_1}{q_0} \right)}{\sum pq_0}$$

the weighted average of quantity relatives, which corresponds to the base-weighted Laspeyres formula.

Table 3

BASE INQUIRY USED FOR INDEXES OF INDUSTRIAL PRODUCTION

Country	Base inquiry	Field of application and coverage	Remarks
Argentina	Industrial census 1953	Manufacturing. Establishments in which workmen or members of the proprietor's family were engaged or that had installed power equipment with a horsepower of 0.5 or more. Whole country.	Artisan industry calculated on the basis of employment.
Chile (Statistic and Census Office)	Industrial inquiry 1959	Manufacturing. Establishments in which 5 or more operatives were engaged. Whole country.	Excluding cottage and artisan industry.
Chile (Sociedad de Fomento Fabril)	Industrial census 1957	Manufacturing. All establishments in which 5 or more operatives were engaged. Whole country.	Including major establishments that entered into production after 1957. Excluding certain groups covered by the census but not represented on the index.
Colombia	Sample of manufacturing industry 1957 Industrial census 1953	Factory production. All registered establishments as well as new establishments with 5 or more persons engaged or an annual production value of 24 000 colombian pesos or more. Whole country. Artisan and small-scale industry. Sample of establishments with fewer than 5 persons or an annual production value of less than 24 000 colombian pesos, individual artisan workers and homecraft units.	
El Salvador	Industrial census 1961	Manufacturing. Establishments with sales of more than 1 000 colons and sugar mills with a production of more than 500 colons. Whole country.	Excluding establishments working part of the year duties (cotton and coffee processing)

Table 3 (concluded)

Country	Base inquiry	Field of application and coverage	Remarks
Guatemala	Industrial census 1946	Manufacturing and electricity. Establishments with 5 workmen or more. Whole country.	
Mexico (Bank of Mexico)	Input-output table 1950	Mining, manufacturing, construction, petroleum and coke, and electricity. All establishments whatever their size. Whole country.	
Nicaragua	Industrial census 1953	Manufacturing. All establishments with an annual production value of 12 000 cordobas or more. Whole country.	Excluding artisan industry.
Uruguay	Industrial inquiry 1961	Manufacturing. All establishments with a production value of 25 000 pesos or more in 1956. Whole country.	
Venezuela	Industrial census 1953	Manufacturing. All establishments. Whole country.	During the process of editing, many of the small establishments were excluded.
	Information supplied by the Ministry of Mines and mining companies 1957	Mining. All enterprises, except those engaged in the quarrying or extraction of stone, clay and sand.	Excluding small-scale mining activities.

25. In describing the weighting coefficients, it is pointed out that most production indexes at the level of ISIC major groups and groups use value added or census value added as weights and that the product indexes or elementary series of indicators are weighted by the value of production. The information available on this point is summarized in the following table (see table 4).

26. Detailed information is not available on the methods used in the calculation of the indexes for Argentina, Chile (Sociedad de Fomento Fabril), Ecuador, Guatemala, Mexico (Bank of Mexico), Peru and Uruguay.

27. All the countries use the Laspeyres formula in calculating their industrial production indexes. Only the Annual Index prepared by the Nacional Financiera de México is based on a comparison of the volume of production in the current year with that of the previous year, the indexes in the remaining countries being in relation to the base year.

28. The methodology used by the Latin American countries in compiling index numbers of industrial production appears to be satisfactory and in line with the standards recommended by the United Nations Statistical Office, particularly as regards the type of formula used. The basic problem in compiling industrial production indexes is not, however, the type of formula, but rather the need for a satisfactory and representative number of series of indicators, and for weights reflecting the structure of the industrial sector.

Elementary series of indicators

29. Information on the number of elementary series used in calculating industrial production indexes, their type (whether output or input series), and their degree of representativity, is extremely useful in assessing these indexes. However, as indicated below, such information was only available for some countries.

30. The index of industrial production for Argentina includes 339 products, whose relative share in the 1960 value added amounted to 88.8 per cent.

Table 4
BASES FOR THE WEIGHTING OF PARTIAL INDEXES

Country	Indexes of products or elementary series	Indexes corresponding to ISIC groups	Indexes corresponding to ISIC major groups
Argentina	Value of production	Census value added	Value added at factor cost
Chile (Statistics and Census Office)	Value added	Value added	Value added
Chile (Sociedad de Fomento Fabril)	Average base year price	Value added	Value added
Colombia	Census value added	Census value added	Census value added
El Salvador	Value of production	Value added	Value added
Guatemala			Value added at 1946 market prices
Mexico (Bank of Mexico)	Value of production	Gross value added	Gross value added
Mexico (Nacional Financiera) ^{a/}	Value of production	Value of production	Value of production
Nicaragua	Unweighted	Unweighted	Census value added
Peru	Value added	Value added	Value added
Uruguay	Value of production	Value added	Value added
Venezuela	Value added	Value added	Value added

^{a/} For the general index the weights are based on the share of the divisions in the gross national product in the previous year.

31. The sample used by the Statistics and Census Office of Chile includes more than 500 establishments engaging five or more workers or /employees; the

employees; the original sample covered 400 establishments, but it had to be extended because, in terms of percentage of total value added, a number of groups were not sufficiently representative. The number of products included in the other industrial production index for Chile, drawn up by the Sociedad de Fomento Fabril, is 236.

32. No details are available on the number of establishments or the number of elementary series used in compiling the index for Colombia. The index for El Salvador includes a list of products selected at the lowest level of aggregation permitted by census data and current industrial statistics, the available information including 109 industrial indicators. The index for Guatemala includes 18 elementary series of indicators.

33. The bank of Mexico uses 106 indicators in calculating the total indexes of industrial activities, and, of these, 59 refer to the manufacturing sector. The exact number of indicators used in the industrial index prepared by the Nacional Financiera de México is not known, but there are some indications that this index covers a greater number of products than that drawn up by the Bank. At least, in major group 31 (chemical products) the Bank only considers soap and matches, while Nacional Financiera includes nine chemical products. Similarly, in major group 34 (basic metal industries) the Bank index includes only the iron and steel group, whereas Nacional Financiera also covers copper and aluminium.

34. Nicaragua is one of the countries with the smallest number of indicators (24) in its production index. It is interesting to note that for certain groups Nicaragua uses indicators other than actual production indicators, such as milk consumption for group 202 (dairy products), imports of flour for group 206 (bakery products) and coffee exports, together with two other products, for group 209 (miscellaneous food preparations).

35. The number of series making up the index for Uruguay is not known, but to judge by the large number of sub-groups into which the groups of activity have been divided it must be a large one.

36. No information is available on the number of series used in calculating the industrial production indexes for Brazil, Ecuador and Peru.

/Weights

Weights

37. According to the international recommendations,^{7/} one of the main tasks in the construction of an index of industrial production is to determine the weights in the base period. It was mentioned above that the weights attached to each industry are the value added or census value added in the base period.

38. Table 5 shows the weights assigned to the ISIC major (two-digit) groups by the different countries in the calculation of their indexes of manufacturing production. The same information at the level of aggregation of the ISIC group is given in annex 1. It should be repeated that in more than half of the countries the weights are based on the industrial structure of more than ten years ago. Consequently, the indexes are not sufficiently representative, particularly in respect of dynamic industries, since they do not include the new industries that have appeared in the last few years or take account of industrial growth.

39. Argentina can be cited as an example of this. The National Statistical Office used to calculate an index using the year 1943 as the weight base, but it gradually became more and more out-of-date and ceased publication in 1963. The Central Bank and the National Development Council (CONADE) compiled the information not included in the scope of the official index and combined it with the basic series prepared by the Statistical Office weighted in relation to 1960. On this basis the new index of manufacturing production was constructed. A comparison of the 1943 and 1960 weights reveals the changes that occurred in the structure of the Argentine manufacturing sector between those two years. The weight assigned to the dynamic industries increased by 17 per cent and those of the major groups "Products of petroleum and coal" and "Electrical machinery" almost tripled. (See table 6.)

^{7/} Index Numbers of Industrial Production, op.cit.

