



**TOGETHER**  
*for a sustainable future*

## OCCASION

This publication has been made available to the public on the occasion of the 50<sup>th</sup> anniversary of the United Nations Industrial Development Organisation.



**TOGETHER**  
*for a sustainable future*

## DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

## FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

## CONTACT

Please contact [publications@unido.org](mailto:publications@unido.org) for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at [www.unido.org](http://www.unido.org)



101371



United Nations Industrial Development Organization

Distr.  
LIMITED

ID/WG.23/2  
October 1968

ENGLISH  
ORIGINAL: SPANISH

International Working Party  
on Industrial Programming Data  
First Session

Vienna, Austria, 18-27 November 1968

PROPOSAL FOR A STUDY ON CAPITAL COEFFICIENTS  
AND OTHER RELATIONS OF INTEREST IN INDUSTRIAL SECTORS <sup>1/</sup>

Economic Commission for Latin America/Latin  
American Institute for Social and Economic  
Planning/Inter-American Development Bank:  
Joint programme for integration of industrial  
development (drafted as of 7 June 1967)

<sup>1/</sup> English translation of "Esquema para un estudio sobre coeficientes de capital y otras relaciones de interes en los sectores industriales" (Programa conjunto CEPAL/ILPES/BID de integracion del desarrollo industrial, 7 de junio 1967).  
This document has been reproduced without formal editing.

We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche.

TABLE OF CONTENTS

	<u>Page</u>
1. Nature of the study	3
2. Relevant co-efficients and required data	3
3. Realisation of the study	6
4. Complementary information	7
ANNEX I (List of data to be studied)	8

1. Nature of the study

The development corporations and banks of some Latin American countries have accumulated a large volume of data on investment projects (new and extension of existing projects), which have been submitted for evaluation and financing.

It seems that these data will permit the determination of a set of technical co-efficients for production units of various industrial branches. The values as observed for these co-efficients in various countries and their variations with respect to size and levels of technology could then be tabulated for an elaborate study.

Actually, two types of data are available in this respect. On the one hand, there are technical co-efficients relating to the industrial sectors and specific industries for some developed countries, in which the prevailing conditions differ to a considerable extent from those in Latin America. On the other hand there are co-efficients at the sectoral level computed on the basis of census data which are incomplete or suffer serious deficiencies. As none of these two groups of data is satisfactory, it appears that a special study to be carried out in the countries of the region will be of considerable value.

The exchange and comparison of this kind of data can be very useful for industrial planners, as well as for project evaluation institutions and development institutions.

2. Relevant co-efficients and required data

Among the relations of interest for the aforementioned purposes, the following may be computed:

- a) Capital-income ratios (value added/investments)

- b) Labour productivity (value added/number of workers)
- c) Capital intensity (investment/per worker)
- d) Investment per unit of production (investment/physical volume of production)
- e) Degree of processing (value added/value of production)

Since the concepts involved in these relations take various forms, different co-efficients can be computed in each case (depending on whether the value added is gross or net, or investment refers to total investment, fixed capital or only machinery, etc.) For this reason and to ensure comparability, it will be necessary to specify in detail the value added, investment, number of workers, value of output, physical volume of output. It will be equally important to establish agreeable definitions for the concepts involved in the co-efficients that will be computed, which will depend to some extent on the data that can be obtained from available projects.

A list of data considered to be the most important to evaluate the afore-mentioned co-efficients is presented in Annex I.

Although in principle the study prepared here refers to investment projects, it might be also useful to have data referring to the actual stage of operations of the implemented projects. Thus, it would be possible to know the co-efficients for plants in operation that would certainly be different from those computed on the basis of the theoretical data for the project. This would permit a comparison that would help discover the practical reasons for the differences observed.

In case the study of actual plants is included, it would be necessary to modify certain items in the list of required data. This is taken into account in Annex I.

It seems important to examine if the participating institutions will be in a position to implement this part of the study, which certainly requires some additional investigations.

Concerning the scope of the study, it seems necessary to cover the greatest possible variety of projects and products. However, it is possible that in some cases the available projects do not quite lend themselves to an analysis in reasonable terms; thus, it would be advisable to establish some limitations to the scope of the study.

A first restrictive criterion is imposed by the need to assure a certain degree of reliability in the basic data of the projects and their real feasibility; this will possibly limit the projects to be considered to those which are approved by respective financing institutions.

On the other hand, projects for infra-structural investment should be included, and focus should be set on the processing industry. At the same time, large projects may be excluded, since a considerable amount of information generally exists for them.

It seems of special interest to study various projects which refer to the same product. This will help examine the differences introduced by different plant sizes and different levels of technology in the co-efficients studied.

Once the choice of projects is made, it will be necessary to establish a special coding system in order to keep the data on the projects or enterprises analyzed on a confidential basis, not revealing their identification.

