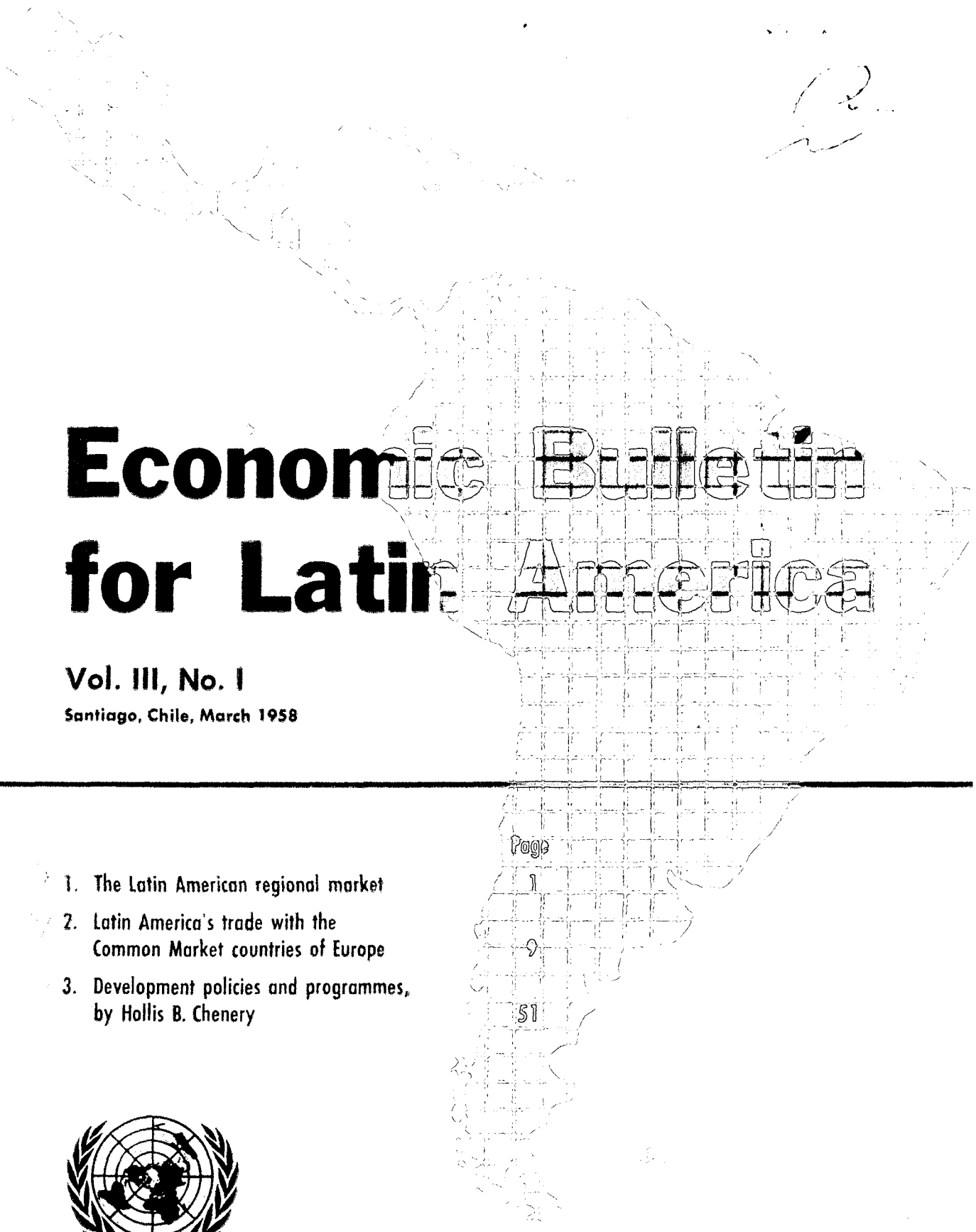

Economic Bulletin for Latin America

Vol. III, No. I

Santiago, Chile, March 1958

UNITED NATIONS

The *Economic Bulletin for Latin America,* published by the secretariat of the Economic Commission for Latin America, appears twice yearly, in February and September. The essential purpose of this periodical is to provide a résumé of the economic situation of the region designed to supplement and bring up to date the information published in the Commission's annual economic surveys. Apart from this summary, which is to appear in every issue, special articles on different subjects related to the economy of Latin America are also included.

The ECLA secretariat assumes entire responsibility for the *Bulletin.* Its content —intended for the information both of public officials and of the general reader— was not submitted to the Commission's member Governments before publication.

EXPLANATION OF SYMBOLS

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

A dash (—) indicates that the amount is nil or negligible.

A minus sign (— 300) indicates a deficit or a decrease.

A stroke (/) indicates a crop year or a fiscal year, e.g., 1954/55.

"Tons" and "dollars" are metric tons and United States dollars, respectively, unless otherwise stated.

Minor discrepancies in totals and percentages are due to rounding.

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ECONOMIC BULLETIN FOR LATIN AMERICA

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UNITED NATIONS

THE LATIN AMERICAN REGIONAL MARKET

At the seventh session of the Economic Commission for Latin America (La Paz, Bolivia, 15-29 May 1957), the member Governments adopted a resolution (116(VII)) on the Latin American regional market, recommending to the secretariat that it should expedite the implementation, within the shortest possible time, of the relevant resolutions of the Trade Committee,[1] "with a view to taking a more decisive step towards their underlying objective".

In compliance with these instructions from June 1957 onwards the secretariat concentrated on organizing the first session of the Working Group on the Regional Market, which was held at the headquarters of the Commission at Santiago, Chile, from 3 to 11 February 1958. For this purpose, the secretariat invited seven prominent Latin Americans to attend the session in their personal capacity and to give it support of their practical experience and of the prestige they enjoy in public and private affairs not only in their respective countries but throughout Latin America. The Group consisted of the following members:

Mr. José Garrido Torres, President of the National Council of Economy of Brazil;

Mr. Rodrigo Gómez, Director-General of the Banco Mexico, S.A., Mexico;

Mr. Flavián Levine, Professor at the University of Chile and Executive Vice-President of the Compañía de Acero del Pacífico (Huachipato);

Mr. Eustaquio Méndez Delfino, President of the Buenos Aires Stock Exchange and former President of the Honorary National Commission of Economy and Finance of Argentina;

Mr. Juan Pardo Heeren, former Minister of Finance of Peru;

Mr. Galo Plaza, former President of the Republic of Ecuador;

Mr. Joaquín Vallejo, former Minister of Development of Colombia.

After electing Mr. Galo Plaza Chairman and Mr. Joaquín Vallejo Rapporteur, the Group met *in camera* so as to be able to discuss more freely the background documents presented by the Secretariat[2] and the members' individual points of view on the problems raised.

In preparing its programmes of work, the Group bore in mind not only the resolutions of the Trade Committee and the Commission to which reference has been made, but also that adopted by the Economic Conference of the Organization of American States (Buenos Aires, August 1957), recommending that OAS should co-operate in the work of ECLA and declaring that it was desirable gradually and progressively to establish a Latin American regional market on multilateral and competitive bases.

The Working Group concentrated on defining clearly the principles and bases upon which the procedures and institutions of a regional market could be established. Its findings were set forth in the report entitled *Bases for the formation of the Latin American regional market,* which it adopted on 11 February 1958.[3]

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[1] See resolutions 2 (I) and 3 (I) in the Report of the Committee reproduced in the study entitled *Inter-Latin American Trade: Current Problems* (E/CN.12/423), United Nations publication, Sales No.: 1957.II.G.5.

[2] The following were the background documents considered by the Group in its discussions: (1) *Study of Inter-Latin American Trade* (E/CN.12/369/Rev.1), United Nations publication, Sales No.: 1956.II.G.3; (2) *Inter-Latin American trade: current problems* (E/CN.12/423), United Nations publication, Sales No.: 1957.II.5; with special reference to the account of proceedings of the first session of the Trade Committee (pages 7 to 14), and to part II, section 3, "Payments and the regional market in inter-Latin American trade" (pages 93 to 105); (3) resolutions 116 (VII) and 121 (VII) of the Economic Commission for Latin America, given in *Annual Report (15 May 1956-29 May 1957)* (E/CN.12/451), pages 105 to 108 and 113 to 115; (4) *ECLA activities relating to payments and the regional market in Latin America* (E/CN/12/483); (5) *Final Act of the Economic Conference of the Organization of American States* (Buenos Aires, Republic of Argentina, 15 August-4 September 1957), with special reference to resolution XI, "Recommendation on a Latin American regional market"; (6) *Liberalización del comercio interlatinoamericano* (document 3.1957 of the Organization of American States)*; (7) *Planteamiento de los problemas del mercado regional* (E/CN.12/C.1/WG.2/1)*; (8) *Algunos problemas del mercado regional latinoamericano* (E/CN.12/C.1/WG.2/2)*; (9) Pierre Uri, *Sugestiones sobre el mercado regional latinoamericano* (E/CN.12/C.1/WG.2/3)*; (10) *Principales antecedentes del Grupo de Trabajo del mercado regional latinoamericano* (E/CN.12/C.1/WG.2/4)*; (11) Hollis B. Chenery, *Alternative approaches to economic integration in Latin America* (E/CN.12/C.1/WG.2/5); and (12) *El movimiento de integración económica centroamericana* (Information Document).*

Note: The English text of the above-mentioned documents which bear an asterisk (*) is not yet available.

[3] The report was originally issued on the date mentioned as a document for "limited" distribution (E/CN.12/C.1/WG.2/6). The full text, which was subsequently reissued for "general" distribution, is appended to the *Progress report on inter-Latin American trade and the regional market, covering the period June 1957 to April 1958* (E/CN.12/AC.40/3) presented to the ECLA Committee of the Whole at its sixth session.

There is no need to stress the importance of this document, since it has already produced wide repercussions in Latin America and provides a new guide for the secretariat's work in this field. The actual bases for the formation of the regional market, the relevant comments and recommendations, and the preamble in which the Working Group analyses the considerations underlying their formulation—in other words, what is considered to be the essence of the report—are reproduced here. The three parts concerned are presented in the following pages; the fourth part is omitted, because it deals with other recommendations largely of an internal nature and contains two annexes consisting of resolutions of the Commission which may easily be found in other documents.

BASES FOR THE FORMATION OF THE LATIN AMERICAN REGIONAL MARKET

I. Introduction

The social need to develop the Latin American countries makes it a matter of increasing urgency to devise effective ways and means of accelerating the rate of growth of their real *per capita* income. It is now fully recognized that such ways and means must necessarily be based on the technical improvements in agriculture and the progressive industrialization of the countries in question. Modern technology offers an almost unlimited potential for the attainment of these ends, as is testified by the experiments of paramount historical importance which are being carried out before our eyes. Will Latin America be able to take full advantage of this potential? A formidable obstacle stands in the way. Industrialization calls for an extensive market without which the countries of the region will be unable to achieve the high level of productivity characteristic of the great industrial centres. Such a market could be available to Latin America, but it has been broken up into twenty watertight compartments. Now that a common market has been formed in Western Europe, that the Scandinavian peoples are making efforts in the same direction and that the countries of Eastern Europe are apparently engaged in a process of integration, Latin America constitutes the only large population group in the world which, in a vast territory endowed with a wealth of natural resources, is wasting for want of economic integration the immense potential represented by modern technology.

In 1955, the population of Latin America numbered some 175 million persons, and it is estimated that it will have increased by a further 100 million by 1975. The share of the active population in this increment should amount to approximately 38 million. If the trends registered in the last twenty years continue, out of this substantial addition to the region's labour force only 5 million will be absorbed by agricultural activities, or fewer still if, as is greatly to be desired, technical progress in agriculture is expedited. Thus about 33 million persons will be left to seek productive employment in other sectors; and of these a considerable proportion will have to be absorbed by the process of industrialization and under conditions of continuous technological progress. There will be a very serious waste of resources if the Latin American countries continue to pursue a policy of industrialization in watertight compartments.

ECLA has viewed this problem in a clear light, and the member Governments agreed in principle upon the need to set up a regional market, first at the initial session of the Trade Committee, held in November 1956, and subsequently, in May 1957, at the seventh session of the Commission in La Paz. Likewise, at the recent inter-American economic conference in Buenos Aires (August 1957), the Governments categorically endorsed the proposal to create a Latin American regional market.

In compliance with the instructions issued to it at the La Paz session, the secretariat has invited the present Working Group to co-operate in the preparatory work for putting this vitally important project into effect. For this purpose the Group has had a series of prior studies at its disposal. The concept of the economic integration of Latin America, which found early expression in ECLA's *Economic Survey of Latin America 1949*, has been progressively developed in subsequent documents. In this connexion, it should be pointed out that definite ideas on the regional market's structure first appear in the study entitled *Payments and the regional market in inter-Latin American trade.*[1] All this material has been very useful to the Working Group, as have also the additional reports presented by the secretariat before and during the meetings of the Group.