Table 5
WEIGHTS ASSIGNED TO ISIC MAJOR GROUPS IN THE CALCULATION OF INDEXES OF INDUSTRIAL PRODUCTION
(Percentages)

ISIC major group	Country base year of the indexes	Argen- tina 1960	Brazil 1953	Chile 1953 a/	Chile 1960 b/	Colom- bia 1957	Ecu- dor 1961	El Salvador 1961	Guate- mala 1946	Mexico 1950 c/	Nicar- agua 1953	Peru 1960	Uru- guay 1961	Vene- zuela 1953													
20 Food products	}	17.9	15.4	16.73	17.8	16.8	29.08	22.638	15.7	30.1	34.8	27.6	14.3	19.7													
21 Beverages			3.5	3.25	4.6	15.3	12.23	19.986	34.9		16.1	8.1	10.3	14.5													
22 Tobacco			0.6	1.6	1.42	5.4	7.4	4.96	11.874		10.8	14.2	1.8	3.1	2.9												
23 Textiles			10.8	15.1	20.09	13.4	16.5	14.18	14.208		13.3	15.1	3.7	15.2	15.1	7.2											
24 Footwear and wearing apparel			4.9	4.2	7.67	7.9	5.9	0.88	8.365		6.1	9.5	7.2	6.8	5.4	4.0											
25 Wood and cork	}	3.8	3.3	3.23	3.2	2.2	1.30	0.921	4.1	6.0	8.4	3.2	1.6	2.2													
26 Furniture															-	2.4	1.36	1.6	0.08	1.500	-	-	4.0	1.7	3.8		
27 Paper and paper products															1.8	2.7	2.09	2.9	1.3	0.61	0.066	-	2.2	-	1.8	3.0	1.0
28 Printing and publishing															3.1	3.2	4.99	3.7	3.2	3.27	-	-	2.5	-	3.3	3.7	5.6
29 Leather and leather products															2.5	1.2	1.91	1.3	1.6	0.80	1.891	1.2	2.9	4.2	1.5	1.4	1.1
30 Rubber products	1.6	2.3	1.04	1.3	2.9	0.72	1.172	-	1.7	-	2.0	2.7	2.5														
31 Chemical products	5.7	13.2	6.76	2.9	8.5	6.43	8.414	3.5	8.8	3.9	7.7	6.7	7.6														
32 Products of petroleum and coal	6.3	-	2.51	3.2	3.6	17.74	-	-	-	-	4.6	9.6	12.7														
33 Non-metallic mineral products	3.9	6.9	6.83	5.3	5.9	4.72	7.371	3.7	4.4	3.5	4.9	5.3	8.7														
34 Basic metal industries	}	11.6	11.7	9.94	11.1	2.0	-	-	-	7.7	-	1.9	1.4	2.1													
35 Metal products															2.9	4.16	5.8	1.82	1.594	-	-	-	4.0	0.3			
36 Machinery, except electrical machinery															15.3d/	-	0.77	6.9	-	-	-	4.2	-	6.9	2.6	0.4	
37 Electrical machinery	4.9	4.1	2.00	1.7	-	-	-	-	-	-	5.0	-	-														
38 Transport equipment	-	3.9	2.70	0.7	-	-	-	-	3.1	-	-	-	2.8														
39 Miscellaneous	-	2.4	0.55	1.2	-	1.18	-	-	1.8	-	2.7	3.1	0.9														
<u>Total</u>		<u>100.0 /</u>	<u>100.0</u>	<u>100.00</u>	<u>100.0</u>	<u>100.0</u>	<u>100.00</u>	<u>100.000</u>	<u>100.00/</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>													

a/ Statistics and Census Office. b/ Sociedad Fomento Fabril. c/ Bank of Mexico. d/ Including major group 38. e/ Including artisan industries. f/ Including electricity.

Table 6

ARGENTINA: WEIGHTING OF THE INDEX OF INDUSTRIAL PRODUCTION
(Percentages)

	1943	1960
<u>Traditional industries</u>		
Food and beverages	22.8	18.9
Tobacco	0.9	0.6
Textiles	14.2	11.4
Footwear and wearing apparel	4.8	5.2
Wood	4.3	4.0
Leather	4.2	2.6
<u>Sub-total</u>	51.2	42.7
<u>Dynamic industries</u>		
Paper and paper products	2.3	1.9
Printing and publishing	6.3	3.3
Rubber products	0.7	1.7
Chemical products	5.6	6.0
Products of petroleum and coal	1.7	6.7
Non-metallic mineral products	4.3	4.1
Basic metal industries and metal products	9.1	12.2
Machinery (excluding electrical machinery) and transport equipment	11.0	16.2
Electrical machinery	1.4	5.2
Miscellaneous	6.4	-
<u>Sub-total</u>	48.8	57.3
<u>Total</u>	<u>100.0</u>	<u>100.0</u>

40. The previously mentioned recommendation that index numbers should be revised every five years was accepted by El Salvador, which used to publish an index of industrial production whose weight base was 1956 and which covered the following major groups: food products and non-alcoholic beverages; alcoholic beverages and beer; textiles and wearing apparel; /cement and

cement and cement products; miscellaneous. The Central Reserve Bank of El Salvador drew up a new index of manufacturing production, using the 1961 Third Industrial Census as the base inquiry and classifying the census information in accordance with the International Standard Industrial Classification (ISIC).

41. It can be concluded from an examination of the weights used that in most of the countries under consideration the most important industries continued to be those making up major groups 20-22 (food, beverages and tobacco) (see table 7). An analysis of the weights assigned to the traditional industries group also reveals that in some countries, Mexico for example, they do not appear to reflect the degree of industrial development achieved by those countries in the last few years.

42. Other examples could be given that point clearly to the need for the weights used in the calculation of industrial production indexes in a number of countries to be revised and brought up to date. Thus, the beverages industry in Guatemala has a weighting of 34.9 per cent; the basic metal industries in Colombia, Peru and Venezuela have a weighting of scarcely 2 per cent and the weights assigned to the transport equipment industries in Brazil and Mexico are 3.9 and 3.1 per cent, respectively.

43. In light of the above, it is advisable that the countries should bring the weights used in their indexes up to date by means of new industrial inquiries or large-scale samples that can be used as a basis for determining the weights. At the very least, consideration should be given to the possibility of revising the series, on the basis of an inquiry relating to the year 1963 or thereabouts, in accordance with the United Nations recommendations. In this way, the new weights will correspond to the actual situation and the new index will be more representative of industrial activity.

Table 7

WEIGHTS ASSIGNED TO THE TRADITIONAL AND DYNAMIC INDUSTRIES
IN THE INDEXES OF INDUSTRIAL PRODUCTION

(Percentages)

Country	Base year	Weighting of indexes of industrial production			
		Traditional industries		Dynamic industries	Total
		Food, beverages and tobacco	Total		
Argentina	1960	18.9	42.7	57.3	100.0 a/
Brazil	1953	20.5	46.7	53.3	100.0
Chile (Statistics and Census Office)	1953	21.4	55.7	44.3	100.0
Chile (Sociedad Fomento Fabril)	1960	27.8	55.2	44.8	100.0
Colombia	1957	39.5	65.7	34.3	100.0
Ecuador	1961	46.3	63.5	36.5	100.0
El Salvador	1961	54.5	81.4	18.6	100.0
Guatemala	1946	61.4	86.1	7.2	100.0 b/
Mexico (Bank of Mexico)	1950	30.1	63.6	36.4	100.0
Nicaragua	1953	65.1	92.6	7.4	100.0
Peru	1960	37.5	64.2	35.8	100.0
Uruguay	1961	27.7	52.9	47.1	100.0
Venezuela	1953	37.1	55.4	44.6	100.0

a/ Including artisan industries.

b/ Including 6.7 per cent for electricity.

/Stages of

Stages of preparation of the indexes

44. Since indexes of industrial production are, by their nature, indicators of short-term changes, their main usefulness is clearly dependent on the promptness with which the results become available. Where there is a conflict between the need to make the indexes available as quickly as possible and the desire to limit the revisions necessary where provisional rather than final figures are used, some solution must be sought that will enable the indexes to be available promptly and with a reasonable degree of accuracy.

45. The speed with which most of the indexes calculated by the Latin American countries are presented is far from satisfactory. Table 8 reveals that the time lag between the compilation of the basic data and publication of the results is too great.

46. It follows, therefore, that the national offices calculating indexes of industrial production should revise the procedures used in the various stages of preparation, with a view to eliminating obstacles to their prompt publication. This revision should enable monthly indexes to be available, in provisional form, within a period of not more than three weeks and, in final form, within six weeks of the reference month of the index. Similarly, a first estimate of the annual index should be available during the first quarter of the following year and the final data no later than the month of July.

Frequency of the indexes

47. Table 9 shows the frequency of the indexes in the Latin American countries. For information purposes, it should be added that the quarterly indexes of the Bank of Mexico are not adjusted to take account of the number of days worked or seasonal variations, and the annual indexes are merely the average of the quarterly indexes. Uruguay publishes its index annually, but from 1964 began to request quarterly information. Venezuela prepares monthly and annual indexes; the monthly cover fewer establishments and major groups than the annual, but there is no methodological difference in the calculations.

Table 8
NUMBER OF DAYS FROM THE REFERENCE PERIOD OF THE INDEXES REQUIRED
FOR COMPLETING THE DIFFERENT STAGES

Country	Frequency: annual quarterly monthly	Compilation of data	Indexes ready for publication	Publication of indexes	
				Preliminary	Final
Chile (Statistics and Census Office)	M	← 52 →		59	89
Chile (Sociedad Fomento Fabril)	M	← 45 →		•	55
Colombia	A	← 200 →		360	-
El Salvador	Q	90	98	113	-
Mexico (Bank of Mexico)	Q	45	135	195	225
Mexico (Nacional Financiera)	A	90-120		a/	150
Nicaragua	A	b/	3	a/	a/
Paru	A	90	135	195	210
Uruguay	A	90-180		← 135-270 →	
Venezuela	M	d/		← 90 →	365
Venezuela	A	90-180	210-240	240-270	365

- a/ The preliminary calculations are not published and are for the internal use of the Nacional Financiera only.
b/ Throughout the year.
c/ Not published.
d/ Continuous compilation.