### 3. Realization of the study

The following financing institutes could possibly participate in the study:

- The Industrial Bank of the Republic Argentina
- The National Bank for Economic Development of Brazil
- The Industrial Development Institute of Colombia
- The Development Corporation of Chile
- The National Financing Institute of Mexico
- The Industrial Bank of Peru
- The Development Corporation of Venezuela

The investigations could be extended afterwards to other financing institutes, such as the North-East Bank of Brazil, the Central American Bank for Integration, the Bank of the Republic of Uruguay, the Industrial Development Corporation of Jamaica, etc. and also, if it is considered convenient and possible, to other organizations which are engaged only in project evaluation, such as the Dirección de Radiación de Capitales/<sup>Argentina</sup> or the Centre of Studies for Development (CEDES) of Ecuador.

This study will be realized basically under the official support of the national authorities which want to participate. They will nominate special consultants, as available to them. If necessary, some additional financial collaboration may be provided by ECLA.

The consultants will meet initially in Santiago for uniform methodological criteria and discuss thoroughly the problems which may arise in carrying out the study. Afterwards they will go to their respective countries to collect data; the work will occupy them approximately two months. In some cases, if the available information is in a particularly large volume, it may be necessary to select a part of it or to extend the working term. The basic information will be processed and analyzed at ECLA, which will



maintain contact with the consultants for necessary corrections or revisions. Afterwards, the consultants will meet in Santiago for discussion and comparison of the results.

The information obtained will be made available to all the participating countries and as far as possible it will be published for dissemination, upon consent of those countries.

#### 4. Complementary information

As an addendum to the above study, a re-compilation of the results of some special studies may be done: e.g. various studies already conducted by the Centre for Industrial Development of the UN (now UNIDO), the National Bureau of Economic Research of the USA, the Netherlands Economic Institute, etc.

At the same time the information from the country studies or industrial sectoral studies may be re-organized by the Economic Commission for Latin America, including the data from industrial surveys, which are readily available.

In general, those studies mentioned above refer to mean co-efficients corresponding to the stock of existing production factors and not to the growth of these factors which is required to increase the production. For this reason, the results of the previous studies will in most cases not be comparable with those of the new proposed study. However, the re-organization of the previous studies will offer a larger frame of reference, that will permit an analysis in depth of the results of the new study.

ANNEX I

1. Identification of production unit

- a) Sectors and branches of industrial activities
- b) Type of unit (new, extended, modernized, etc.)
- c) Principal production (annual volume of two or three most important products, noting also secondary products)
- d) Technological process (description of the nature of the process, type of equipment utilized, degree of vertical integration, degree of modernization, etc.) 1/
- e) Origin of know-how (licensing agreement, foreign technicians, national technicians, etc.)
- f) Geographical location
- g) Author of the project (indicate whether it is the firm itself, national consultants, foreign consultants, suppliers of equipment, etc.)
- h) Date of the formulation of the project
- i) Date of the commencement of the implementation of the project and the start of production
- j) Expected life of the production unit

---

✓ It may be indicated, in the case of a textile plant, for example, whether it deals with woven or knitted material; whether it utilizes carded yarn or combed yarn; whether the major machines are mechanical or automatic; whether the process provides only raw cloth or finished cloth, etc.

2. Employment in normal operation

- a) In production
  - i) workers
  - ii) employees
  - iii) supervisors
- b) In administration and marketing
  - i) workers
  - ii) employees
  - iii) supervisors

3. Commercial value of capital, undepreciated

- a) Fixed capital in plants
  - i) land (in addition to value, indicate the physical size)
  - ii) natural resources (in addition to value, indicate physical quantity)
  - iii) buildings and fixtures (in addition to value, indicate floor space)
  - iv) equipment and machinery (cif value)
    - of production
    - of maintenance
    - transportation costs to the plant
    - installation cost of the equipment
  - v) transportation equipment
  - vi) miscellaneous (cost of preliminary investigations, start-up costs, interest during the construction period, etc.)

- b) Fixed capital in auxiliary facilities 2/
- c) Working capital
  - i). raw material and work in process
  - ii) finished products
  - iii) miscellaneous

4. Financing

- a) Own capital (proprietary capital)
- b) Loan
- c) Origin of the loans (indicate institutions, currency, terms and conditions, etc.)

5. Depreciation methods

- a) Depletion of natural resources
- b) Depreciation of buildings and fixtures
- c) Depreciation of equipment and machinery
- d) Depreciation of transportation equipment
- e) Depreciation of intangibles, good-will and other capital assets (cost of the project, start-up cost, etc.)

---

2/

Indicate specially the investments which had to be realized due to the lack of infrastructural facilities in the area; indicate whether these investments were for electrical plants, repair shops, access roads, housing for personnel, etc.