Thus, the concept of the Latin American regional market has long been gradually taking shape, and the Group deems it a privilege to have had the present opportunity of giving it new impetus by formulating what should, in the Group's opinion, constitute the market's essential bases. The establishment of the European common market has rendered the creation of a Latin American regional market a more pressing need; in the first place because it shows how an idea that some years ago might have been considered utopian quickly gains ground when enlightened statesmen give it the support of their prestige and define it with conviction; and, secondly, because the European common market, undeniable as are its advantages for its six member countries and beneficial as its indirect repercussions may prove for Latin America, will produce in addition some adverse effects, mainly as a result of the preferential measures introduced in favour of the members' overseas territories. However much concerted action on the part of the Latin American countries

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[1] *Note by the secretariat.* The report in question was published under this title by the secretariat in 1956 and was prepared by the economists Mr. José Garrido Torres (Brazil) and Mr. Eusebio Campos (Argentina) in their capacity as consultants, after they had carried out a survey in various South American countries with the co-operation of the secretariat. The following were among the recommendations with which the report closed:

"It is considered that agreements should be concluded with a view to promoting — by means of collaboration amongst several countries, and on a basis of financial contributions from both regional and foreign sources — the establishment or development of industries that require substantial capital and wide markets...

"It is felt to be expedient that in the field of trade policy steps should be taken to establish general principles and certain specific procedures conducive to the gradual building up of a regional market on multilateral and competitive bases. This regional market would permit the intensification of those Latin American lines of industrial production in which a reduction in costs and future expansion basically depend upon an increase in consumer capacity.

"At this level, and as a preliminary phase, the drawing up of an industrial map of Latin America is suggested, mainly with a view to the determination of possible and advisable action."

may mitigate such effects, it would not be feasible to imagine that they can be entirely averted. Furthermore, the European common market will powerfully stimulate the technological revolution which is already taking place in the agriculture of the countries concerned, as well as in their production of synthetic raw materials; and all this is bound to have unfavourable consequences for the producer countries of Latin America.

A negative reaction, however, is not enough. Latin America's positive reaction must be the creation of the regional market. The time is ripe to take this step resolutely and without detriment to the region's advantageous trade relations with the great industrial centres. Latin America will continue to buy from them in so far as they absorb its exports, which the countries of the region will have to promote to the fullest possible extent. But the composition of Latin American imports must be further modified and brought into line with the capacity for external payments. If this process is carried out within the broad framework of the regional market, Latin American industry will be vigorously spurred on towards new and more efficacious forms of expansion, with favourable consequences for the economic development of the region. In the course of this task of substituting domestic production for imports, the sooner Latin America speeds up its production of capital goods, which at present are imported because their manufacture in watertight compartments is anti-economic, the sooner will the region be able to counter such foreign trade setbacks as may accompany the advantages attendant upon the European common market.

From another point of view, it would be a mistake to consider that the main justification of the common market lies in the incentives it will afford to the production of capital goods and intermediate products that require complex processing. This applies especially to the more advanced of the Latin American countries, where conditions have been becoming increasingly favourable for the establishment of such activities; but the vast possibilities for expansion, consolidation and specialization among existing consumer goods industries, as well as those others which will undoubtedly come into being by virtue of the regional market, must not be overlooked.

The situation of the less advanced countries is also of vital importance. The system of watertight compartments has virtually cut them off from the favourable effects of industrialization in the more highly developed countries. The significance of this problem is obvious, and the regional market must provide the indispensable conditions for its solution. The less developed countries of the region will have to find the decisive stimulus to their own industrialization in rising levels of consumption in those that have reached a higher stage of development. This calls for special treatment. If the treatment accorded in the regional market were to be exactly the same for countries at different stages of the industrialization process, the inequalities would tend to be perpetuated. To reduce and finally eliminate them, special incentives to the industrial development of the less advanced countries will have to be provided, for the mutual benefit of both groups.

Bearing in mind these considerations and others which will be discussed later, and in conformity with its terms of reference, the Group presents the following bases on which the Latin American regional market may be established. In formulating them, the Group has been guided first and foremost by the idea that such bases will be effective only in so far as they offer ample opportunities to private enterprise and its achievements. The Governments will plan the structure of the regional market, but it will be for private enterprise to give it life; and in the pursuit of this aim, the countries concerned will have to take special care that their legitimate efforts towards industrialization do not deprive agriculture and the infrastructure of essential resources, thus jeopardizing the balanced development of their economy and, in the final issue, weakening their rate of growth.

On these foundations it will be possible to build up the specific projects which the Governments members of the Commission have requested this Working Group to recommend. To this end a series of analyses will have to be carried out on the lines suggested to the secretariat in the third part of the present document, in which comments are presented concerning the bases enumerated below.

II. Enumeration of the bases

1. *Universality of membership in the regional market*

Membership in the regional market must be open to all the Latin American countries, for which reason it is essential that conditions acceptable to all of them be established from the outset.

The universal nature of the regional market agreement does not, however, imply that countries closely linked by geographical proximity or common economic interests shall not be empowered to enter into negotiations among themselves. But it is essential that these negotiations be effected within the framework of a general agreement, and along such lines that the reciprocal concessions involved are not exclusive and are automatically extended to other member countries, or to such countries as may become members in the future if all do not accede to the initial agreement.

2. *Range of the regional market in respect of commodities*

The ultimate aim of the regional market must be the inclusion of all goods produced within its area. This concept does not mean, however, that the regional market must become effective immediately for all such goods. It only implies that the agreement will have to establish procedures and time-limits for the progressive abolition of those customs duties and restrictions which nowadays hamper or prevent inter-Latin American trade. In other words, the agreement must be immediate but its implementation gradual.

Once this principle is established, various ways of putting it into practice are conceivable, which must be carefully examined before final recommendations are made.

3. *Development of the less advanced countries*

The less advanced countries must be accorded special treatment to enable them, through progressive industrialization and the over-all strengthening of their economies, to share fully in the benefits of the regional market.

With this end in view, their import duties and restrictions must be reduced more slowly than in the more advanced countries, in accordance with formulae to be studied; and such formulae must further establish facilities for exports from the countries in question, and especially for goods produced by their new industries and other activities, so as to ensure equitable trade reciprocity. In addition, other measures must be devised, especially of a financial nature, conducive to the more rapid development of the less advanced countries.

4. *The tariff system* vis-à-vis *the rest of the world*

One implication of the regional market is that it will be desirable eventually to establish a single customs tariff *vis-à-vis* the rest of the world. But in some countries the tariff has been deprived of its protectionist role, and has been superseded by restrictive measures of various kinds. Until these are replaced by a new tariff, an interim system will have to be established to ensure the progressive abolition of such restrictions in the countries in question to an extent equivalent to the tariff reductions effected by other member countries.

5. *Specialization in industries and other activities*

The specialization in industries and other activities which is one of the objectives of the regional market must be the outcome of the free interplay of economic forces within the over-all conditions established by the agreement, and without precluding the pursuance of an investment policy calculated to further as effectively as possible the aims of the said agreement.

It is inconsistent with this principle to accord specific countries the exclusive right to install certain industries or activities, or to impose restrictions on free competition, except as regards the special features of the integration programme of the Central American countries, which in this context must be considered as a single unit, if such is the form of membership they desire.

6. *The payments system*

In the interest of greater efficiency, the regional market must have a special system of multilateral payments conducive to maximum inter-Latin American trade reciprocity, and not detrimental to the possible participation of Latin America in the re-establishment of a more general multilateralism. It is essential that, under the system established, the member countries be protected against all exchange risks.

7. *Temporary import restrictions*

Member countries must have the right to impose temporary import restrictions, in accordance with regulations to be laid down in the agreement, and provided that basic remedial measures of monetary, fiscal and economic policy are also adopted, when such a step is rendered necessary by:

(*a*) The magnitude and persistence of the disequilibrium in their balance of payments with the other member countries; and

(*b*) The need to facilitate reabsorption of manpower, in the course of the readjustments consequent upon the changing industrial structure.

8. *Safeguards for agriculture*

Member countries must have the right to restrict imports of agricultural commodities, limiting them to given proportions of the increment in consumption, should this be indispensable for the normal maintenance of agricultural activities.

9. *Rules of competition*

To promote the smooth functioning of the regional market, steps must be taken to prevent the export trade of a member country from prejudicing, by means of unfair competitive practices, the activities of other member countries, either through competitive currency depreciation or by any other method.

Member countries must also refrain from discriminatory practices, so that export prices may be the same for any given commodity, irrespective of the market of destination.

10. *Credit and technical assistance*

The regional market must be provided with an effective system of credit and technical assistance, both in order to stimulate intra-regional exports and with a view to furthering the installation and development of the industries concerned.

11. *The advisory body*

The problems that the functioning of the regional market will involve call for the creation of an advisory body constituted by the member Governments, and the establishment of a system of arbitration.

12. *Role of private enterprise*

For the formation of the regional market the agreement of the respective Governments is required. But the making of such a market a going concern will depend to a large extent on private enterprise, on its understanding of the problem and on its ability to turn to account the immense advantages offered by the regional market for industrialization, for the introduction of more advanced agricultural techniques and for over-all economic development.

It is, therefore, deemed highly desirable to enlist the active co-operation of the organizations representing private enterprise, in both the national and the international field, for the study and discussion of these problems.

III. Comments on the bases and recommendations

Bases 1 and 2. *Universality of membership in the regional market*

The greater the number of countries and the wider the range of commodities included in the regional market, the greater will be the possibilities of reciprocal trade and the more flexible the market's operations, inasmuch as the liquidation of balances among member countries will be facilitated.

It therefore appears desirable that the agreement should be open for accession to all the Latin American countries and, at the same time, that formulae should be evolved flexible enough to allow countries in close geographical proximity or with specific interest in common to make mutual concessions. While such concessions may originally be designed to promote the mutual interests of the countries concerned, they should be extended to other member countries without any intent of exclusiveness.

As regards the commodities, a careful examination will have to be made of ways and means of gradually and progressively reducing duties and restrictions. Because of their complementarity or the fact that they have not yet been produced or are produced in only one country, in the case of certain commodities—for example, some traditional items of trade and also, to a large extent, capital goods and durable consumer goods, as well as some important intermediate products—the reduction of duties and restrictions could be embarked upon without any limitations. At the other extreme are the industries producing goods for current consumption. Here, reduction must be gradual and progressive in order to allow for adjustments and increased specialization in the various sectors and to avoid the serious maladjustments which would otherwise occur.

In considering this aspect of the regional market, the secretariat should take into account various methods of reduction, whether they refer to all commodities, to groups of similar or related commodities or to individual trade items.

Basis 3. *Development of the less advanced countries*

It is essential for the success of the regional market that the less advanced countries should find in it incentives, lacking at present, for vigorous industrialization. However, if such countries acceded to the agreement on the same terms as the more advanced countries, this objective would not be achieved because of the greater industrial productivity of the latter. To prevent this, various procedures must be studied. For example, it might be possible to maintain for a judicious period the reasonable amount of protection required by the industries of the less advanced countries which are working for their own internal market, while the duties and restrictions for the same and other industries in the more advanced countries are gradually eliminated. Another possibility would be to promote the establishment of export industries in the less advanced countries and to grant the necessary facilities for importing the products of these industries to the more advanced countries. All these alternatives must be considered.

At the same time, an analysis will have to be made of the manner in which credit facilities could be granted to these countries to help them finance their export industries. Furthermore, it is to be hoped that foreign capital might well find in the countries in question the incentives for industrial investment which are lacking today, since such investment would have at its disposal an extensive regional market instead of the narrow range of markets at present available.

This does not mean that the more advanced countries should make a sacrifice in favour of the others. Quite clearly, the interests involved are reciprocal. Under the preferential trade system which the regional market implies, the exports made by the less developed to the more developed countries will give the former a purchasing power that will largely be used to buy the manufactured products of the latter, particularly when the countries concerned succeed in establishing a multilateral system of payments which will encourage the utilization of credit balances within the regional market itself and which will reduce to a minimum the outflow of dollars or other freely convertible currencies to the rest of the world.

Without these special arrangements, the more advanced countries would have great difficulty in selling their capital goods and other goods whose costs are higher than those in other parts of the world. Certainly, the enlargement of the market and the consequent increase in productivity will gradually bring costs closer to world levels. In the meanwhile, it would be logical to expect that the less developed countries will be unwilling to grant preferences in respect of such goods if they have to spend their hard currencies in order to purchase them, but if they are able to pay for them with additional exports, especially of manufactured goods, a wide field of mutual interest will be opened for both groups of countries.