Table 9
 FREQUENCY OF THE INDEXES OF INDUSTRIAL PRODUCTION

Country	Monthly	Quarterly	Annual
Argentina			x
Brazil			x
Chile (Statistics and Census Office)	x		x
Chile (Sociedad Fomento Fabril)	x		x
Colombia			x
Ecuador			x
El Salvador		x	x
Guatemala	x		x
Mexico (Bank of Mexico)		x	x
Mexico (Nacional Financiera)			x
Nicaragua			x
Peru			x
Uruguay			x
Venezuela	x		x

48. As can be seen from the above table, most of the indexes of industrial production prepared by these countries are annual. When the delay in publication is added to this fact, it is clear that the indexes are not satisfactorily fulfilling the purposes for which they are prepared. The countries that have not yet done so should, therefore, begin to prepare more frequent indexes (quarterly, or monthly if possible), using a smaller sample than that used for the annual inquiry.

/CONCLUSIONS

CONCLUSIONS

1. The first conclusion that emerges from the examination of the various points raised in this paper is the need for steps to be taken to improve industrial production indexes and increase their comparability. This conclusion is applicable to most indexes of this kind prepared in Latin America.

A description has been given of the uses to which such indexes are put, and stress laid on the need for every country to have a production index as soon as possible to enable it to trace the short-term changes that take place in the industrial sector of its economy.

3. The main aspects considered have been summarized and are presented below in the form of a list of points for discussion at the Seminar and possible adoption by the countries of the region:

(a) The countries that do not have an industrial production index should take steps forthwith to calculate the necessary series;

(b) The countries that prepare a manufacturing production index should, as far as possible, enlarge its field of application to include the divisions of Mining and Electricity. It would also be desirable for them to add Construction, despite the difficulties involved;

(c) Countries that have no indexes at all, or annual indexes only, should consider the possibility of preparing them on a more frequent basis, say, monthly or at least quarterly;

(d) The establishments included in the index should be classified in accordance with the International Standard Industrial Classification (ISIC), and the indexes should be worked out at the level of ISIC (2-digit) major groups;

(e) The base year of the indexes should be changed to 1963 or a year near to it;

(f) The elementary series of indicators should be revised so that those that are truly representative of industrial activity in the country can be singled out;

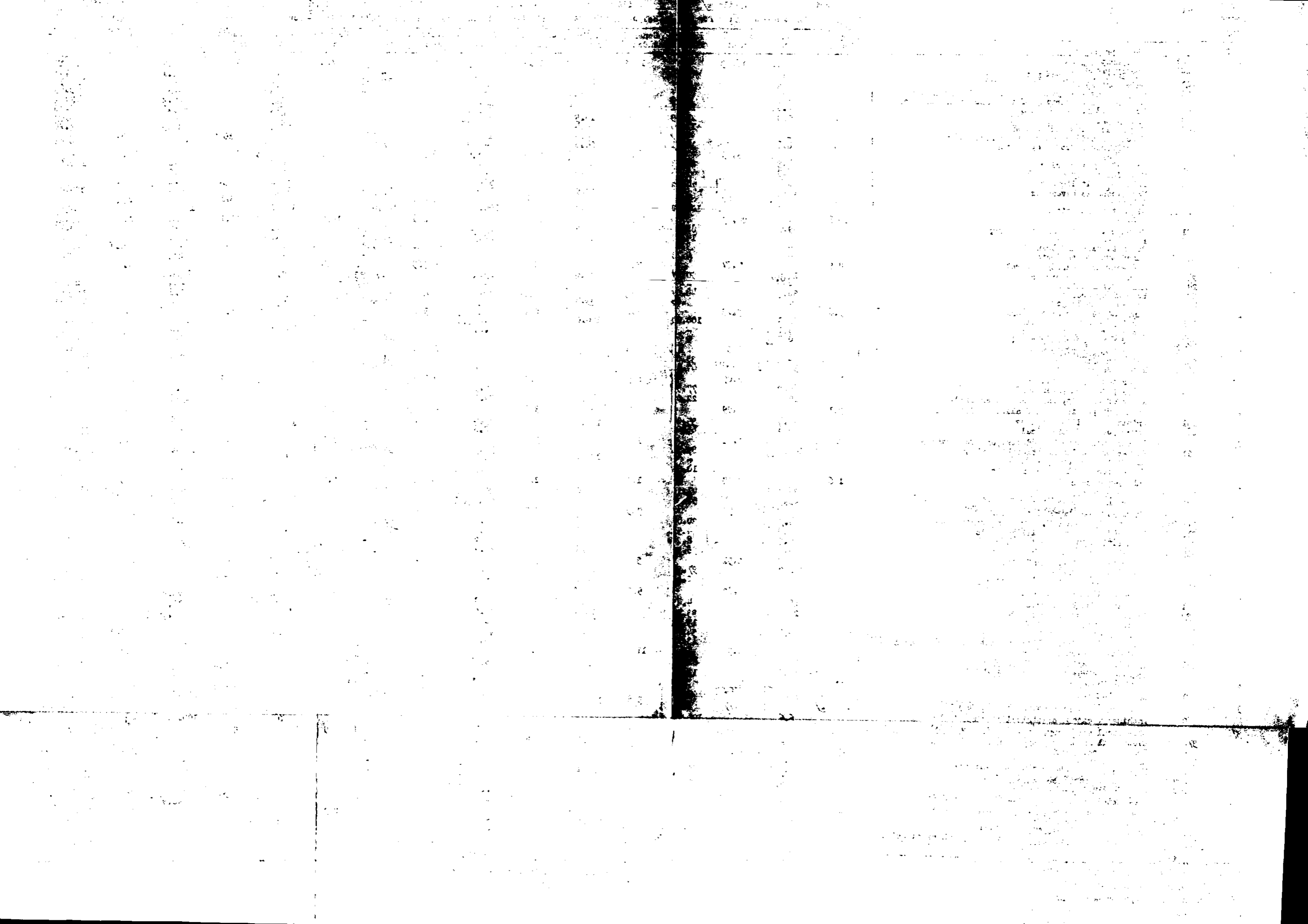
/(g) Simultaneously

(g) Simultaneously with the implementation of point (d), the weighting coefficients should be decided upon for the major groups, groups and sub-groups in proportion to their contribution to value added in a recent year;

(h) The Latin American countries should prepare studies on their industrial production indexes to cover such aspects as: (i) field of application; (ii) coverage; (iii) elementary series of indicators; and (iv) methodology, so that they can make an appraisal of the existing situation and give users a reasonable idea of the indexes' scope and limitations;

(i) The offices that calculate industrial production indexes should review the stages of preparation and take steps to obtain the monthly indexes between three and six weeks after the reference month, and the annual indexes between three and six months after the reference year.

4. The implementation of the foregoing points depends almost entirely on the countries themselves, but is also related to the availability of methodological recommendations to facilitate the work of the national statistical offices responsible for preparing indexes. In this respect, the participants in the seminar may wish to suggest to the United Nations Statistical Office that, in co-operation with the other international organizations concerned and on the basis of consultations with the countries themselves, it proceed to bring up to date the document entitled Index Numbers of Industrial Production, Studies in Methods, Series F, No. 1, and prepare a manual for its application.



Annex 2

INDEX NUMBERS OF INDUSTRIAL PRODUCTION
(Series of data)

ARGENTINA: INDEX NUMBERS OF VOLUME OF INDUSTRIAL PRODUCTION

(1960 = 100)