6. Value added
- a) Salaries, wages and social security
  - b) Interest on capital (specify whether the total capital is considered or what part of the capital; also indicate corresponding rates and periods of amortization)
  - c) Rents, insurance, property tax, advertising, etc.
  - d) Gross profit
    - i) net profit (before taxes)
    - ii) depreciation

7. Value of inputs
- a) Raw material (indicate separately the 3 or 4 most important ones; in addition to the value, indicate volume)
  - b) Intermediate products (pieces, parts or semi-finished products; indicate the 3 or 4 most important ones both in terms of value and volume)
  - c) Other materials
  - d) Energy (in both value and quantity)
  - e) Water (in both value and quantity)
  - f) Other inputs

8. Value of production f.o.b. (ex-factory price)

- a) Value of production (indicate separately the major products, in terms of both value and quantity.)
- b) Value of the services rendered to third parties (e.g. repairs)
- c) Market prices (if part of the production is destined for export, indicate also the type of exchange considered)

9. Production capacity

- a) Installed capacity of the various units in the plant (indicate also the conditions of utilization)
- b) Number of work days per year and number of (eight-hour) shifts per day in the various units;
- c) Percentage of over-all utilization
- d) Initial period of operation needed to reach full utilization of installed capacity

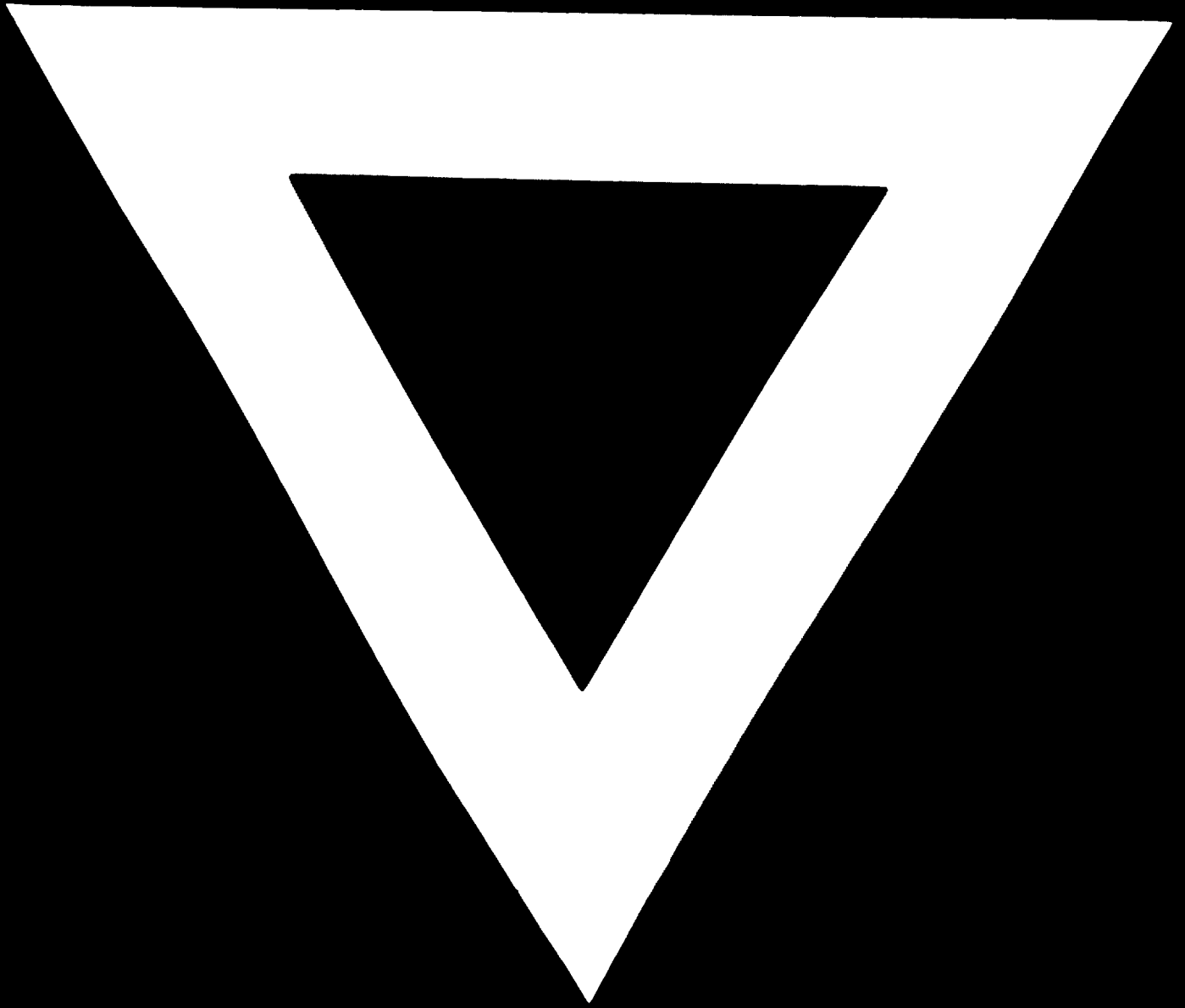
Note:

In the case of the projects which are yet to be implemented, it would be interesting to collect additional data on the same projects after one year of normal effective operation, or in the case of failures, any data of the last year of operation as available.

In this case some figures will probably differ from the corresponding pre-project estimates and an additional scheme will then be required. This will be similar to the previous scheme although the actual project description should include an indication of the method adopted in estimating the value of capital (if possible, in depreciated market value or in replacement cost) and the real utilization of the planned installed capacity.

As indicated previously, it is possible that the compiling of part of these data on actual projects in operation must be done by consulting directly the enterprise running the plant.





**74.10.17**