Basis 4. *The tariff system* vis-à-vis *the rest of the world*

There are two ways of tackling the problem of a preferential policy: that of the free trade zone and that of adopting a single customs tariff *vis-à-vis* the rest of the world. The first method would have the advantage of not requiring any readjustment of existing tariffs *vis-à-vis* third countries: each country would maintain or establish *vis-à-vis* the rest of the world the duties which it desired — subject to the limitations imposed by the treaties in force — and would undertake only to grant those progressive reductions which the agreement required for the other countries operating within the same system. However, in certain circumstances, the lack of a common tariff for certain commodities imported from third countries would have serious disadvantages.

On the other hand, it is no easy task to work out a common tariff. In particular, there are countries where the tariff has disappeared as the result of inflation and has been replaced by restrictions of a different kind. It might take time to re-establish the tariff, but there is no need to wait for this to happen before the common market agreement is concluded. Intermediate stages may be envisaged at once. The progressive reduction of duties and restrictions could be started within a free trade zone, while the decisive steps were being taken for the establishment of a common tariff. It would be advisable for the secretariat to analyse the various alternatives in this field,

including that for which provision is made in article XXV of the GATT, and at the same time, to devise suitable ways and means of gauging the magnitude of both the restrictions and the customs duties introduced for the purposes of reductions contemplated in this report.

Basis 5. *Specialization in industries and other activities*

Many consumer goods industries in the Latin American countries may possibly have attained an apparently satisfactory size in comparison with their counterparts in the advanced industrial centres. However, a close examination will reveal that the smallness of the market in Latin America compels factories to produce an excessive variety of articles, while factories in the more advanced centres have reached a high degree of specialization. The regional market will stimulate such specialization in Latin America. The time required for the reduction of duties and restrictions will allow the gradual introduction of the necessary readjustments and may possibly encourage the merger of industrial interests between firms of different countries or the conclusion of mutual agreements to attain the necessary specialization in this and other cases.

All this should come about as the result of the free interplay of interests, which is not incompatible with effective guidance through financial agencies. But in no case should it lead to exclusive arrangements which prevent competition or the entry of new enterprises.

Basis 6. *The payments system*

In the abstract, a regional market without a special payments system is conceivable but, in practice, the full potential of the market will not be realized without it. A system in which any credit balance in favour of one country might give rise to an immediate outflow of foreign exchange to the rest of the world would mean a substantial weakening of the regional market. It is therefore necessary to create incentives to ensure that such balances are used within the market itself.

For this purpose, it will be necessary to examine the possibility of organizing a credit system at the same time as the multilateral payments system.

The group noted with satisfaction that the meeting of representatives of some of the Central Banks in Montevideo, convened by ECLA, recommended parity for units of account in bilateral agreements and laid the foundations for the voluntary transfer of balances. It is to be hoped that the second meeting, to which all the Latin American Central Banks should be invited, will work out wider formulae for multilateral compensation and that an immediate programme for the elimination of certain restrictions which interfere with trade will open the way for the automatic transferability of intra-regional balances.

Basis 7. *Temporary import restrictions*

The incentive to use balances within the regional market itself referred to in the preceding section (Basis VI) will be a powerful stabilizing factor. But it is possible that certain transitory factors or inflationary pressure may produce desequilibria which, because of their nature and magnitude, cannot be remedied by additional credits. Such a situation may compel the debtor countries to impose restrictions on imports from the regional market. However, it is essential that such restrictions should conform to certain norms and that they should be applied for a limited time, since other measures must be adopted to attack the disequilibrium at its source. In this respect, the bodies to be established under the agreement could provide useful advice and guidance.

Consideration must also be given to cases in which the disequilibrium is of a structural character, or, in other words, when a country has not succeeded in attaining a rate of economic development similar to that of others without a persistent trend towards external disequilibrium. In this instance, firm action must be taken to stimulate exports and replace imports by domestic production. Monetary readjustment in accordance with the provisions and practices of the International Monetary Fund is one possible method. But some thought should be given to protective measures of limited scope which could be introduced only after the views of the bodies concerned had been heard. These are delicate matters which require careful consideration.

There is another type of disequilibrium which will have to be taken into account. The regional market will tend to accelerate the rate of growth of the Latin American countries. This fact and the more or less prolonged period of time which will have to be allowed for the reduction of duties and restrictions will facilitate the readjustment of the economic activities of a country when it is faced with competition from other member countries.

Cases may arise, however, where, because of the nature of an activity or its geographical position, it is not easy to transfer labour no longer required by that activity to others in process of development. In these cases, it is logical that a country should be able to impose temporary restrictions on imports which give rise to such difficulties.

Basis 8. *Safeguards for agriculture*

From the point of view of the foregoing comments agriculture is in a special position. In certain cases, safeguards have been necessary to protect it against competition from other Latin American countries. This is a fact towards which no hard-and-fast attitude can be adopted. On the one hand the introduction of advanced techniques in agricultural in the countries concerned may enable them to face such competition on favourable terms. On the other hand it must not be forgotten that with the passage of time a marked increase in consumption may require that those activities now enjoying protection be maintained and stimulated, because the surplus of the exporting countries may gradually be reduced through the growth of their own consumption.

In the light of these possible changes it is necessary to proceed with caution and to accord special treatment to agricultural activities, without losing sight of the need to draw up programmes for the gradual replacement of certain costly lines of production by others in which productivity is higher, both for the benefit of the consumer and in order to promote the more efficient utilization of available productive resources.

Basis 9. *Rules of competition*

The essence of a regional market lies in its competitive character. But the success of such competition must be the result of better productive ability and not of arbitrary

factors. These factors may be of different kinds. If the external depreciation of a country's currency is continually higher then internal depreciation, export prices might fall to the detriment of other countries competing on the market.

In other cases unfair competition might be rather the result of deliberate procedures, taking the form of apparent or concealed subsidies. These practices are not compatible with the regional market.

Basis 10. *Credit and technical assistance*

In this field also it is necessary to proceed with caution for, while the accelerated development brought about by the regional market will give rise to greater need for investment resources, there is the risk of embarking on over-ambitious projects which, however well conceived, may prove difficult to carry out in practice. A beginning should be made with modest undertakings which could extend their field of action as they proved to be reliable and efficient.

The credit requirements inherent in the regional market are of two types: first, the financing of exports and, secondly, the financing of industries which produce these exports. So far as the former is concerned, a system of medium-term credits designed specifically to encourage exports of capital goods will have to be organized. Consideration should be given to the possibility of entrusting these credit operations to the same body which is responsible for the system of multilateral payments, without precluding the appropriate use of existing financial organizations, both domestic and foreign.

As regards the financing of industries, particularly those producing for exports, the enlargement of the market will undoubtedly provide private domestic and foreign capital with more powerful incentives than at present. These incentives will encourage the pooling of capital from different countries for the development of industries which serve the regional market, and other forms of financial co-operation. Yet national resources will clearly be insufficient and recourse will have to be had to international credit resources. It will therefore be necessary to consider the possibility of establishing a special development agency to carry out these financing operations, which should be supplemented by measures of technical assistance in regard to which international organizations could provide very valuable support.

The secretariat should study the possible repercussions on the regional market of the different kinds of treatment now accorded by the Latin American countries to investors.

Basis 11. *The advisory body*

The Group does not consider that the Latin American countries are yet ready to establish at the outset an executive authority for the regional market although this might constitute an objective for the future. Accordingly, it would prefer an organization of an advisory type but whose influence might in time become decisive if its efficiency and impartiality conferred upon it an unquestionable moral authority. This report has dealt with various circumstances in which a country has to take emergency measures which run counter to the aims of the agreement and which might cause harm to third countries. The advisory body would intervene in all such cases. What is more, its opinion should first be sought so that the country which considers itself prejudiced by measures taken by other countries may apply for a ruling. For this purpose, it would suffice to establish a procedure for appointing arbitrators in the specific cases which may arise.

Besides these functions, the advisory body should be responsible for following the development of the regional market, giving guidance to the organization previously referred to and fostering increasing co-ordination between the economic policies of the various countries, in order to ensure the efficient operation of the market itself.

Basis 12. *Role of private enterprise*

A perusal of the text in which the basis is described will suffice to show the desirability of requesting the secretariat that, in carrying out the studies and research entrusted to it in connexion with the regional market, it should explore the views of the private sector on this problem and seek the necessary ways and means of obtaining its active co-operation, both in the national and in the international field.

LATIN AMERICA'S TRADE WITH THE COMMON MARKET COUNTRIES OF EUROPE

I. INTRODUCTION

The signing in Rome, on 25 March 1957, of the Treaty establishing the European Economic Community[1] consisting of Belgium, Luxembourg, France, the Federal Republic of Germany, Italy and the Netherlands aroused considerable interest in Latin America for two main reasons: first, because of the possible effect which the Common Market might have on trade between the six member countries and Latin America. Since exports from EEC dependent territories, mainly from French and Belgian possessions in Africa, will have duty-free entry into the six countries, the possibility that this preferential treatment might displace imports from other areas, including those from Latin America, has aroused concern. The second reason is the stimulus that the European initiative has given to Latin America to go forward more rapidly with economic integration which has for some years been a part of economic thinking in this region.

Underlying this interest is the sheer magnitude, in population and economic potential, of the EEC which can be succinctly expressed in a few statistics (see table 1).

Table 1

ECONOMIC SIGNIFICANCE OF THE EEC COUNTRIES IN RELATION TO WESTERN EUROPE AS A WHOLE,[a] 1953-55

(Annual averages; values in 1,000 millions of dollars)

	In absolute terms	*Percentage of Western Europe*
Population (millions)	161.0	57
Mining[b]	3.4	60
Manufacturing[b]	45.4	60
Agriculture[c]	16.5	63.5
Investment in machinery and equipment[d]	11.2	62
Imports[e]	16.0	50
Exports[e]	16.2	54

Source: Statistics published by OEEC and the United Nations, and compiled by GATT in *Trade Intelligence Paper No. 6*, Table (Geneva, December 1957).

[a] Western Europe means the metropolitan countries of OEEC.
[b] Value added at 1953 prices.
[c] Value of production at current prices.
[d] At 1954 prices.
[e] F.o.b. at current prices.

No less important is the fact that, in recent years, the six member countries have absorbed about one-seventh of Latin America's total exports and have supplied a similar proportion of Latin American imports.

It was in response to this early interest that the United Nations Economic Commission for Latin America (ECLA) decided to include the possible repercussions of the proposed European Common Market on Latin American trade as an item in the agenda of its seventh session, held at La Paz, Bolivia, in May 1957. A background document prepared by the secretariat was used for this purpose.[2] During the seventh session, ECLA adopted resolution 121(VII) in which it recommended to the secretariat, that, among other things, "it continue to observe closely the economic integration of Europe and other areas, and that it keep the member Governments supplied with the relevant information".

The present study is published in response to this recommendation. The ratification of the Rome Treaty by the parliaments of the signatory countries and its entry into force, on 1 January 1958, make the study all the more timely.

Only some of the possible economic consequences of the creation of the EEC are dealt with in the following sections. Its institutional aspects have been briefly described in the secretariat Note mentioned above and in numerous other sources. Moreover, the full text of the Rome Treaty and annexes are also generally available.

The possibility of including the European Economic Community in a broader free-trade area which would include the other members of the OEEC is still in the stage of negotiation and consequently has not been taken into account in this study.[3]

[1] Generally the European Economic Community is subsequently referred to as "the EEC" or "the Common Market".

[2] *Note by the secretariat on the possible repercussions of the European Common Market on Latin American exports* (E/CN.12/449 and Add.1).

[3] A comprehensive treatment of the issues involved, mainly from the standpoint of the United Kingdom, is given in *Britain and Europe* (The Economist Intelligence Unit, Ltd., London, December 1957).

II. SUMMARY

1. *Some important trends in European-Latin American trade*

(a) *Long-term.* During the course of the past half century, two main developments stand out in the area distribution of Latin America's foreign trade. First, Europe and the United States have long been the predominant regions influencing the level and growth of such trade; together they accounted for over nine-tenths of

Latin America's overseas purchases and sales at the beginning of the century, and they still represent about three quarters. Secondly, there has been a fairly continuous redirection of Latin America's overseas trade from Europe towards the United States during the same period. Five decades ago, for instance, some two thirds of Latin America's exports and imports were effected with Europe and only about a quarter with the United States, whereas, in recent years, the United States share of Latin America's much higher level of trade has risen to approximately half, while Europe's share has fallen to less than a third of the total.

(b) *Short-term.* Since the Second World War there has been a substantial revival in trade between Europe and the twenty Latin American republics. Regardless of whether this implies some reversal of the longer-term area redirection mentioned above, Latin American-European trade is both high in absolute terms and has also been recording a noticeable upward trend in recent years. The analyses which follow therefore begin with a recognition of the reciprocal importance of Latin American-European trade for both areas, and assess the extent to which the creation of the European Common Market might affect subsequent growth prospects for certain commodities.