ISIC	Percent- age weighting	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
20 - 21	17.9	89.2	81.7	81.9	83.7	85.9	97.6	112.3	108.5	117.8	102.0	100.0	99.1	107.2	116.6	104.5	110.2
22	0.6	88.0	92.7	101.7	103.4	99.0	104.4	102.2	101.8	104.2	103.4	100.0	102.7	104.1	103.8	112.1	114.3
23	10.8	94.4	96.4	91.1	82.7	88.3	98.1	98.0	102.2	103.5	94.8	100.0	101.3	81.5	74.7	96.1	110.6
24	4.9	95.4	95.9	87.0	84.8	88.2	98.9	100.1	104.7	104.2	96.2	100.0	99.9	84.0	69.9	86.6	95.3
25	3.8	98.3	97.3	94.9	92.2	94.8	98.5	96.3	103.8	101.1	99.6	100.0	101.1	91.0	77.7	89.5	99.7
27	1.8	73.7	79.7	69.1	61.9	78.8	91.7	100.8	105.1	117.7	117.0	100.0	123.3	120.1	116.8	132.0	149.6
28	3.1	101.2	92.8	63.7	62.0	71.7	82.3	90.9	96.0	100.1	90.7	100.0	111.4	96.1	89.9	98.2	111.9
29	2.5	86.6	90.5	94.2	90.2	87.1	86.4	90.8	102.9	113.2	113.8	100.0	87.4	78.3	69.2	80.8	83.0
30	1.6	46.0	63.4	66.5	60.6	73.9	83.6	83.4	86.5	88.6	80.8	100.0	133.8	130.7	102.2	124.4	148.9
31	5.7	53.0	54.7	55.5	56.6	66.2	74.8	79.3	86.9	94.1	95.8	100.0	108.1	99.8	95.8	107.1	121.6
32	6.3	56.6	55.7	61.4	63.9	67.6	72.7	74.5	90.2	98.8	92.3	100.0	111.0	124.4	123.5	129.8	147.1
33	3.9	83.5	84.1	80.1	79.8	85.6	93.7	98.7	108.0	111.9	99.3	100.0	112.3	110.2	92.7	99.1	114.3
34 - 35 a/	11.6	49.3	55.1	49.6	53.2	71.5	86.1	86.0	98.2	114.1	96.1	100.0	119.2	108.8	107.4	146.5	162.2
36 - 38	15.3	32.5	34.4	36.9	39.8	44.6	50.7	55.0	64.5	74.1	72.6	100.0	119.4	105.3	88.5	116.8	133.4
37	4.9	19.9	27.3	29.2	37.1	44.5	55.7	62.1	81.4	89.8	88.8	100.0	120.0	93.6	79.3	93.3	110.4
<u>Total factory production</u>	<u>94.7</u>	<u>67.6</u>	<u>68.1</u>	<u>66.1</u>	<u>66.4</u>	<u>73.0</u>	<u>82.3</u>	<u>87.2</u>	<u>94.1</u>	<u>101.6</u>	<u>93.4</u>	<u>100.0</u>	<u>109.4</u>	<u>101.9</u>	<u>96.0</u>	<u>110.2</u>	<u>123.3</u>
Artisan industry b/	<u>5.3</u>	95.4	97.6	99.3	94.1	94.2	97.5	98.2	102.6	102.3	105.0	100.0	93.5	89.4	88.6	93.0	97.7
<u>Total</u>	<u>100.0</u>	<u>69.1</u>	<u>69.7</u>	<u>67.9</u>	<u>67.9</u>	<u>74.1</u>	<u>83.1</u>	<u>87.8</u>	<u>94.6</u>	<u>101.6</u>	<u>94.0</u>	<u>100.0</u>	<u>108.1</u>	<u>100.5</u>	<u>95.6</u>	<u>109.3</u>	<u>121.9</u>

Sources: Prepared by National Development Council (CONADE), published in Cuentas nacionales de la República Argentina (April 1964); and direct information.

a/ Metals, excluding machinery.

b/ Artisan industry (not covered by the censuses).

BRAZIL: INDEX NUMBERS OF VOLUME OF INDUSTRIAL PRODUCTION

(1953 = 100)

ISIC	Percentage weighting	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
20	12.9	90	93	94	100	98	117	104	126	...	...	...	...	...	...	...
21	2.9	89	106	96	100	99	105	92	99	...	...	...	...	...	...	...
22	1.3	74	87	96	100	115	126	133	141	...	...	...	...	...	...	...
23	12.7	93	90	95	100	118	124	124	109	146	...	...	...	...	...	...
24	3.5	88	105	97	100	100	109	115	116	141	...	...	...	...	...	...
25	2.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26 ^{a/}	2.0	...	...	...	...	...	100	104	95	111	...	...	...	...	...	...
27	2.3	85	90	90	100	108	114	131	124	143	151	163	172	...	...	...
28	2.7	67	82	98	100	110	115	120	152	...	...	...	...	...	...	...
29	1.0	93	99	94	100	101	99	110	113	125	124	116	118	117	109	111
30	1.9	77	84	90	100	114	116	110	115	130	156	191	201	233	235	253
31	11.1	69	92	84	100	112	262	350	357	416	448	517	688	773	801	912
33	5.8	72	75	83	100	120	129	142	141	144	148	169	181	188	188	199
34	9.8	76	84	88	100	108	109	126	117	139	165	183	200	208	215	228
35 ^{a/}	2.4	...	...	...	...	...	100	115	110	119	...	...	...	...	...	...
37 ^{a/}	3.4	...	...	...	...	...	100	159	156	261	...	...	...	...	...	...
38 ^{a/}	3.3	...	...	...	...	...	100	112	249	366	530	721	800	...	...	...
39 ^{a/}	2.0	...	...	...	...	...	100	104	95	94	...	...	...	...	...	...
<u>Total 2-3</u>	<u>83.8</u>	<u>82</u>	<u>87</u>	<u>91</u>	<u>100</u>	<u>109</u>	<u>121</u>	<u>129</u>	<u>136</u>	<u>152</u>	<u>179</u>	<u>198</u>	<u>220</u>	<u>238</u>	<u>237</u>	<u>248</u>
1	1.3	79	96	93	100	98	105	116	120	142	171	201	212	215	255	...
4	7.5	76	86	94	100	97	102	116	121	137	151	145	159	162	164	170
511	7.4	104	110	104	100	119	129	146	165	183	196	214	228	254	261	287
<u>Total</u>	<u>100.0</u>	<u>82</u>	<u>88</u>	<u>92</u>	<u>100</u>	<u>109</u>	<u>120</u>	<u>128</u>	<u>136</u>	<u>158</u>	<u>178</u>	<u>197</u>	<u>219</u>	<u>206</u>	<u>207</u>	<u>218</u>

Source: Prepared by Getulio Vargas Foundation, Brazilian Institute of Economics, published in Anuario Estatístico do Brasil (1965).

^{a/} 1955 = 100.

BRAZIL: INDEX NUMBERS OF VOLUME OF INDUSTRIAL PRODUCTION

(1962 = 100)

ISIC	1962	1963	1964
20	100.0	99.2	100.6
21	100.0	102.0	112.7
22	100.0	100.5	101.8
23	100.0	97.3	101.6
24	100.0	100.8	113.1
25	100.0	102.5	105.5
26	100.0	...	...
27	100.0	107.8	114.8
28	100.0	...	...
29	100.0	92.8	102.1
30	100.0	100.9	107.6
31	100.0	103.6	113.9
33	100.0	99.9	105.6
34	100.0	103.4	109.7
35	100.0	102.6	104.1
37	100.0	96.1	105.1
38	100.0	89.3	92.3
39	100.0	...	...
<u>Total 2-3</u>	<u>100.0</u>	<u>99.7</u>	<u>104.8</u>
1	100.0	118.4	...
4	100.0	101.3	103.5
511	100.0	102.6	110.0
<u>Total</u>	<u>100.0</u>	<u>100.2</u>	<u>105.2</u>

Sources: Anuario Estatístico do Brasil, op. cit.

COLOMBIA: INDEX NUMBERS OF VOLUME OF MANUFACTURING PRODUCTION

(1957 = 100)

ISIC	Percentage weighting	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
20	16.8	65.1	73.6	74.3	80.1	93.0	97.2	103.7	100.0	103.9	113.4	118.6	127.7	139.8	133.4
21	15.3	74.0	75.6	84.5	92.2	102.9	93.8	92.7	100.0	104.6	113.1	118.6	123.1	130.1	137.6
22	7.4	79.2	88.4	84.7	85.7	89.9	89.0	94.8	100.0	100.9	103.5	107.7	111.2	113.7	120.0
23	16.5	61.3	56.6	65.5	73.4	83.9	96.0	97.2	100.0	106.5	116.1	126.7	131.1	140.0	150.3
24	5.9	59.3	54.4	61.9	67.4	77.9	85.8	96.7	100.0	100.5	113.3	123.7	132.7	148.3	161.5
25 and 26	2.2	54.9	58.2	61.8	66.1	66.4	66.8	88.6	100.0	103.0	104.7	105.3	108.1	107.6	107.8
27	1.3	42.0	46.7	57.0	68.0	79.9	86.8	93.6	100.0	99.4	117.7	138.3	151.4	182.2	196.5
28	3.2	45.1	51.3	57.3	69.8	69.9	87.8	103.5	100.0	92.3	95.6	95.4	124.3	139.2	157.5
29	1.6	67.8	61.2	72.5	78.7	77.0	80.7	91.8	100.0	95.6	88.3	90.6	102.0	109.7	119.4
30	2.9	39.3	40.3	42.7	57.6	67.9	80.6	96.2	100.0	100.7	105.3	120.1	129.0	135.1	138.5
31	8.5	49.6	52.9	54.9	64.8	74.5	84.6	90.6	100.0	105.6	122.5	129.1	136.4	142.5	149.2
32	3.6	46.0	48.1	56.4	58.3	58.4	75.4	82.5	100.0	122.3	126.8	139.1	151.8	161.5	156.6
33	5.9	62.7	57.0	66.9	78.8	79.0	87.0	107.0	100.0	97.7	119.7	116.6	122.2	139.8	142.0
34	2.0	9.9	9.9	9.9	9.7	11.3	61.8	81.3	100.0	104.0	95.0	128.5	139.5	122.1	157.8
35 to 38	6.9	33.3	37.2	41.1	49.1	56.1	64.0	81.6	100.0	119.8	144.3	162.4	179.6	204.3	228.4
Total factory production	100.0	59.2	61.1	66.1	73.3	81.6	87.9	95.3	100.0	104.9	115.1	123.0	131.1	141.2	148.3
Artisan industry a/	...	79.1	81.4	84.5	87.6	90.4	93.4	97.0	100.0	102.6	105.6	108.9	112.7	116.5	120.8
Total	...	63.4	65.3	69.9	76.3	83.4	89.0	95.6	100.0	104.4	113.0	120.0	127.2	135.9	142.4

Sources: Prepared by Bank of the Republic, Department of Economic Research, direct information.

a/ Small-scale and artisan industry.

CHILE: INDEX NUMBERS OF VOLUME OF INDUSTRIAL PRODUCTION

(1960 = 100)

ISIC	Percentage weighting	1960	1961	1962	1963	1964	1965 ^{a/}
20	17.8	100.0	107.6	118.0	125.1	130.1	132.2
21	4.6	100.0	108.8	123.4	113.9	107.6	135.3
22	5.4	100.0	105.2	109.0	103.7	105.0	113.1
23	13.4	100.0	107.6	114.3	129.4	128.8	139.5
24	7.9	100.0	114.5	124.2	123.0	132.3	138.9
25	3.2	100.0	120.4	123.7	133.0	157.0	194.1
26	1.6	100.0	113.8	136.1	175.8	189.7	220.5
27	2.9	100.0	134.1	122.8	130.6	133.8	133.5
28	3.7	...	...	...	...	...	...
29	1.3	100.0	112.8	114.1	109.7	118.5	171.4
30	1.3	100.0	108.9	118.3	139.9	176.7	187.3
31	7.9	100.0	111.6	117.3	116.9	115.9	131.0
32	3.2	100.0	111.7	153.0	156.2	169.4	164.3
33	5.3	100.0	113.9	127.7	146.2	140.6	150.8
34	11.1	100.0	89.8	118.1	120.5	150.1	143.2
35-36	5.8	100.0	140.9	161.5	160.4	191.0	236.1
37	1.7	100.0	114.9	122.1	152.6	213.7	248.0
38	0.7	...	...	...	...	...	...
39	1.2	100.0	141.2	182.6	200.8	196.0	192.4
<u>Total</u>	<u>100.0</u>	<u>100.0</u>	<u>111.2</u>	<u>123.8</u>	<u>128.5</u>	<u>137.4</u>	<u>149.8</u>

Source: Prepared by Sociedad de Fomento Fabril, published in Memoria 1965.

^{a/} Eleven-month average.

CHILE: INDEX NUMBERS OF MANUFACTURING PRODUCTION

(1953 = 100)

ISIC	Percentage weighting	1953	1957	1958	1959	1960	1961	1962	1963	1964	1965
20	16.73	100.0	103.3	99.0	107.0	110.6	113.5	121.9	127.1	132.0	135.3
21	3.25	100.0	115.8	115.4	122.3	139.9	141.7	167.3	156.5	145.1	181.3
22	1.42	100.0	85.9	95.6	106.0	118.0	127.6	137.0	120.8	128.1	138.0
23	20.09	100.0	92.5	92.5	106.5	95.2	102.8	109.8	127.1	131.7	137.3
24	7.67	100.0	115.8	122.3	134.7	126.2	148.4	164.0	157.4	154.9	165.5
25	3.23	100.0	117.4	128.8	164.4	163.9	166.1	179.0	183.0	194.4	209.6
26	1.36	100.0	76.3	71.2	80.5	88.1	84.6	102.5	98.0	108.8	119.9
27	2.09	100.0	118.1	154.8	187.3	170.4	218.1	209.8	236.0	235.6	261.4
28	4.99	100.0	90.7	93.2	86.7	100.3	110.2	108.0	113.0	115.0	128.1
29	1.91	100.0	102.7	102.8	102.8	90.1	101.2	99.1	95.9	99.2	107.8
30	1.04	100.0	92.8	98.9	134.1	147.3	161.2	147.4	164.8	202.6	209.9
31	6.76	100.0	111.7	121.8	121.3	125.2	134.6	135.4	135.8	133.5	132.2
32	2.51	100.0	99.9	114.8	119.9	141.7	156.4	204.2	207.0	222.6	221.4
33	6.83	100.0	91.5	97.8	121.8	111.3	122.3	138.2	158.3	147.1	146.7
34	9.94	100.0	115.2	114.1	152.4	129.8	122.4	162.9	174.3	216.3	219.2
35	4.16	100.0	117.6	123.7	148.9	154.5	195.3	224.3	271.5	290.1	307.3
36	0.77	100.0	98.0	135.2	128.1	120.9	111.5	100.7	122.6	150.9	174.4
37	2.00	100.0	112.0	122.2	138.5	149.6	159.7	163.4	169.5	174.9	189.2
38	2.70	100.0	116.6	99.0	128.4	134.4	122.3	101.4	102.0	102.5	103.2
39	0.55	100.0	114.0	123.4	157.8	163.3	163.4	158.7	179.4	201.6	259.8
Total	100.0	100.0	102.7	106.9	122.1	119.2	127.5	139.7	148.9	156.2	163.7

Sources: Prepared by Statistics and Census Office, published in Central Bank, Boletín Mensual, N° 361 (November 1959) and N° 451 (September 1965); Statistics and Census Office, Comentario al índice de producción (February 1966).

EQUADOR: INDEX NUMBERS OF VOLUME OF FACTORY PRODUCTION

(1950 = 100)

ISIC	Percentage weighting	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
20	29.08	100	108.5	115.0	111.4	135.8	166.0	182.7	184.2	204.4	229.3	245.2	293.3	294.0
21	12.23	100	131.9	158.5	178.1	201.8	200.0	206.7	234.5	251.2	263.7	285.7	292.4	287.5
22	4.96	100	101.4	99.0	95.7	90.1	90.3	100.5	93.5	90.8	88.6	90.0	103.5	116.4
23	14.18	100	113.7	119.7	130.4	143.9	149.7	144.3	177.0	166.5	170.6	181.6	207.0	218.3
24	0.88	100	119.5	127.8	113.3	130.3	122.8	114.4	116.7	109.1	106.5	102.9	110.7	121.7
25	1.30	100	121.2	132.4	136.6	132.0	134.8	155.1	157.5	166.2	146.3	142.9	140.3	160.0
26	0.08	100	92.8	106.5	113.7	140.0	147.0	144.7	161.8	161.3	206.5	217.4	231.5	241.9
27	0.61	100	99.4	111.5	139.4	160.6	226.7	273.9	255.2	321.8	380.6	447.9	606.1	896.8
28	3.27	100	111.9	105.3	113.1	128.4	134.5	146.4	149.8	174.2	190.3	205.3	211.9	217.5
29	0.80	100	104.3	105.5	110.4	123.5	129.0	120.0	115.6	106.3	107.8	111.3	114.2	122.3
30	0.72	100	118.8	145.0	143.3	163.5	210.6	237.2	295.7	303.9	292.2	316.0	354.6	357.6
31	6.43	100	114.3	135.5	141.1	147.7	124.4	107.9	106.2	108.9	124.6	142.8	206.6	233.7
32	17.74	100	105.6	110.1	107.3	121.3	131.2	134.0	135.4	157.0	198.3	289.0	280.9	270.3
33	4.72	100	130.5	147.5	151.0	160.6	245.6	257.9	270.3	282.2	273.7	340.9	386.1	385.7
35 - 36	1.82	100	103.4	109.5	130.4	172.4	185.0	193.6	198.2	231.9	275.5	308.3	306.7	353.4
39	1.18	100	140.0	173.3	187.6	222.9	251.4	316.2	356.2	377.1	477.1	660.0	952.4	1 115.4
<u>Total</u>	<u>100.0</u>	<u>100</u>	<u>112.1</u>	<u>120.5</u>	<u>123.7</u>	<u>138.4</u>	<u>149.5</u>	<u>155.1</u>	<u>164.0</u>	<u>173.9</u>	<u>189.9</u>	<u>216.9</u>	<u>241.5</u>	<u>252.6</u>

Source: Prepared by National Economic Planning and Co-ordination Board, direct information (26 August 1965).

EL SALVADOR: INDEX NUMBERS OF VOLUME OF MANUFACTURING PRODUCTION

(1961 = 100)

ISIC	Percentage weighting	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
20, 214	17.781	88.2	90.5	100	114.8	117.9	113.0	111.8	115.9	114.8	122.0	133.8
211-213	31.324	106.7	97.9	100	120.0	103.9	83.2	91.3	84.0	91.2	96.2	96.8
23 and 24	16.341	109.8	96.8	100	119.8	129.0	142.3	192.3	238.8	236.7	246.8	289.9
33	11.163	87.4	88.0	100	113.1	123.5	114.4	122.6	117.4	116.7	137.3	205.6
39	23.391	74.9	86.8	100	109.2	108.5	109.7	114.4	109.4	172.6	187.1	223.6
<u>Total</u>	<u>100.000</u>	<u>94.2</u>	<u>92.7</u>	<u>100</u>	<u>115.7</u>	<u>119.8</u>	<u>107.8</u>	<u>120.3</u>	<u>124.7</u>	<u>141.1</u>	<u>151.2</u>	<u>176.7</u>

Sources: Prepared by Central Reserve Bank, Revista Mensual (September 1966).