2. *Coverage limitations*

Three coverage limitations to these analyses must be specified at the outset. First, only trade flows into the six EEC countries, and not those in the reverse direction, are examined. Secondly, Latin American exports of only six primary commodities are studied separately, namely, coffee, cacao, bananas, cotton, sugar and copper. Thirdly, these are examined almost exclusively in order to assess how the future foodstuff and industrial requirements of the EEC countries for imports of such commodities from Latin America and elsewhere might be affected after the Common Market has been in existence for some time.

3. *Prospects of future growth for Latin American exports*

In the future, as in the past, Latin America will be preoccupied with the growth potential in both its domestic and external trade sectors. As regards the latter, the twenty republics as a whole will necessarily continue to rely heavily on export prospects in the United States and European markets for the financing of their imports. Such prospects in turn will be determined primarily by future growth in levels of real income, manufacturing production and population in the two industrial areas concerned.

(a) *Post-war growth in the industrial centres and future expectations.* Since the Second World War, economic expansion in the United States and Europe has contributed directly to the large and growing volume of Latin America's export trade. The average annual increase (3.75 per cent) in the real product of the United States is comparable to that of the boom years in the 1920s, while the rate of 5.3 per cent *per annum* in Western Europe has surpassed the record of that period. In fact, post-war income growth in both areas has proceeded at a strikingly quicker pace than the average for the past 80 or 100 years. A number of special factors have stimulated growth recently, however, and according to some projections by OEEC, the rate of growth is likely to be about 3 per cent in the near future. The effects of the creation of the Common Market are unpredictable, but, if it is successful, the results will show themselves in somewhat faster rates of growth than would otherwise occur.

(b) *Anticipated growth in Western European imports.* The growth in the gross national product of the industrial areas should be reflected in the volume of their primary commodity imports. According to recent GATT estimates, these should increase by 50-60 per cent from 1953-55 to 1973-75.[4] This in turn would further accentuate the present predominance of Western Europe among world importers of primary commodities. Generally speaking, the European trade categories most likely to increase by 1973-75 include petroleum (despite the creation of EURATOM), followed by minerals and, finally, tropical beverages. Prospects for natural fibres are uncertain, mainly due to competition from synthetics and those for temperate zone commodities seem least favourable of all, depending upon the agricultural policy of the Common Market as finally formulated. The inclusion, in the Common Market structure, of French and Belgian dependencies in Africa need not however necessarily reduce the volume of Latin American exports of tropical commodities to EEC countries. Even shifts in their relative shares could be of a minor nature so long as EEC import demand grows, for past experience indicates that preferential arrangements lead to major shifts only for commodities facing a declining demand. Conversely, Latin American temperate zone commodities might be more vulnerable in view of the possibility that Western Europe may achieve greater self-sufficiency in foodstuff production.

4. *The African supply potential*

In addition to the demand originating from the Common Market countries, Latin America's future exports of coffee, cacao, bananas, cotton, sugar and copper will also depend on the extent to which supplies are available for export from EEC dependencies in Africa.[5] Within these dependencies, various factors may limit the degree to which primary production can be expanded. Although extensive areas of land exist, most are of medium or low fertility and receive only irregular amounts of annual rainfall. Many of the indigenous peoples have a high incidence of illiteracy and illness and a shifting and primitive system of land tenure and cultivation that often yields little or no surplus production for trade. Finally, taken as a whole, the region is deficient in basic facilities ranging from education and medical services to transport and power networks. In recent years, however, active steps have been taken to increase output and consumption in Africa by providing both social capital and directly productive investments as well as by stimulating local technical proficiency. Thus, while topographical, sociological, financial and technical shortcomings have obstructed African primary production in the past, there is considerable scope for expansion in the future.

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[4] GATT estimates that, on optimistic assumptions concerning the effects of the Common Market, inputs may reach a level 50 percent higher than otherwise.

[5] Tropical cane sugar is an exception, not only because of Europe's domestic beet industry, but also since the African dependencies as a whole are net importers of sugar.

In so far as this will increase Africa's output of the six commodities mentioned above, Latin America is understandably concerned for two reasons. Firstly, these commodities represented about one-half of all Latin American primary exports during 1952-56, yielding approximately $3,600 million annually during those five years. Secondly, if a larger share of EEC imports of primary commodities comes from Africa in the future, Latin America's share will thereby be reduced. During 1952-56, for instance, 18 per cent of Latin America's exports of these six primary commodities were purchased by the EEC countries, averaging $630 million annually.

5. *Commodity prospects*

In view of the above circumstances, the six individual commodity analyses conclude with the following general and specific findings.

(a) *General.* Rising levels of income in the EEC countries, in both aggregate and *per capita* terms, will stimulate demand for the commodities under review. In general, a larger share of this demand will tend to be met by the EEC dependencies in Africa and a smaller share by Latin America. This conclusion seems warranted on two broad grounds. First, production of most of these commodities in the African dependencies has increased substantially since the Second World War, and further expansion will undoubtedly continue in the future. Secondly, to the extent that common tariffs are introduced, the African dependencies will receive preferential treatment over Latin America. Of course production trends and tariff preferences will vary in magnitude as between commodities and countries. Furthermore, depending upon future trends of income and manufacturing production, it is possible that EEC imports from the twenty republics will be higher in absolute even though lower in relative terms than if the Common Market were not created. To the extent that a growing volume of exports from the African dependencies moves to Europe, a greater proportion of Latin American exports could move to the United States market (though this would mean still greater reliance on a single market and frustrate plans for geographical diversification).

(b) *Specific.* In the specific cases of coffee, cacao, and bananas, production in the EEC African dependencies has increased considerably in the post-war decade, and there are many indications that this will continue. In all three cases, moreover, preferential tariff treatment may modify existing trade patterns in such a way that an increased proportion of EEC imports will eventually come from the African dependencies.[6] In any event, while such production and tariff factors might reduce the proportion which Latin America now provides of EEC coffee, cacao and banana imports, considerable prospects exist for an increase in the aggregate EEC import volume of all three items, including the volume originating from Latin America.

In the cases of cotton and copper, future Common market tariff rates will be nil or negligible, and Latin American countries should therefore face no institutional disadvantages as compared with producers in the African dependencies. Latin America's principal concern will be rather the prospective production developments in Africa and the important technological trends that have already been taking place in connexion with synthetic fibres, on the one hand, and aluminum substitutes, on the other.

As regards sugar, the EEC tropical dependencies in Africa are now net importers rather than exporters. Even though competition from Africa will not be a factor, the prospects for increased EEC sugar imports are uncertain due both to continued high levies and to the fact that the EEC countries produce most of their own sugar.

Latin America will, it seems, be affected as much, if not more, by future levels of African production as by the prospective Common Market tariff structure. Of course, in addition to the EEC dependencies, account must also be taken of the products of other parts of the world which will be competing with those of Latin America within the EEC tariff area. Reference to such commodities is made in section IV, but a more detailed analysis of the over-all competitive position of Latin America's exports is outside the scope of this study.

In order to maintain its competitive status, Latin America will find it progressively more important to keep production costs low while simultaneously maintaining the highest possible standards of quality.

6. *Significance of future EEC agricultural policies*

Since the Second World War, agriculture in Western Europe has been undergoing a technological revolution similar in form to that which occurred in the United States just before and after the war. European crop yields, for example, are rising through the use of better seed, improved cultivation techniques, stricter control of disease and pests, and by the increased application of fertilizers. In addition, there has been a marked shift to mechanical power, the number of tractors on farms having increased more than eightfold since before the war in the EEC area. Not only has this permitted a reduction in farm labour, but, by shifting feed formerly eaten by work animals to cattle, hogs and poultry, the necessity for certain traditional imports has been reduced. Although such improvements in European farm technology occurred prior to the creation of the Common Market, the removal of EEC trade barriers will encourage further readjustments and the output of specialized farm products. Furthermore, the unification of EEC agricultural agencies should speed up research and extension, and the centralized agricultural marketing and purchasing agencies foreshadowed in the Rome Treaty could strongly influence the future composition of European agricultural imports. Indeed, increased agricultural production in Europe has already played an important role in curtailing imports. This readjustment is by no means complete. Depending on the evolving pattern of EEC agricultural policies and practices, Latin American exports of temperate zone commodities may well be affected. Therefore, it becomes ever more important that the republics concerned should give closer attention to rationalizing their production and to reducing their costs.

[6] The final impact of tariff levies on consumption will be affected, however, by internal taxes or subsidies which are not governed specifically by the Rome Treaty.

1. *Post-war economic growth of Western Europe*[7]

The high level and general upward trend in Latin American exports in the post-war years must be attributed mainly to developments in the great industrial areas of the world. It can be assumed that this causal relationship will continue to be of paramount importance to Latin America.

[7] Throughout this study, and unless otherwise specified, the term "Western Europe" means the metropolitan member countries of the Organization for European Economic Co-operation (OEEC), namely, Austria, Belgium, Denmark, France, Germany (Federal Republic), Greece, Iceland, Italy, Luxembourg, Netherlands, Norway, Portugal, Sweden, Switzerland, Turkey and the United Kingdom.

Historically, the post-war growth of production in the industrial countries has been exceptional in its magnitude, particularly if account is taken of the fact that by now the upswing has lasted for more than a decade. Even on the basis of statistics starting after production on the European continent had generally regained the pre-war level, it appears that post-war economic growth has been nearly everywhere more intense than during the boom of the 1920s. This expansion is strikingly greater than the average rate of growth of the last 80 or 100 years when the bulk of the productive plant of Western Europe and North America[8] was created (see table 2).

[8] Comprising the United States and Canada.

Table 2

ANNUAL CUMULATIVE RATE OF GROWTH OF REAL GROSS NATIONAL PRODUCT IN SELECTED INDUSTRIALIZED COUNTRIES

(Percentages)

Country	*Secular trend*		*Growth in the 1920s*		*Growth since end of Second World War*	
EEC members						
Belgium	1846-1953	(1.9)	..	..	1948-55	3.5
France	1860-1954	(1.0)	1924-29	3.5	1949-55	4.8
Germany (post-war Federal Republic)	1860-1913	(2.4)	1927-29	2.0	1950-55	9.3
	1913-1954	(1.5)				
Italy	1860-1900	(1.7)	1918-28	4.0	1950-55	5.5
	1901-1953	(1.6)				
Netherlands	1900-1954	2.3	1919-29	4.1	1948-55	4.5
Others in Europe						
Denmark	1870/79-1947/50	2.5	1921-29	2.6	1948-55	2.6
Norway	1900-1954	2.8	1925-30	5.1	1947-55	3.5
Sweden	1870-1954	(2.3)	1920-29	2.25	1948-55	4.3
United Kingdom	1870-1954	1.85	1920-29	1.25	1948-55	2.9
North America						
Canada	1870-1952	3.5	1919-29	2.4	1948-56	5.0
United States	1869/78-1953	3.75	1920-29	3.9	1948-55	3.75

Source: International Bank, Economic Staff, *Statistical Tables on Economic Growth*, 8 March 1956, on the basis of published sources indicated therein, and subsequent revision.

Note: Figures in brackets indicate rough estimates.

It is for this reason that, referring to the economic advance of Western Europe in recent years, the OEEC notes that "comparable rates of growth have probably never been sustained in the past by developed economies starting from high levels of economy activity".[9] As a gauge, it may be noted that a 3 per cent cumulative rate of growth, if not interrupted, should lead to a doubling of the national product every 23 years.

During 1949-1955, Western Europe as a whole expanded its output of goods and services at an annual rate of 5.3 per cent, which is more rapid than the post-war growth in the United States (average 3.75 per cent in 1948-55). Europe's advance was comparable to that of Latin America (5.9 per cent yearly in 1946-55) even though its production base was considerably broader than that of the latter area.[10]

[9] *Eighth Report of the OEEC: Europe Today and in 1960*, Vol. II, page 126 (Paris, 1957).

Manufacturing production was responsible to a very large extent for the post-war rise in the net national product in Western Europe. In some countries such as the United Kingdom, the Federal Republic of Germany, and Italy, manufacturing accounted for more than half of the increase of the net national product (see table 3). It is precisely this activity which, through its demand for raw materials and fuels, constitutes the main factor determining the volume of Europe's imports from non-industrial areas.[11] Moreover, the level of manufacturing output, through its effect on incomes, has an important bearing on food imports.

[10] Area averages from *Statistical Tables on Economic Growth*, op. cit., and subsequent revision.

[11] The yearly average in 1953-55 for Western Europe's net imports of primary commodities from non-industrial areas was 3,980 million dollars for foodstuffs, 4,000 million for raw materials and 1,330 million for fuels (see GATT, *International Trade* 1956, table 6, Geneva, 1957).