EL SALVADOR: INDEX NUMBERS OF VOLUME OF MANUFACTURING PRODUCTION

(1956 = 100)

ISIC	Percentage weighting	1961	1962	1963	1964	1965
20	22.638	100.0	108.6	115.3	198.7	151.3
21	19.986	100.0	107.8	111.5	113.4	123.4
22	11.874	100.0	107.1	114.1	121.5	123.7
23	14.208	100.0	115.9	130.5	150.3	203.8
24	8.365	100.0	115.2	136.5	202.2	235.5
25	0.921	100.0	135.8	139.3	71.5	247.7
26	1.500	100.0	95.8	104.2	332.9	366.6
27	0.066	100.0	28.1	27.0	29.3	31.4
29	1.891	100.0	92.5	104.4	95.9	95.3
30	1.172	100.0	118.8	142.6	169.8	179.1
31	8.414	100.0	147.5	250.4	478.9	701.7
33	7.371	100.0	88.7	109.7	128.3	120.5
35	1.594	100.0	9.8	101.1	145.3	252.7
<u>Total</u>	<u>100.0</u>	<u>100.0</u>	<u>109.9</u>	<u>129.1</u>	<u>168.3</u>	<u>205.9</u>

Source: Prepared by Central Reserve Bank, published in Revista mensual (August 1965).

Note: Weighting: United Nations, 1963 Supplement to Monthly Bulletin of Statistics.

GUATEMALA: INDEX NUMBERS OF INDUSTRIAL PRODUCTION

(1946 = 100)

ISIC	Percentage weighting	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
20	15.7	124.0	124.2	124.5	119.6	95.8	124.2	131.1	163.2	158.9	178.7	171.9	198.2	184.9	213.4	193.1	204.3
21	34.9	113.1	114.9	120.9	118.0	123.6	116.0	128.2	137.1	137.8	140.5	137.8	136.1	130.9	136.0	134.6	140.6
22	10.8	135.2	142.1	145.8	136.9	147.8	141.9	151.7	150.8	152.4	163.2	166.9	163.8	167.7	176.4	185.3	203.5
23	13.3	85.1	66.9	86.9	77.5	86.0	81.8	90.5	99.1	114.6	101.9	108.2	124.0	131.4	152.4	154.9	182.8
24	6.1	91.2	79.3	90.5	95.1	92.3	105.1	111.0	144.4	225.7	219.6	213.8	191.4	167.6	182.9	228.0	279.8
25	4.1	97.8	94.4	84.6	76.8	83.3	133.6	174.2	156.8	144.3	139.5	106.0	114.9	84.1	84.3	128.2	135.6
29	1.2	107.6	115.9	111.8	105.5	118.8	97.2	113.6	103.8	117.9	112.2	147.6	151.3	147.4	126.6	134.1	124.1
31	3.5	139.4	141.6	151.3	159.2	147.1	152.9	158.5	199.5	239.2	321.1	383.1	423.8	466.6	664.0	672.8	610.8
33	3.7	134.7	171.2	172.9	192.0	187.7	233.7	245.4	285.4	380.4	355.4	347.6	372.3	345.2	437.0	521.7	666.0
511	6.7	139.3	157.5	170.5	185.2	193.4	209.7	228.0	261.9	301.5	385.0	374.2	426.5	483.7	552.8	626.3	736.2
<u>Total</u>	<u>100.0</u>	<u>115.2</u>	<u>114.9</u>	<u>121.2</u>	<u>120.4</u>	<u>121.1</u>	<u>127.3</u>	<u>138.9</u>	<u>154.5</u>	<u>168.6</u>	<u>178.0</u>	<u>178.0</u>	<u>188.4</u>	<u>187.4</u>	<u>212.9</u>	<u>223.7</u>	<u>247.7</u>

Source: Prepared by Bank of Guatemala, published in Boletín Estadístico, October 1957 - 1st. Quarter 1966.

MEXICO: INDEX NUMBERS OF INDUSTRIAL PRODUCTION

(1950 = 100)

ISIC	Per- cent- age weighting	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
20 - 22	30.1	100.0	111.8	117.8	122.2	128.4	138.7	148.5	159.9	170.9	177.6	195.0	199.6	213.2	224.3	251.3	270.5
23	15.1	100.0	97.2	104.6	92.9	107.2	112.8	116.1	120.4	125.7	132.3	138.6	137.3	139.2	151.9	176.4	186.8
24	9.5	100.0	100.7	106.7	104.5	113.9	121.0	125.7	130.9	136.1	142.3	149.8	153.8	157.0	167.4	183.9	193.4
25	6.0	100.0	105.3	78.9	77.1	78.1	79.6	105.5	84.0	73.3	94.9	94.9	78.7	84.8	91.5	102.6	107.9
27	2.2	100.0	109.7	108.6	106.5	118.4	126.5	141.6	156.2	163.2	174.6	191.9	209.2	220.0	240.5	264.9	307.4
28	2.5	100.0	106.7	110.5	104.3	122.0	126.8	133.0	148.3	153.6	161.2	154.5	158.9	188.5	206.2	236.4	250.2
29	2.9	100.0	110.7	113.9	101.6	111.5	107.0	118.0	132.0	144.7	139.8	133.6	140.2	150.0	157.0	158.2	162.7
30	1.7	100.0	124.5	117.7	115.6	132.0	142.9	150.3	155.8	185.7	212.9	227.2	238.1	258.5	299.3	342.9	381.0
31	8.8	100.0	100.8	125.9	130.3	156.6	182.8	208.2	226.0	247.1	295.7	335.0	359.6	411.5	454.8	506.7	560.0
33	4.4	100.0	116.6	115.5	122.3	127.4	148.6	168.7	180.4	178.5	190.2	210.9	207.3	218.2	242.1	285.6	294.3
34 - 35	7.7	100.0	120.1	128.2	140.7	163.6	201.5	245.2	267.3	291.0	321.3	356.5	368.5	383.8	441.7	512.3	543.4
36	4.2	100.0	103.7	103.1	101.7	114.9	138.2	162.4	200.8	207.9	221.3	253.9	281.7	290.7	324.2	389.6	419.1
38	3.1	100.0	206.9	209.2	160.2	154.8	148.3	193.1	192.3	177.4	234.9	224.5	273.6	272.8	308.0	411.1	417.2
39	1.8	100.0	110.6	115.2	113.9	125.2	137.7	153.0	162.9	172.2	187.4	202.6	209.9	223.2	243.7	278.1	298.0
<u>Total</u>	<u>100.0</u>	<u>100.0</u>	<u>110.6</u>	<u>115.5</u>	<u>114.2</u>	<u>125.3</u>	<u>137.5</u>	<u>153.1</u>	<u>163.1</u>	<u>171.9</u>	<u>187.3</u>	<u>202.9</u>	<u>210.1</u>	<u>223.6</u>	<u>244.2</u>	<u>278.8</u>	<u>298.7</u>

Sources: Prepared by Bank of Mexico, S.A., Department of Economic Studies, National Production Division, direct information.

MEXICO: INDEX NUMBERS OF VOLUME OF INDUSTRIAL PRODUCTION

(1960 = 100)

ISIC	Sector	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
1	Mining	90.3	84.6	93.8	91.6	86.3	94.2	92.1	98.4	98.1	97.7	100.0	96.1	96.8	99.3	97.6
130 and 132	Petroleum industry <u>a/</u>	34.9	39.3	43.3	46.6	47.6	55.2	61.9	69.9	76.2	90.0	100.0	110.7	111.9	117.1	127.3
511	Electricity	40.7	45.2	49.1	52.4	57.8	64.0	72.0	77.7	83.7	89.9	100.0	110.4	117.6	128.9	148.1
4	Construction	44.9	49.8	53.1	54.2	57.2	67.6	73.8	81.5	80.9	85.5	100.0	96.7	97.8	113.1	131.6
2 - 3	Manufacturing	46.8	52.0	55.9	54.7	58.7	64.8	71.9	80.4	85.1	91.7	100.0	107.3	114.7	127.2	149.2
	(1) Consumer goods <u>b/</u>	55.8	60.0	65.0	62.7	65.2	68.7	73.7	80.1	85.4	89.2	100.0	102.6	112.0	119.2	139.5
	(11) Production goods <u>c/</u>	38.3	44.7	47.6	47.5	53.2	62.2	71.8	82.6	85.9	96.7	100.0	112.0	117.5	134.2	157.7
	<u>Total</u>	<u>46.7</u>	<u>51.0</u>	<u>55.1</u>	<u>54.8</u>	<u>57.7</u>	<u>64.5</u>	<u>70.9</u>	<u>78.9</u>	<u>84.6</u>	<u>90.3</u>	<u>100.0</u>	<u>105.9</u>	<u>111.5</u>	<u>123.1</u>	<u>141.8</u>

Source: Prepared by Nacional Financiera, S.A., published in La Economía Mexicana en Cifras (1965).

a/ Including crude petroleum and petroleum products.

b/ Including 23 indicators of different major groups.

c/ Including 24 indicators of different major groups.

MEXICO: INDEX NUMBERS OF INDUSTRIAL PRODUCTION

(1950 = 100)

	Per- cent- age weight- ing	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
<u>Mining</u>	10.0	100.0	96.4	107.0	105.9	99.8	115.6	116.8	124.5	123.8	127.7	132.6	127.0	128.6	133.1	134.3	133.2
a) Non-ferrous metals	8.9	100.0	93.6	103.6	101.3	94.8	103.5	97.5	101.0	96.4	97.3	99.4	94.9	91.5	92.8	89.5	87.7
b) Iron ore	0.1	100.0	109.4	119.0	115.9	109.7	150.2	171.0	212.9	220.8	253.0	300.8	345.9	365.8	418.1	406.7	475.4
c) Non-metallic	1.0	100.0	121.8	137.9	147.7	145.7	226.2	293.0	336.9	371.9	400.6	427.4	406.9	453.5	483.0	527.7	526.6
<u>Petroleum and coke</u>	9.0	100.0	110.0	116.0	117.8	126.8	136.8	146.0	155.5	173.8	197.0	207.8	231.4	235.8	250.4	273.2	284.7
a) Petroleum and petroleum products	8.7	100.0	110.2	115.9	117.8	127.3	137.2	145.8	155.5	174.3	197.3	207.4	231.9	236.4	250.6	274.0	286.1
(i) Extraction	6.8	100.0	106.6	106.8	100.3	115.1	123.7	127.4	124.5	136.2	143.1	147.2	157.5	163.8	171.7	186.7	190.2
(ii) Refining	1.9	100.0	114.3	126.3	137.8	140.9	152.5	166.7	190.4	217.6	258.8	275.8	316.6	318.7	339.7	372.8	394.8
b) Coke	0.3	100.0	104.4	124.3	118.3	107.2	121.5	154.2	156.5	154.8	183.0	224.0	209.7	209.4	237.4	238.9	222.4
<u>Manufacturing</u>	67.7	100.0	110.6	115.5	114.2	125.3	137.5	153.1	163.1	171.9	187.3	202.9	210.1	223.6	244.2	278.8	298.7
<u>Construction</u>	10.3	100.0	109.5	123.3	113.8	122.5	136.5	157.6	178.3	172.2	176.0	201.6	203.6	205.8	238.1	277.2	272.5
<u>Electricity</u>	3.0	100.0	111.0	120.7	128.9	142.0	158.3	177.0	191.1	205.7	221.0	242.6	265.6	282.8	309.9	356.0	390.0
<u>Total</u>	<u>100.0</u>	<u>100.0</u>	<u>109.0</u>	<u>115.7</u>	<u>114.1</u>	<u>123.1</u>	<u>135.8</u>	<u>150.0</u>	<u>161.0</u>	<u>168.3</u>	<u>182.0</u>	<u>197.4</u>	<u>204.7</u>	<u>215.1</u>	<u>235.0</u>	<u>266.0</u>	<u>280.9</u>

Source: Prepared by Bank of Mexico, published in Annual report, 1964.

NICARAGUA: INDEX NUMBERS OF MANUFACTURING PRODUCTION

(1953 = 100)

ISIC	Per-centage weight-ing	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
20	34.8	100.0	110.4	118.3	125.8	158.4	192.9	179.2	187.7	210.8	234.6	227.8	242.3	261.7
21	16.1	100.0	106.2	134.6	134.2	140.0	143.3	132.3	119.4	133.9	153.6	184.6	238.6	273.0
22	14.2	100.0	110.7	119.0	120.8	117.2	118.7	120.6	125.2	123.6	126.1	136.2	146.8	154.1
23	3.7	100.0	159.1	170.8	128.5	143.0	162.3	229.8	241.0	209.2	256.8	267.2	281.2	290.2
24	7.2	100.0	116.3	140.8	133.2	133.7	138.7	139.0	150.1	130.8	125.4	138.2	145.0	150.4
25	8.4	100.0	105.4	117.5	110.4	112.6	116.7	148.1	96.5	105.9	73.3	82.9	90.3	78.8
26	4.0	100.0	187.5	194.9	169.8	166.0	218.3	235.4	82.8	173.6	71.2	54.6	90.7	106.5
29	4.2	100.0	102.4	120.0	110.2	138.9	157.3	158.5	158.8	140.3	159.6	163.1	173.6	175.0
31	3.9	100.0	118.0	121.4	120.2	111.6	123.6	122.1	129.9	139.2	153.1	163.8	173.6	184.1
33	3.5	100.0	107.1	121.8	154.8	159.3	149.1	136.8	128.1	132.1	166.4	193.9	215.6	229.1
<u>Total</u>	<u>100.0</u>	<u>100.0</u>	<u>114.5</u>	<u>127.9</u>	<u>127.7</u>	<u>141.1</u>	<u>158.2</u>	<u>157.3</u>	<u>149.7</u>	<u>161.4</u>	<u>170.3</u>	<u>177.3</u>	<u>197.2</u>	<u>211.9</u>

Source: Prepared by Statistics and Census Office, direct information from the Central Bank of Nicaragua.

PANAMA: INDEX NUMBERS OF GROSS VALUE OF MANUFACTURING PRODUCTION

(1960 = 100)

ISIC	Percent- age weight- ing	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
20	39.74	33.2	39.4	46.4	51.7	56.6	60.0	67.8	85.6	86.3	95.5	100	113.0	122.5	147.1	153.5	159.1
21	16.93	80.9	82.2	90.7	86.1	81.2	81.8	87.3	94.0	89.8	90.8	100	110.9	118.5	126.6	135.4	145.5
22	6.05	-	-	-	-	10.1	37.7	45.0	60.6	87.6	88.8	100	113.4	119.1	117.1	125.5	122.9
24	13.44	53.0	43.3	62.7	58.4	61.8	65.3	68.3	73.2	80.9	80.1	100	92.0	101.9	100.7	95.9	111.4
25	2.45	49.7	79.4	117.4	131.5	57.6	78.1	52.0	67.1	68.9	78.6	100	120.5	140.5	163.8	148.7	155.7
26	3.89	12.6	17.8	20.1	21.9	22.9	24.7	53.8	72.6	84.5	77.3	100	91.6	158.5	175.0	181.7	199.9
27	2.27	-	-	8.1	31.2	37.9	41.6	44.1	45.7	59.6	80.4	100	222.3	297.3	362.4	407.7	496.8
29	1.04	13.3	16.0	31.7	41.6	60.8	60.3	62.4	77.9	82.9	91.9	100	110.5	68.8	127.1	140.4	113.0
30	0.52	15.2	28.7	28.2	26.5	28.0	40.4	52.2	64.1	76.1	87.9	100	112.2	98.4	107.9	86.4	102.8
31	2.83	51.3	51.6	65.7	56.7	56.3	66.5	75.6	87.4	82.5	107.9	100	92.0	97.3	144.7	159.7	160.9
32 a/	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	184.1	167.8	187.0
33	8.84	33.5	42.1	49.5	48.4	48.6	49.4	55.8	72.7	67.7	84.7	100	100.3	129.7	153.9	117.6	142.0
34 a/	-	-	-	-	-	-	-	-	-	14.2	60.7	-	22.7	100.0	201.5	657.7	770.6
39	2.00	46.1	47.2	51.6	52.9	49.6	62.1	67.6	89.4	81.6	91.9	100	172.5	199.0	242.3	98.4	100.9
Total	<u>100.00</u> ^{b/}	<u>41.2</u>	<u>44.2</u>	<u>53.5</u>	<u>54.9</u>	<u>55.8</u>	<u>60.6</u>	<u>67.2</u>	<u>80.6</u>	<u>83.1</u>	<u>90.2</u>	<u>100</u>	<u>111.6</u>	<u>155.7</u>	<u>199.8</u>	<u>197.5</u>	<u>214.8</u>

Source: Prepared by Statistics and Census Office, June 1965, direct information.

a/ 1962 = 100

b/ Excluding major groups 32 and 34.