Table 3

INCREASE IN NET NATIONAL PRODUCT IN SELECTED WESTERN EUROPEAN COUNTRIES SINCE PRE-WAR[a]

	Index number for 1955 (Pre-war[a] = 100)	*Contribution of manufacturing to increase (Percentage of total)*
Belgium	129[b]	34.0
Denmark	144	26.0
France	138[b]	30.4
Germany (Federal Republic)	178	50.2
Italy	150	51.2
Netherlands	153[b]	..
Norway	159	39.5[c]
United Kingdom	134	56.6

Source: ECE, *Economic Survey of Europe in 1956*, chapter VII, tables 3 and 5 (Geneva, 1957).

[a] 1938, except for the United Kingdom, 1937; Germany, 1936; Belgium, 1936-38.

[b] In 1954.

[c] Includes electricity, gas and water.

Western Europe's economic expansion since its recovery must be attributed in part to a fuller utilization of its productive resources. Thus, idle plant capacity has largely disappeared, new capacity has been added and labour resources, except for a substantial residue in Italy, have been absorbed. The expansion has also been due in part to the absorption of wartime technical advances. Consequently, even if adequate demand is maintained in the future, it is difficult to anticipate that production can continue to increase at the same rate as in recent years.

It should be emphasized that the six EEC countries have been growing in recent years at a substantially more rapid rate than the rest of Western Europe. The more dynamic role of the EEC countries taken as a whole is indicated by the following percentage increases during the period 1950-56.

	EEC countries	*Rest of Western Europe*	*Western Europe as a whole*
Mining production	36	16	28
Manufacturing	72	26	51
Agricultural production[a]	18	11	15
Value of imports, c.i.f.	99	55	76
Value of exports, f.o.b.	116	57	85

Source: OEEC and United Nations publications; data compiled by GATT in *Trade Intelligence Paper No. 6*, table 1 (Geneva, December 1957).

[a] Until 1955/56.

2. *Long-term projections of economic growth in the industrial areas*

In order to project future developments in various economic sectors, particularly in the foreign trade of the world's two main industrial areas, certain assumptions relating to economic and population growth have been made by various national and international bodies.[12] The long-term assumptions cover a period of 20 to 25 years and are based on a "reasonable" rate of economic growth. These correspond to a cumulative annual increase of 3 per cent of the gross national product in Western Europe and 3.25 per cent in North America.

The projections in question have one common feature: the economies of both Western Europe and North America have been assumed to grow at a rate faster than their average over the past 80 or 100 years, but clearly less than the exceptionally high rate which has prevailed since the end of the Second World War. Furthermore, it is anticipated that output in North America will increase somewhat more than in Western Europe, but so will population in the former, with the result that the gap in *per capita* income between the two areas will remain, in relative terms, practically the same. These projections are summarized in table 4.

Table 4

ASSUMED RATES OF ECONOMIC AND POPULATION GROWTH IN WESTERN EUROPE AND NORTH AMERICA, 1953-55 TO 1973-75

(Values at constant prices)

	1953-55 average	*1973-75 average*	*Percentage increase*
Western Europe			
Gross national product (1,000 millions of dollars)	203	365	80
Population (millions)	282	317	12.5
Per capita income (dollars)	720	1,150	60
North America			
Gross national product (1,000 millions of dollars)	400	760	90
Population (millions)	177	223	26
Per capita income (dollars)	2,260	3,410	51

Source: GATT, *International Trade 1956*, op. cit., table 7.

Note: GATT notes that the gross national product of Western Europe is underestimated by being converted into United States dollars at official exchange rates. If expressed in comparable purchasing power, European *per capita* income would be equivalent to 40-50 per cent of the North American figure for 1953-55, instead of about 32 per cent as is implied in the table. Thus, in terms of comparable purchasing power, the projection assumes that the Western European *per capita* income might reach about three-fourths of the present North American level within about twenty years.

The difficulty of maintaining the same rate of expansion after a fuller degree of utilization of resources has been attained is illustrated in the case of Western Europe. In the OEEC countries, the 26.5 per cent increase in the gross national product in 1951-55 was accounted for by an 8.5 per cent increase in the labour supply and by a 16.6 per cent increase in productivity. During 1956-60, mainly due to the previous absorption of unemployment and to the anticipated changes in the age structure of the population, the labour supply is expected to increase by

[12] The projections in question include the so-called "Paley Report" dealing with the United States economy (*Resources for Freedom*, A Report to the President by the President's Materials Policy Commission, June 1952); the so-called "Gordon Report" (*Preliminary Report*, Royal Commission on Canada's Economic Prospects, December 1956); two OEEC studies dealing with Europe's prospects: *Europe's Growing Needs of Energy—How Can They Be Met?* (May 1956) and *Europe Today and in 1960* (Volume II of the *Eighth Report of the OEEC*, April 1957); and one by the European Steel and Coal Community, *Memorandum sur la définition des objectifs généraux de la Communauté*, in its *Journal Officiel*, 20 May 1957. These projections have been re-examined and collated by GATT in an analysis of the long-term market prospects for primary commodities in Western Europe and North America, contained in its annual report *International Trade 1956* (June 1956), which has been used here. The import projections were subsequently revised by GATT in *Trade Intelligence Paper No. 6* (December 1957) which distinguishes between the Common Market countries and the rest of Western Europe.

only 2.8 per cent. The anticipated increase in productivity will have to depend mainly on new investment and is expected to be about 14 per cent. As a result of these two factors, the increase in the gross national product is expected to be only 17.4 per cent.[13]

Western Europe's post-war growth of production has been appreciably stimulated by international action which in some countries and during some years proved to be decisive. This took the form of United States economic aid and of a concerted effort, undertaken by the European nations themselves, to reduce the obstacles to intra-European payments and trade. By now external economic assistance has practically come to an end, but the promoters of the European Economic Community hope to replace the impulse from abroad by the advantages of large-scale production and other internal stimuli to economic development. One of the non-quantifiable factors, which undoubtedly has played an important role in the expansion of Western European manufacturing since the end of the reconstruction phase, has been the backlog of technical innovations in production for civilian use which had been accumulating for nearly a decade. The introduction of technical innovations in a number of countries is now being increasingly hampered by the limited size of the domestic market. Large-scale production, which is expected to be encouraged by the creation of the Community, would expand again the scope for the assimilation of technological innovations and, in turn, would stimulate the latter.

Under these circumstances it may be that the anticipated rate of Western Europe's economic development, conceived as the aggregate of projections of the various national economies in question, will be exceeded when the institutional machinery of the Community begins to operate. A fuller utilization of the factors of production (frequently to be achieved by redistributing them) would be facilitated by a further strengthening of the economic co-operation among the Western European countries and particularly by such arrangements as the creation of the Common Market and a free-trade area.[14]

The higher rate of growth of the six countries of EEC, as compared with the rest of Western Europe, has been taken into account in the long-term projection given in table 4. The 80 per cent increase in the gross national product of Western Europe as a whole over a period of twenty years implies an increase of 90 per cent for the EEC countries and of only 67 per cent for the rest of the area. The GATT secretariat has worked out alternative projections on the assumption that the creation of the Common Market will accelerate the already rather intensive growth anticipated for the six countries taken separately. These countries show, over two decades, an increase in their total gross national product of 120 and even as much as 150 per cent.[15]

3. *The changing pattern of trade between Latin America and Europe*

The creation of the European Economic Community may be expected to have certain effects upon the future course of Latin American exports to Western Europe which should be seen against the background of past changes.

During the course of the present half century there has been a progressive loosening of Latin America's trade ties with Europe, a development that has contrasted sharply with the steadily growing importance of United States trade with the twenty American Republics. In 1901-05, for instance, the value of Latin America's total trade turnover (i.e., exports plus imports) with Europe was approximately 140 per cent higher than with the United States. In 1928, it was still almost 45 per cent higher, but, by the mid-1950s, it was about 40 per cent lower.

This fundamental shift in area shares has been equally evident in both Latin America's export and in its import trade. At the turn of the century, about two-thirds of Latin American imports and almost the same proportion of its exports were being transacted with Europe, whereas fifty years later less than a third of its trade in each direction was with Europe. United States-Latin American trade flows during these five decades showed almost diametrically opposite changes. Thus, in 1901-05 approximately one-quarter of Latin American imports came from the United States and a slightly higher share of its exports went to the United States. Fifty years later both these proportions had doubled.

As might be expected, there have been equally striking contrasting movements in the volume of Latin America's trade with Europe and the United States over the long term. As recently as 1951 for example, Latin American exports and imports with Europe, in terms of volume, were both well below those existing in 1913. Both exports to and imports from the United States, on the other hand, were far in excess of the volume levels prevailing before the First World War.[16]

The most pronounced shifts in the relative trade position of Western Europe and Latin America took place as a result of the Second World War. Europe absorbed slightly more than half of Latin America's aggregate exports in 1928 and in 1937-38, whereas it has been absorbing about 30 per cent in recent years. Looking at the same trade from the opposite point of view, Latin America provided slightly more than 10 per cent of total Western European imports (including intra-European trade) in 1928, some 9 per cent in 1937-38, and between 6 and 8 per cent from 1950 to the present (see table 5). This was accompanied by an increase in the share of Latin American exports absorbed by North America (from 30 per cent in 1938 to 51 per cent in 1951-55).

The manifold reasons underlying such pronounced changes in the levels and direction of Latin America's foreign trade have been comprehensively studied in other publications[17] which also provide a detailed analysis of the specific commodities and countries involved. These extensive commentaries will therefore not be repeated here. To some extent the relative decline of Latin

[13] *Eighth Report of the OEEC*, op. cit., Vol. II, table 6, and technical note in the Annex, page 137.

[14] *Ibid.*, page 126.

[15] GATT, *Trade Intelligence Paper No. 6*, op. cit., page 33 *et seq.*

[16] See the joint ECLA, ECE and FAO publication entitled *A Study of Trade Between Latin America and Europe*, Sales No.: 1952. II, Geneva, 1953, tables 3 and 4, page 2. Comparable volume series are not available for European-Latin American trade subsequent to 1951.

[17] See especially *A Study of Trade Between Latin America and Europe*, op. cit., and the *Economic Surveys* of Latin America and of Europe, as published by the secretariats of ECLA and ECE, respectively.

America's exports to Europe is only one facet of the general phenomenon of the decreasing share of primary commodities in world trade. Thus, despite increasing current values (from $16,460 million in 1950 to $22,200 million in 1956), exports from the non-industrial to the industrial areas of the world constitute a declining share (from 28.9 per cent to 24.0 per cent) of world exports. This relative decline is mainly due to the increase of trade among industrial areas which rose from 34.3 per cent to 40.3 per cent of world exports.[18] It is probable that both these trends will continue.

Table 5

WESTERN EUROPE: TOTAL IMPORTS AND IMPORTS FROM LATIN AMERICA

(Milions of dollars)

Year	*Total*	*From Latin America*	*Latin America as per cent of total*
1928	17,206.6	1,766.5	10.3
1937	13,972.3	1,388.0	9.9
1938	12,740.4	1,044.3	8.2
1946	14,025.3	1,347.3	9.6
1947	21,412.0	2,139.7	10.0
1948	24,836.7	2,387.4	9.6
1949	24,899.7	1,728.8	6.9
1950	24,228.9	1,918.3	7.9
1951	33,514.8	2,493.5	7.4
1952	32,032.4	1,895.4	5.9
1953	31,204.4	2,099.6	6.7
1954	33,687.3	2,344.0	7.0
1955	38,684.4	2,408.8	6.2
1956	42,586.4	2,848.4	6.7

Source: OEEC, *Foreign Trade by Areas*, Series 1, selected issues.
Note: Total imports include trade among Western European countries.

The decline, relative to the world aggregate, of exports from non-industrialized to industrialized areas is only partly due to the secular increase in the share of manufactured goods entering world trade and to the growing significance of synthetic raw materials. An additional factor has been the relatively greater increase in the volume of raw materials in international trade supplied by the industrialized countries as compared with those supplied by the non-industrialized areas. Thus, before the Second World War the non-industrialized countries supplied 58-59 per cent of the primary commodities imported by the industrialized countries and by 1956 their share had declined to 56 per cent.[19] Probably this is the result of a more rapid assimilation of technological innovations in primary commodity production, mainly in agriculture, in the industrial countries as well as of governmental measures in such countries in support of agricultural incomes. This slow shift in world trade may continue for some time, depending particularly on the relative share that temperate zone foodstuffs, wool and cotton will have in world primary commodity trade. For some individual commodities, of course, the share supplied by the industrial countries may increase fairly rapidly.

[18] GATT, *International Trade, 1956*, op. cit., table 2. In Western Europe, imports of primary commodities rose from $22,100 million in 1951 to $25,000 million in 1956, but their share in the total dropped from 66 per cent to 59 per cent. (OEEC, *Foreign Trade by Areas*, series 1, selected issues.)

[19] *Ibid.*, page 9.