PERU: QUANTUM INDEX OF MANUFACTURING PRODUCTION

(1960 = 100)

ISIC	Percentage weighting	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
20	27.6	52.0	53.6	57.1	64.4	65.8	71.0	72.7	73.9	70.6	87.2	100.0	110.9	116.1	118.1	130.8
21	8.1	42.1	50.2	57.7	66.2	71.0	73.8	72.4	87.4	82.8	84.6	100.0	102.5	118.4	130.4	137.1
22	1.8	96.2	93.2	92.5	101.7	108.0	116.3	95.9	108.8	110.7	100.0	100.0	108.7	97.2	86.4	76.4
23	15.2	59.2	61.1	63.9	70.6	80.8	80.9	80.7	90.3	80.8	88.1	100.0	102.4	107.5	110.5	109.0
24	6.8	49.5	51.3	53.4	57.0	58.0	65.7	70.3	83.3	88.5	94.2	100.0	106.6	119.5	126.9	141.5
25	3.2	77.3	78.6	88.7	84.1	90.6	100.6	104.1	109.7	85.8	85.8	100.0	103.6	130.1	130.5	148.2
27	1.8	24.9	44.9	42.5	46.7	54.6	55.9	70.1	72.8	74.2	88.8	100.0	111.6	113.8	130.3	139.0
28	3.3	44.1	52.6	45.6	52.4	59.1	71.0	77.4	88.8	70.5	79.4	100.0	113.1	124.5	140.5	159.0
29	1.5	65.8	68.0	69.6	72.8	80.4	83.9	87.4	93.6	86.1	88.3	100.0	107.4	107.8	110.1	98.0
30	2.0	36.1	47.9	47.0	71.4	65.3	71.0	73.3	81.0	81.7	98.0	100.0	112.4	120.6	119.1	109.4
31	7.7	31.9	33.3	36.3	37.8	46.1	54.5	63.3	73.7	78.7	73.7	100.0	119.5	153.7	177.6	203.0
32	4.6	73.6	81.7	82.9	84.1	88.1	89.6	95.1	95.5	97.6	93.8	100.0	100.4	108.8	114.9	129.8
33	4.9	46.0	46.9	52.4	66.4	74.3	82.5	85.8	88.3	97.6	94.7	100.0	101.3	117.3	124.7	135.0
34	1.9	22.1	24.8	26.6	30.0	33.0	37.6	29.3	44.9	42.9	40.8	100.0	109.5	94.6	105.7	107.1
35 - 38	6.9	30.6	35.5	42.9	48.2	52.8	60.5	65.8	81.6	82.5	92.8	100.0	117.8	134.1	142.5	149.4
39	2.7	37.6	34.5	29.1	40.0	40.0	44.9	54.2	67.7	74.3	92.9	100.0	156.5	203.9	286.3	412.7
<u>Total</u>	<u>100.0</u>	<u>49.6</u>	<u>52.8</u>	<u>56.0</u>	<u>62.4</u>	<u>67.0</u>	<u>72.1</u>	<u>74.6</u>	<u>82.3</u>	<u>79.7</u>	<u>87.1</u>	<u>100.0</u>	<u>109.8</u>	<u>121.3</u>	<u>130.0</u>	<u>142.6</u>

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Source: Prepared by Bank of Peru, Office of Economic Studies, direct information.

URUGUAY: INDEX NUMBERS OF VOLUME OF INDUSTRIAL PRODUCTION
(1961 = 100)

ISIC	Percentage weighting	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964 ^{a/}	1965 ^{b/}
20	14.3	114.3	115.8	104.1	105.8	93.0	100.0	100.0	106.9	103.9	86.3	75.5
21	10.3	91.3	91.0	89.0	95.5	88.8	90.1	100.0	120.5	125.0	136.6	135.2
22	3.1	74.6	78.4	94.5	97.7	98.2	100.4	100.0	108.9	120.1	110.9	108.7
23	15.1	113.2	140.4	123.1	117.7	125.3	97.0	100.0	88.2	96.0	102.5	125.2
24	5.4	83.0	98.2	114.9	128.4	122.2	104.6	100.0	87.2	103.1	112.9	94.6
25	1.6	160.1	158.3	164.4	133.1	126.6	103.8	100.0	111.0	96.5	...	...
26	1.7	98.5	99.0	121.8	99.1	82.8	87.1	100.0	92.5	103.3	...	...
27	3.0	59.9	49.4	117.1	107.5	112.9	132.0	100.0	103.9	112.0	127.2	142.7
28	3.7	87.2	85.4	105.7	112.5	99.5	123.6	100.0	95.2	80.8	78.0	77.8
29	11.4	120.7	119.0	104.6	119.2	111.8	94.5	100.0	95.9	96.1	...	...
30	2.7	39.9	86.4	81.5	120.7	90.6	141.2	100.0	78.1	60.3	76.8	84.3
31	6.7	86.4	76.9	101.2	97.9	99.0	96.6	100.0	91.8	88.9	101.9	110.7
32	9.6	101.5	89.9	90.0	89.8	88.8	99.1	100.0	111.0	110.0	111.9	...
33	5.3	81.7	88.3	107.1	108.9	111.1	114.1	100.0	88.5	74.4	85.3	...
34	1.4	125.9	105.0	140.8	111.9	123.1	115.5	100.0	91.4	87.7	...	...
35	4.0	143.2	162.1	135.5	103.8	114.8	124.2	100.0	104.3	112.7	146.8	136.8
36	2.6	102.6	91.6	125.3	109.6	117.6	127.8	100.0	121.9	112.3	...	...
37	5.0	67.9	59.8	70.5	69.8	69.5	82.4	100.0	85.9	70.7	83.5	...
39	3.1	47.6	64.4	55.8	70.7	81.2	91.8	100.0	102.6	85.0	...	...
Total o/	100.0	96.6	101.5	103.6	102.8	101.2	102.5	100.0	100.1	99.1	104.7	105.1

Source: Prepared by Bank of the Republic, published in *Revista Económica*, statistical supplement (December 1964) and direct information.

a/ Provisional figures. b/ Theoretical estimate. o/ Including mining and quarrying from 1960 onwards.

VENEZUELA: INDEX NUMBERS OF VALUE ADDED

(1953 = 100)

ISIC	Percentage weighting	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
20	19.7	70.7	69.6	88.1	100.0	116.2	142.6	148.0	156.0	159.7	184.7	201.3	213.9	236.0	256.7	287.7	319.6
21	14.5	70.7	87.5	97.1	100.0	106.6	115.0	118.2	131.7	165.0	191.9	206.6	200.1	204.2	205.8	216.1	228.4
22	2.9	69.3	74.6	91.5	100.0	108.9	119.2	122.3	125.5	137.3	153.6	239.0	260.3	279.7	296.4	312.0	343.9
23	7.2	53.6	77.2	90.6	100.0	119.8	124.5	140.4	176.8	193.3	238.6	268.8	283.5	342.7	371.9	436.8	436.6
24	4.0	37.0	49.0	67.0	100.0	131.0	150.5	182.0	170.3	165.3	209.5	180.5	195.6	183.2	172.9	233.1	198.3
25	2.2	69.1	75.6	80.6	100.0	126.0	156.4	158.5	167.1	162.8	187.4	132.5	138.2	144.2	159.3	192.1	205.4
26	3.8	59.5	74.1	86.3	100.0	99.7	118.4	149.2	206.4	183.7	201.5	163.4	173.8	207.5	218.4	242.8	326.9
27	1.0	39.5	67.2	79.5	100.0	250.8	208.3	231.8	313.6	315.4	554.5	618.9	682.0	745.3	924.7	1 186.0	1 404.1
28	5.6	56.7	65.6	83.2	100.0	112.5	164.4	160.1	168.8	204.2	224.7	220.0	206.5	219.9	283.9	237.3	260.4
29	1.1	63.6	71.9	88.7	100.0	113.1	127.5	174.6	187.2	203.6	246.9	214.5	301.0	266.9	246.0	314.1	260.4
30	2.5	54.5	59.9	75.1	100.0	155.5	166.6	192.7	225.0	256.7	308.9	324.6	324.3	377.6	380.2	420.3	481.4
31	7.6	46.4	49.6	72.8	100.0	117.1	139.9	147.3	183.6	202.1	228.4	218.0	237.0	283.0	302.4	371.2	409.1
32	12.7	61.0	78.0	86.0	100.0	106.0	130.0	148.0	167.0	180.6	200.7	203.6	220.9	244.0	246.7	252.6	270.4
33	8.7	62.6	68.9	86.4	100.0	120.1	126.3	136.4	172.1	154.4	172.7	143.7	145.0	144.4	148.0	181.8	208.4
34	0.3	-	-	-	100.0	-	-	-	-	-	-	-	-	1 640.7	2 699.0	3 132.3	3 891.4
35	2.1	55.0	62.0	63.0	100.0	178.0	201.0	267.0	364.0	486.6	615.6	659.1	699.0	758.0	839.1	1 038.0	1 068.3
36	0.4	85.0	88.0	93.0	100.0	109.0	121.0	134.0	149.0	167.0	176.3	178.9	190.1	229.8	298.1	399.4	550.8
38	2.8	61.0	67.0	83.0	100.0	117.0	136.0	131.0	141.0	163.4	200.6	174.2	179.5	185.4	201.6	281.0	350.9
39	0.9	38.2	46.0	69.2	100.0	144.0	171.7	222.7	304.9	332.6	452.3	482.6	637.9	708.3	777.1	1 066.9	1 137.9
Total	100.0	61.9	70.7	85.6	100.0	118.5	136.5	147.0	166.7	181.2	212.3	219.9	230.5	256.7	277.6	315.5	345.6
Total (excluding petroleum refining)		64.7	69.7	85.5	100.0	120.3	137.4	153.1	173.2	189.1	223.3	222.2	231.9	258.6	281.8	324.7	355.2

Source: Prepared by Central Bank of Venezuela, published in Memorias, 1958-1964 and direct information.