The reduced role of the non-industrialized countries, taken together, as world suppliers of primary commodities conceals substantial differences between countries which have reached a stage of semi-industrialization and those that are still distinctly non-industrialized.[20] Partly because of the stagnation in demand, and also as a result of imbalances in their development process, the semi-industrialized countries increased the output of their main primary commodities entering world trade by only 12 per cent between the pre-war period and 1954-55, while, in the other non-industrialized countries, the increase was about 53 per cent, mainly due to a greater output of metals and petroleum. Under these circumstances greater domestic demand meant that the volume of the principal primary commodities exported by the semi-industrialized countries actually decreased by 5 per cent during the period in question, while that of the other non-industrialized countries rose by 58 per cent.[21] Furthermore, the net primary commodity export position of some semi-industrialized countries may be greatly weakened by rapidly growing petroleum imports. In Latin America this has been particularly true of Brazil and Argentina.

It is also worth noting that only an improvement in the terms of trade of the primary producers prevented the decline in the volume of exports of the semi-industrialized countries from critically impairing their capacity to import manufactured goods; in fact, this capacity increased by some 30 per cent between 1937-38 and 1954-55. A combination of higher export volumes and improved terms of trade enabled the other non-industrialized nations of the world to double the volume of imported manufactures during the same period.[22]

A more specific cause of the relative decline in Latin America's exports to Western Europe has been the increased volume of exports from other primary producing areas. As indicated above, this was partly due to a greater increase in production in other continents. The decline was also hastened by preferential arrangements, particularly in the 1930s. Such measures were frequently accompanied by policies designed to increase self-sufficiency in foodstuffs and certain raw materials. Finally, Latin America's trade dependence on North America during two world wars, the effects of the expanding network of United States direct investments, and the need for financing dollar imports of capital goods and other manufactures available from the United States, have all facilitated a steadily rising level of exports to North America, part of which might otherwise have been directed to Europe.

In recent years, however, there has been a notable increase in Latin American exports to Europe, a development of considerable importance if it implies a departure from the long-term geographical concentration of Latin American exports mentioned above. From 1949-50 to

[20] In its examination of the problem, GATT included among the "semi-industrialized" countries: Argentina, Brazil, Mexico, Australia, India, Union of South Africa, Finland, and Yugoslavia, which together account for about 80 per cent of manufacturing activity outside the industrial area proper. See *International Trade, 1956*, op. cit., p. 11. Eastern Europe, the USSR, and the People's Republic of China have not been taken into account.

[21] *Ibid.*, table 4.

[22] *Ibid.*, page 13

1955-56, for example, the value of exports from the twenty Latin American republics to Europe increased at a more rapid rate (44 per cent) than did Latin American sales to the United States (35 per cent).[23]

This recovery in Latin American exports to Western Europe reflected the area's growing requirements of primary commodities. As was shown earlier, these requirements were essentially the result of the rapidly rising level of economic activity, and particularly of manufacturing production (see again table 3). As is typical of the economic expansion of industrialized areas, this development was characterized by a lag in imports in relation to the gross national product. Thus, while production in Western Europe recovered its pre-war level in about 1949, its imports from overseas (i.e., excluding intra-regional trade) did not exceed 1937-38 levels, in terms of volume, until 1954.

[23] According to data from the member countries, OEEC imports c.i.f. from Latin America averaged $1,800 million annually in 1949-50 and $2,600 million in 1955-56. United States imports f.o.b. from Latin America increased from $2,600 million to $3,500 million annually during the same period.

4. *Long-term projections of primary commodity imports: possible effects of the creation of EEC*

The anticipated expansion in the gross national product in Western Europe will be reflected in the volume and composition of the area's commodity imports from the rest of the world. These changes have been recently analysed by GATT along more general lines which take into account the prospective primary commodity imports of both Western Europe and North America[24] (see table 6). The projections are for 1973-75 when the transition period (assuming that it will last 15 years) envisaged in the Rome Treaty will have come to an end. They are not based on estimates regarding the possible effects of the creation of the Community on the Economies of the member countries, but on the sum of the various individual national projections.

[24] See *International Trade, 1956,* op. cit., "Long-Term Market Prospects for Primary Products in Western Europe and North America", page 17 *et seq.,* and appendix, page 268 *et seq.* The analysis is based in part on the assumptions made in the Paley Report, the Gordon Report, and the OEEC and ECSC reports mentioned in footnote 12.

Table 6

WESTERN EUROPE AND NORTH AMERICA: NET IMPORTS OF PRIMARY COMMODITIES, IN 1953-1955 AND PROJECTED FOR 1973-1975

(Annual averages in 1,000 millions of dollars, f.o.b., at 1953-1955 prices)

Commodity groups	Western Europe		North America		Total	
	1953-55	1973-75	1953-55	1973-75	1953-55	1973-75
Food						
Coffee, tea, cacao	1.4	2.0	1.8	2.6	3.2	4.6
Fruits and vegetables	0.7	1.2	0.1	0.2	0.8	1.4
Other food[a]	2.9	2.2 4.8	—1.3	—4.9 —1.9	1.6	—2.7 +2.9
TOTAL	5.0	5.4 8.0	0.6	—2.1 +0.9	5.6	3.3 8.9
Raw materials and fuels						
Fuels	1.5	4.3	0.4	0.5	1.9	4.8
Ores and metals	1.0	2.2	0.65	0.8	1.65	3.0
Natural textile fibres	2.1	1.7	—0.15	—0.15 —0.95	1.95	1.55 0.75
Rubber	0.35	..	0.35	..	0.7	0.75
Other materials	1.25	(1.9)	—0.1	(0)	1.15	1.9
TOTAL	6.20	(10.6)	1.15	(1.40) (0.60)	7.35	12.0 11.2
Grand total primary commodities	11.2	16.0 18.6	1.75	—1.5 +2.3	12.95	14.5 20.9

Source: GATT, *International Trade 1956,* op. cit., tables 8 and 10.

[a] Including oilseeds, oils, fats and tobacco.

Note: Minus sign is for net exports.

Of interest to Latin America is the likelihood that Western Europe, at present the world's largest net importer of primary commodities, will import on a relatively even greater scale in the long run. As early as 1953-55 Western Europe's net imports of primary commodities constituted 86.4 per cent of the total as compared with 13.6 per cent for North America. Even though such proportions, based on net trade, conceal the importance of North America as a market for primary commodities, because of the sizeable exports of the latter area, the projections for 1973-75 indicate that Western Europe's role is likely to be strengthened. Thus a high and rising level of economic activity in Western Europe is important to the primary producing countries in general from the point of view of earning adequate amounts of foreign exchange.

The picture resulting from the import projections is necessarily a very broad one. The degree of uncertainty as to anticipated levels of imports varies from one commodity group to another, since, in several instances, these levels depend primarily on Western Europe's own output of the commodities in question or of their substitutes. The widest variation is to be found in foodstuffs (excluding tropical products) due mainly to the marginal

character of such imports. For instance, in 1953-55, the net value of food production in Western Europe was $25,200 million per year and imports of foodstuffs (excluding coffee, tea, cacao and fruits and vegetables) amounted to $2,000 million. It is estimated that, twenty years from then, local food production (at constant prices) might be valued at between $36,100 million and $38,700 million, as a result of which imports (excluding the categories just mentioned) could vary within the wide range of $2,200 - $4,800 million. In turn, the level of foodstuff production in Europe will depend very largely on the agricultural policy, at present defined in very general terms only, which the EEC countries will follow and in which political and other non-economic considerations are likely to play a role. The issues involved are discussed in section V. It can also be surmised that, should foreign exchange stringency compel the EEC countries to reduce imports, the first group of primary commodities to be affected by any restrictive measure would be temperate zone foodstuffs.

Technological innovations may cause a considerable change in the anticipated demand for certain commodities —particularly natural textile fibres (mainly cotton) and rubber—which are facing increasing competition from synthetics. Among metals, copper may suffer a relative displacement by aluminium. The effect of institutional and technological factors on import projections is also illustrated by the creation of Euratom which led to a recent revision of the GATT estimate of Western Europe's future production and imports of conventional fuels. For 1973-75 the latter projection has been reduced from an annual average of $4,300 million to $3,400 million (at 1953-55 prices f.o.b.).[25] This in itself implies a reduction of about 6 per cent in Western Europe's net primary commodity import projections.

As stated earlier, an 80 per cent increase in the gross national product in Western Europe as a whole between 1953-55 and 1973-75 implies a 90 per cent increase for the EEC countries. The possible effect of such an expansion in the primary commodity imports of the six member countries is shown separately in the second column of table 7. However, the creation of the Common Market may provide an additional stimulus to the economic growth of the six countries. The possible targets, namely, an increase of 120 or 150 per cent over their combined gross national product of 1953-55 would, in turn, be reflected in a significant manner in their imports of primary commodities. Such hypothetical levels are shown, in order of magnitude, in the last two columns of table 7.

[25] *A Target for Euratom*, Report submitted by Louis Armand, Franz Etzel and Francesco Giordani at the request of the Governments of Belgium, Federal Republic of Germany, France, Italy, Luxembourg and Netherlands (May 1957). The conclusions of this report have been taken into account by GATT in its *Trade Intelligence Paper No. 6*, op. cit.

Table 7

WESTERN EUROPE: PROJECTED ANNUAL AVERAGE NET IMPORTS OF PRIMARY COMMODITIES, 1973-75

(1,000 millions of dollars, f.o.b.)

	Western Europe outside the Common Market	*Common Market, assuming GNP to be the following percentages of the level in 1953-55*		
		190	*220*	*250*
Fuels	*2.2*	*0.5*	*1.15*	*1.85*
Ores and metals	0.9	1.25	1.5	1.8
Natural textile fibres	0.5	1.25	1.45	1.65
Natural rubber	(0.2)	(0.3)	(0.4)	(0.5)
Wood and pulp	—0.1	1.0	1.2	1.45
Other materials	(0.45)	(0.55)	(0.65)	(0.8)
Raw materials	*1.95*	*4.35*	*5.2*	*6.2*
Coffee, tea, cacao	1.0	1.0	1.1	1.2
Fruits and vegetables	3.4	A 0.0	0.0	0.0
		B 1.4	1.4	1.4
Other foodstuffs		C 2.8	2.8	2.8
Total foodstuffs	*4.4*	*1.0 3.8*	*1.1 3.9*	*1.2 4.0*
Total primary commodities	*8.55*	*5.85 8.05*	*7.45 10.25*	*9.25 12.05*

Source: GATT, *Trade Intelligence Paper No. 6*, op. cit., table 11.

Note: The sources and methods used in arriving at the 1973-75 estimates are the same as in *International Trade 1956*, with the exception of projected fuel imports in respect of which account has been taken of new estimates published in *A Target for Euratom*. The three sets of net import figures shown for foodstuffs other than coffee, tea, cacao, and the resulting ranges in the total foodstuff and total primary commodity figures, are purely notional. They indicate three different net import volumes—the same for each of the three GNP levels shown—as follows: A = net imports *nil;* B = net imports of the same volume as in 1953-55; C= net imports of twice the volume of 1953-55.

It should be borne in mind that different levels of gross national product will result in changes in agricultural productivity in EEC countries which in turn may influence the import of primary commodities along somewhat different lines than those indicated in the table above.

The free access which exports from the EEC dependencies to the six member countries will enjoy gives rise to the concern that this preferential arrangement will reduce the share which other primary producing areas will obtain in this important and expanding market. In this respect the findings of GATT on the general impact

of the liberalization of intra-European trade effected under the sponsorship of OEEC in recent years should serve as a useful precedent.[26]

The principal finding, based on statistical evidence, is that between 1951 and 1955, when most of the liberalization programme was carried out, there has been, with two exceptions, no substantial diversion of imports from non-European to European sources.[27] Consequently, even though the OEEC trade liberalization programme is held in some quarters to be "discriminatory", there is no evidence that during the period in question it has produced a significant diversion of imports in favour of the participating countries. The fact that the two major classes in which a diversion took place in favour of OEEC sources were at the same time among the few in which OEEC imports declined leads GATT to the tentative conclusion that "discriminatory (or preferential) arrangements are more likely to result in trade diversion while total trade values are falling than while they are rising". Thus, so long as the promise that Western Europe's steady economic growth and expanding imports of primary commodities is fulfilled, the relative position of Latin American exports in that area need not be seriously imperilled even in those commodity classes in which African suppliers are granted preferential treatment. Under such circumstances, the main reason for any decline in Latin America's share of the EEC market, should it occur, would have to be sought in a slower growth of its exportable surplus as compared to that of Africa.

Finally, it may be noted that a diversion of African exports to EEC countries may create a gap in non-European markets, notably in the United States, which exports from Latin America or from other competitive areas would be called upon to fill.[28] Thus, trade diversion by itself need not directly affect the total exports of Latin America. Producers in the area, however, would be affected by an expansion in the volume of African exports due to a diversion of trade to Europe, unless this were offset by an increased demand for imports.

In the light of the probable trends indicated in the import projections, and leaving aside the effects which the EEC might have, divergent prospects may be discerned in the export volume of most Latin American countries over approximately the next fifteen years. As an exporter of petroleum and iron ore, Venezuela probably has the most favourable outlook in the area. Next are those countries which are significant exporters of minerals, namely, Chile, Mexico, and Peru. The future prospects for Peruvian and especially Mexican cotton exports, however, will depend substantially on future United States export policy. The third group is constituted by countries in whose exports coffee and/or bananas play a dominant role, namely, Brazil, Colombia, and Central America. The prospects of the Caribbean sugar-exporting republics will apparently depend more than ever before on the United States market. The least favourable future, in relative terms, seems to face the countries with temperate-zone agricultural exports (Argentina and Uruguay).

The export prospects, in terms of volume, of the various categories of primary commodities provide only a rough and frequently unreliable indication as to the future course of any particular country's export earnings. The latter will be determined, specifically, by the size of its export surpluses and by the unit prices involved. No realistic appraisal can be made of the long-term prospects of either. Nevertheless, some trends may be discerned regarding terms of trade which are of special relevance from the aspect of the economic development of the primary producers. The general trend since pre-war has been a favourable one for the countries of this group, and the creation of the EEC should constitute, from their point of view, a sustaining element for two reasons: first, the higher level of economic industrial activity anticipated for the EEC countries should be a strengthening factor for primary commodities taken as a whole; secondly, Western Europe's high import requirements and its technological progress, which may be accelerated within the Community, should provide the elements for keener competition among exporters of manufactured goods, resulting in a downward pressure on their prices.[29]

On the other hand, the EEC will contribute to specialization in production not only among its member countries, but probably also abroad. Thus, the semi-industrialized countries of the world, including those of Latin America, will find it more difficult to compete in third markets with the manufactures of the industrialized countries. Under such circumstances, trade in manufactured goods among Latin American countries will have to flow through sheltered channels to a greater extent than would otherwise be the case. By the same token, in Latin America, the ultimate users or consumers of manufactured goods imported from within that area are likely to feel that their contribution to the industrialization of the region is proportionately more burdensome.

Long-term projections of primary commodity imports for specific supplying areas are not feasible. Nevertheless, in the sections that follow, six commodities—coffee, cacao, bananas, cotton, sugar and copper—which are produced both in Latin America and in the French and Belgian dependencies in Africa—are analysed mainly from the point of view of their future competitive position in the Common Market.

Before selected commodities are discussed individually, the following outline will help to place in its proper perspective their over-all importance from the respective viewpoints of the Latin American export and of the EEC import trade in these same commodities.

The six commodities cover all the major Latin American tropical exports and one of its important minerals. Together they accounted for 55 per cent of Latin America's primary commodity exports during the period 1952-56. The balance was mainly represented by petroleum (27 per cent) and temperate-zone products (14 per cent).

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[26] See *International Trade, 1956*, op. cit., "The Development of Intra-European Trade in Recent Years", page 35 *et seq.*

[27] In this context "diversion" is understood to mean a change in the percentage share of a given commodity class supplied by European as compared to non-European sources. The two major exceptions were cereals and textile fibres. The decline of cereal imports from outside OEEC from $2,040 million to $1,580 million and from 93 per cent to 86 per cent of total cereal imports was due mainly to increased wheat exports from France. The decline of textile fibres from $3,620 million to $2,490 million and from 86 per cent to 83 per cent of total fibre imports was largely due to synthetic fibres traded among OEEC countries.

[28] See, for instance, section IV, point 2.

[29] This should not preclude, for instance, the possibility of a relative rise in the prices of capital goods in the event of an investment boom.

On the basis of partial data, it may be estimated that Latin American exports of these six commodities to all areas averaged about $3,600 million annually, at current values, between 1952 and 1956. Almost 75 per cent was sold to the United States and EEC Europe. However, in contrast to the large share (approximately 56 per cent) that was absorbed by the United States, less than 18 per cent was directed to EEC member countries. The balance of 26 per cent was accounted for mainly by the United Kingdom, Canada, Japan, and intra-Latin American trade.

The 18 per cent of Latin American exports absorbed by EEC Europe represented an annual average value of $630 million during the five years 1952-56. The two main commodities involved in this trade were coffee and cotton, which alone accounted for 70 per cent of Latin American exports of the six commodities to EEC Europe.

Viewing this same trade from the side of the EEC importers, table 8 shows that Latin America is a most important source of supply for the commodities under review. Thus, 28 per cent of all EEC imports of these six primary commodities came from Latin America, as compared with only 20 per cent from EEC dependent territories in Africa and 14 per cent from all other African regions.

Table 8

EEC COUNTRIES' IMPORTS OF SIX PRIMARY COMMODITIES IN 1952-56, BY MAIN GEOGRAPHICAL AREAS

(Annual averages in millions of dollars and in percentages)

Commodity	Total Value	From Latin America		From Africa				From other areas	
				Total		EEC dependencies			
		Value	per cent of total	Value	per cent of total	Value	per cent of total	Value	per cent of total
Coffee	513.3	229.0	58.3	172.5	33.6	126.2	24.6	41.8	8.1
Sugar	123.3	52.6	42.7	22.3	18.1	0.2	0.1	48.4	39.3
Cotton	797.1	152.7	19.2	194.0	24.3	53.2	6.7	450.4	56.3
Copper	539.8	63.7	11.8	205.1	38.0	156.7	29.0	271.0	50.2
Bananas	105.1	33.6	32.0	39.4	37.5	37.5	35.7	32.1	30.5
Cacao	174.0	27.6	15.9	137.1	78.8	74.1	42.6	9.3	5.3
GRAND TOTAL	2,252.6	629.2	27.9	770.4	34.2	447.9	19.9	853.0	37.9

Source: ECLA, on the basis of national statistics and others listed in the appended Note on Statistical Sources.

Moreover, Latin America's importance as a source of supply for the EEC countries varies as between commodities: Latin America at present provides 10-20 per cent of total EEC imports of cotton, cacao and copper, and from 30 to 60 per cent of coffee, sugar and bananas. It is also of interest to note that Latin America's share in total EEC imports of coffee, sugar and cotton at present exceeds the share of the EEC dependencies in Africa.

Latin America therefore occupies a relatively more important position as a supplier (of the six commodities) for EEC Europe than EEC Europe as a market for Latin America.

IV. SELECTED PRIMARY COMMODITIES

1. *Introduction*

In this section a brief review will be made of the conditions under which coffee, cacao, bananas, sugar, cotton and copper are produced in the African dependencies of the EEC countries and, so far as they are now foreseeable, the prospects for their expansion in the future.

The African dependencies that are taken into account here include the Belgian Congo and Ruanda-Urundi, French West Africa, French Togoland, French Equatorial Africa, French Cameroons and the islands of Madagascar and Réunion. Their combined area amounts, in round figures, to 10.6 million square kilometres as compared with 20.0 million square kilometres for the Latin American republics.[30] The arable land and land planted to tree crops in the African dependencies is reported to be 102 million hectares, as compared with 85 million for Latin America. But these figures tell very little until account is taken of the characteristics of the land: its fertility, its climate and its topography.

Although the quality of the soil in these regions varies widely, most of it is of indifferent or poor fertility. Again, the rainfall is irregular and the dates when the rainy season begins and ends are uncertain. Thus, natural resources, though extensive, are generally of poor quality.

In addition to these drawbacks, the population, consisting of 50 million—mostly indigenous inhabitants—in 1957 is widely scattered and not numerous enough to make efficient use of the natural resources available. Moreover they use very primitive cultivation methods, and the prevailing type of agriculture is a shifting system in which the crop land is abandoned when yields decline and the farmers move to virgin land. Under these conditions most of the effort of the local population is required merely to provide themselves with food and shelter, leaving but little time for the production of cash crops. Their indigenous inhabitants are not slow to learn

[30] United Nations, *Demographic Yearbook 1956*, page 140 *et seq.*

improved methods, however, when these can be applied under their conditions.

Another main difficulty is the lack of social overhead capital for roads, railways, schools, experimental stations and extension services, and of private capital for the purchase of equipment and materials. Anticipated public expenditures, to be financed largely by the metropolitan countries and supplemented later by the EEC special development fund, are expected to remedy these deficiencies somewhat. The Governments of France and Belgium have established agricultural experimental stations and their colonial administrations are spending considerable sums in efforts to stimulate production with a view to raising the standard of living.

In view of the conditions just described, the elasticity of supply of African coffee, cacao or cotton cannot be considered in terms of a simple mathematical equation. Rather it must be viewed in terms of a dynamic institutional situation in which the assimilation of available technology will gradually be improved and in which the supply both of private and social capital will be slowly growing.

It appears certain that the rate and direction of progress will be materially affected by the policies of the Governments of France and Belgium as well as those yet to be developed by the organized European Economic Community.

2. *Coffee*

Latin American producers show more concern about the probable effects of the European Common Market on the coffee trade than on that of any other commodity. This is understandable since, on the one hand, coffee is an important export from fourteen of the Latin American republics and, on the other, members of the European Economic Community have large dependent territories in Africa whose coffee competes directly with that of Latin America.

Value of the Common Market's coffee imports

Annual coffee imports into the six Common Market countries from 1952 to 1956 were valued at $513 million in round figures (table 9). Of this amount France accounted for $190 million and the Federal Republic of Germany for $147 million. During this period the Federal Republic's imports were recovering rapidly from the effects of the war and, by 1956, they had risen to $198 million. Of total EEC imports, $299 million came from Latin America, with Brazil contributing $173 million and Colombia $40 million. Africa furnished coffee valued at $173 million, of which $126 million came from the dependent territories of France and Belgium. Of the total of $190 million for coffee exports from these dependent territories, France accounted for $110 million.

Table 9

COFFEE: VALUE OF IMPORTS INTO COUNTRIES OF THE EUROPEAN ECONOMIC COMMUNITY

(Annual averages for 1952-56, in thousands of dollars)

	EEC total	*Federal Republic of Germany*	*France*[a]	*Italy*[a]	*Belgium Luxembourg*	*Netherlands*
Total imports	515,280	147,077	190,524	79,259	59,127	37,298
Source of imports						
Latin America, total[b]	*298,965*	*118,974*	*70,247*	*47,763*	*40,988*	*20,993*
Brazil	172,961	52,938	59,338	30,852	19,697	10,136
Colombia	40,305	25,273	2,041	2,396	5,798	4,797
Costa Rica	15,776	13,748	136	609	741	542
El Salvador	13,931	11,277	21	1,212	400	1,042
Haiti	19,192	252	4,479	6,072	8,258	131
Mexico	10,379	6,848	1,353	—	1,499	679
Africa, total	*172,477*	*20,255*	*114,887*	*15,169*	*10,377*	*11,789*
EEC dependencies	126,189	2,691	109,847	4,851	8,042	738
Other Africa	46,288	17,564	5,040	10,318	2,335	11,031
Other regions	41,837	7,848	5,390	16,321	7,762	4,516

Source: ECLA, on the basis of national statistics and others listed in the appended Note on Statistical Sources.

[a] Provisional.

[b] Latin American republics. Total for Latin America includes other countries not listed separately. Coffee exports from the European dependencies in the Western Hemisphere are included in "Other regions".

With post-war recovery practically completed, the value of Latin American exports to EEC countries rose from $229 million in 1952 to $323 million in 1956. Exports to the Federal Republic of Germany were the largest component and these increased from $57 million in 1952 to $163 million in 1956.

To provide some perspective: aggregate Latin American coffee exports in 1956 were valued at $1,955 million; of this amount exports to the United States were $1,313 million, those to Europe $559 million and those to other markets $83 million. Within Europe, two-thirds of the volume of coffee imports from all sources went to the six Common Market countries in 1956.[31]

Conditions of production

There are several distinct species of coffee and these have many varieties and strains which are variously affected by different climatic and soil conditions. *Coffea*

[31] Pan American Coffee Bureau, *Annual Coffee Statistics 1956*, pages 42 and 48 (New York, 1957).

arabica,[32] which grows wild in Ethiopia and adjacent high-altitude areas has very specific requirements. On the other hand, the *Robusta*, *Liberica*, and *Excelsa* varieties, which originated in the lowlands of Africa, are planted down to sea level. The different varieties also require other specific conditions in which to thrive.

Not only the tree, but the product as well, is highly sensitive to the treatment it receives. The flavour is affected by the type of processing, the altitude and probably the type of soil. This seems to account for most of the difference in flavour between Colombian and Central American wet-processed coffees, on the one hand, and the dry-processed coffee of Brazil, on the other. Furthermore, the admixture of green, ripe, and over-ripe berries affects the quality, as does enzyme action which may be caused by moulds when the coffee is being dried. These influences as well as variety differences account for the wide spread in market grades and prices. The Latin American coffees are nearly all of the *Arabica* species. The African coffees are predominantly, but not entirely, of *Robusta* types which have less flavour and body and fetch lower market prices.

In any discussion of the future of coffee production in Africa, mention must be made of the fungus disease *Hemileia vastatrix*.[33] *Robusta* is more resistant to this rust than is *Arabica*. This is the reason for the displacement of *Arabica* by *Robusta* varieties over such a large area of Africa, as well as in the other coffee-producing areas bordering on the Indian Ocean.

African producing areas

Among the difficulties confronting coffee production in Africa are the wide variation in types of soil and the scarcity of soil of high fertility. In addition, the rainy seasons are likely to be irregular, and there are often long dry periods which are injurious to the crop.

The territories under the control of France and Belgium are predominantly lowland areas which produce *Robusta* coffee and some *Liberica* and *Excelsa*. There are, however, some regions such as Ruanda-Urundi, parts of the eastern Belgian Congo and the Cameroons, which produce *Arabica* coffee.

In most of these dependent areas, coffee is produced chiefly by small farmers, who may have anything from a dozen trees to a few hectares. The greater part of their coffee is poorly processed and is not of uniform quality. In French Equatorial Africa and in the Cameroons, however, about two-thirds of the coffee is produced on plantations operated by Europeans. The same is true of about one-third of the coffee grown in the Ivory Coast and of the part of the production of the Belgian Congo and Ruanda-Urundi. These larger growers are able to produce coffee of higher and more uniform quality than that grown by the Africans. Production among the Africans is, however, expanding in all the areas named. It is not improbable that they will gradually improve the quality of their product, so far as the genetic characteristics of the predominant *Robusta* variety permit.

Rapid progress has been made in planting coffee in French West Africa, especially in the Ivory Coast. Experimental stations have acclimatized about fifty varieties and strains of the coffee plant and some of these have proved to be of practical importance.[34] In addition, a central purchasing agency has tried to grade and improve the coffee going to market. Production in this area has risen very rapidly.

Madagascar is an old coffee-producing area. Prior to the outbreak there of *Hemileia vastatrix* in 1873, *Arabica* coffee was raised on the island. At present, very little except the *Robusta* type is produced. Until the Second World War, Madagascar was the most important French coffee-producing area, but it has now been surpassed by French West Africa.

Account should be taken of the fact that there are many coffee-producing areas in Africa that are not under the control of EEC members. During the past few years these other areas have produced just about as much coffee as the EEC dependent areas.

The most favourable conditions for *Arabica* coffee are in north-east Africa, especially in Ethiopia and adjacent Kenya. Here, especially in south-west Ethiopia, many varieties of coffee grow wild in the forests. This is the source of the great bulk of the production of Ethiopia. There are relatively few plantations. The cherries are picked from wild coffee-trees or shrubs, or are scooped up from the ground on the mountain sides and are prepared for market by very primitive methods. This region has vast possibilities for increased production. The region is also of importance because these numerous strains of *Coffea arabica* may well provide useful genetic material for the improvement of Latin American varieties.

In Uganda and Tanganyika, as well as in Kenya, there are good upland coffee regions, including some with soils of volcanic ash on the slopes of several large volcanoes. These areas are well suited for *Coffea arabica*. Grown at elevations of over 1,500 metres, *Arabica* accounts for about one-third of the coffee production in the two territories. The other two-thirds consists of *Robusta* which is produced in lower-lying zones. Most of the production here comes from native growers. But there are also plantations owned by Europeans and Asians. In Uganda, these account for about one-fifth of the area planted to coffee.

In Angola, considerable coffee grows wild in the forests at elevations of 800 or 1,000 metres. The berries are collected and processed by the dry method. There are, in addition, an increasing number of plantations. In order to improve the quality of the product, the Government requires it to be passed through warehouses where it is inspected, cleaned and classified. Production in this area has been increasing notably during the past decade.

Production trends

Tables 10 and 11 show annual averages of total and exportable production of coffee for 1935-39 as compared

[32] This species prefers a cool climate with a temperature range between 15 and 20°C. It does best in deep loam, well drained and well supplied with humus. It needs a relatively humid climate with a rainfall of 1,300 to 2,300 mm well distributed throughout the year. It is unfavourably affected by temperatures above 30°C.

[33] This rust disease attacks the leaves of the coffee plant, frequently causing defoliation and death of the plant. Development of the disease is especially favoured by low-lying, warm and moist localities. It appeared in Ceylon in 1867 and since that time has destroyed practically all the cultivated plantations of *Arabica* coffee in that country, in Indonesia, in Madagascar, and on the mainland of Africa, except in higher and drier localities such as in Ethiopia, Uganda, Kenya and Ruanda-Urundi.

[34] FAO International Institute of Agriculture, "Studies of the Principal Agricultural Products on the World Market", *The World's Coffee*, page 292 (Rome, 1947).

with 1947-51 and 1952-56.[35] Latin American production in 1935-39 averaged 36.5 million bags per year in round figures. This declined to 32 million in 1947-51, but recovered to 35.4 million in 1952-56. In 1935-39, coffee was being destroyed in Brazil or was being stockpiled. Actual exports from Latin America in the earlier period given were 23.8 million bags, as compared with 26.4 in 1947-51 and 28.1 million in 1951-56. The greatest shift in production and exports occurred in Brazil, where production declined from 25.3 million in the first period named to 18.9 million in the second period and then recovered slightly to 19.7 million in 1952-56.

Table 10

GREEN COFFEE: WORLD PRODUCTION FOR SELECTED FIVE-YEAR PERIODS

(Thousands of 60-kilogramme bags)

	1935/36-1939/40	1947/48-1951/52 (Annual averages)	1952/53-1955/56
Latin America			
Brazil	25,340	18,902	19,694
Colombia	4,452	5,883	6,780
El Salvador	1,091	1,201	1,298
Guatemala	1,002	1,068	1,145
Mexico	959	1,056	1,533
Other	3,645	3,842	4,969
TOTAL LATIN AMERICA	36,489	31,952	35,419
Africa			
EEC dependencies			
Belgian Congo	320	552	740
French Cameroons, Togoland and French Equatorial Africa	58[a]	206[a]	363[a]
French West Africa	250	989	1,712
Madagascar	537	306	785
TOTAL EEC DEPENDENCIES	1,165	2,253	3,600
Other Africa			
Angola	300	834	1,171
Ethiopia	345[b]	375	771
Kenya	297	177	322
Tanganyika	263	249	311
Uganda	225	588	1,018
Other	7	157	190
TOTAL OTHER AFRICA	1,437	2,380	3,783
TOTAL AFRICA	2,602	4,633	7,383
Asia and Oceania	2,495	1,164	2,058
TOTAL WORLD PRODUCTION	41,586	37,748	44,860

Source: United States Department of Agriculture, Foreign Agricultural Service, *Foreign Crops and Markets*, various issues, and unpublished statistics provided by the Department.

[a] Estimate.

[b] Three-year average.

[35] The principal difference between the figures in the two tables is explained by the amounts of coffee retained for consumption in the producing countries, plus some changes in stocks.

Table 11

GREEN COFFEE: WORLD EXPORTS FOR SELECTED FIVE-YEAR PERIODS

(Thousands of 60-kilogramme bags)

	1935/36-1939/40	1947/48-1951/52 (Annual averages)	1952/53-1956/57
Latin America			
Brazil	15,095	16,638	15,500
Colombia	3,972	5,117	6,044
El Salvador	922	1,119	1,155
Guatemala	759	878	948
Mexico	599	703	1,330
Other	2,461	1,994	3,149
TOTAL LATIN AMERICA	23,808	26,449	28,126
Africa			
EEC dependencies			
Belgian Congo	283	512	713
French Cameroons, Togoland and French Equatorial Africa	52[a]	206[a]	363[a]
French West Africa	185	949	1,627
Madagascar	456	454	741
TOTAL EEC DEPENDENCIES	976	2,121	3,446
Other Africa			
Angola	268	801	1,162
Ethiopia	183[b]	322	704
Kenya	289	170	312
Tanganyika	253	240	323
Uganda	195	534	975
Other	93	152	189
TOTAL OTHER AFRICA	1,281	2,219	3,665
TOTAL AFRICA	2,257	4,340	7,111
Asia and Oceania	1,678	340	1,054
GRAND TOTAL	27,743	31,123	36,291

Source: United States Department of Agriculture, Foreign Agricultural Service, *Foreign Crops and Markets*, various issues, and unpublished statistics provided by the Department.

[a] Estimate.

[b] Three-year average.

The other major Latin American producers all showed rather consistent increases in production: more than 50 per cent since pre-war in Colombia and Mexico and smaller proportions in the other principal exporting countries.

Meantime, production and exports from the African coffee regions were steadily increasing from a very low level in 1935-39 to substantial totals in 1952-56. In the dependencies of France and Belgium, production expanded from 1.2 million bags in the first period to 3.6 million in the most recent one. In Madagascar the increase was about 50 per cent. In the Belgian Congo, the rise was from 320,000 bags to 740,000. In French West Africa, it was from 250,000 to 1.7 million, and in French Equatorial Africa from 58,000 to 363,000. As remarked above, the great bulk of this coffee was of the *Robusta* type.

Not only EEC dependent territories, but also other regions in Africa were offering Latin America increasing competition from year to year. Production in Kenya and

Tanganyika rose slowly. Ethiopia more than doubled its production. Uganda and Angola approximately quadrupled their coffee output.

It should be noted that these rapid increases in output occurred before serious consideration was given to the formation of a Common Market in Europe. In 1952-56, production in the African regions outside the French and Belgian dependencies was slightly greater than in those dependencies. Finally, part of the coffee in the "other Africa" regions is *Arabica* rather than *Robusta*. It is not improbable that the processing and grading methods in these areas will improve as time goes by. It is safe to anticipate that, with or without the Common Market, the total volume, especially of *Robusta*, produced in Africa will continue to rise for some time in the future.

Imports into EEC countries

In 1934-38, the countries which are now members of EEC imported, in round figures, 8 million bags of coffee each year. This level declined markedly during the Second World War, but by 1952-56 it had recovered to 7 million bags (table 12). Before the war 6.1 million bags were furnished by Latin America; 786,000 were from the dependent African territories and 150,000 from other African regions. In 1952-56, the imports from Latin America were only 3.8 million bags, while those from the dependent territories had increased to 2.1 million and those from other African regions to 600,000. The Federal Republic of Germany and France were the heaviest coffee importers and absorbed about two-thirds of the total.

Table 12

GREEN COFFEE: IMPORTS INTO COUNTRIES OF THE EUROPEAN ECONOMIC COMMUNITY

(Selected five-year periods. 60-kilogramme bags)

Importing country and source	*1934-38*	*1947-51 (Annual averages)*	*1952-56*
Germany (post-war Federal Republic)	2,763,452	346,039	1,645,236
Latin America	2,641,585	254,951	1,362,489
Africa, EEC dependencies	3,071	11,412	32,320
Other Africa	47,630	40,111	184,244
Other countries	71,168	39,564	66,183
France	3,077,019	1,805,088	2,867,797
Latin America	2,119,067	447,076	956,095
Africa, EEC dependencies	518,214	1,253,387	1,808,002
Other Africa	35,847	64,673	40,672
Other countries	403,891	39,951	63,029
Italy	618,610	802,120	1,151,004
Latin America	502,531	683,793	666,777
Africa, EEC dependencies	37	7,152	78,432
Other Africa	51,817	49,183	159,632
Other countries	64,226	61,992	246,163
Belgium-Luxembourg	839,605	1,273,961	852,917
Latin America	443,702	985,267	560,239
Africa, EEC dependencies	264,256	159,615	150,573
Other Africa	—	38,701	49,813
Other countries	131,646	90,378	92,292
Netherlands	673,252	352,557	494,389
Latin America	371,367	190,915	254,144
Africa, EEC dependencies	413	23,358	11,269
Other Africa	14,766	109,265	166,236
Other countries	286,704	29,019	62,739
Total EEC imports	7,971,938	4,579,765	7,011,343
From: Latin America	6,078,252	2,562,002	3,799,744
Africa, EEC dependencies	785,991	1,454,924	2,080,596
Other Africa	150,060	301,933	600,597
Other countries	957,635	260,904	530,406

Source: ECLA, on the basis of national statistics and others listed in the appended Note on Statistical Sources.

Both in the earlier and the later period Germany purchased the great bulk of its coffee from Latin America, chiefly from Brazil and Colombia. The same was true of Italy, Belgium and Netherlands, all of which obtained the bulk of their coffee from Brazil.

France's imports followed a somewhat different pattern. In 1934-38, that country imported 2.1 million bags from Latin America and 518,000 from its African dependencies. By 1947-51 the proportion had shifted and it bought only 447,000 bags from Latin America as compared to 1,253,000 bags from the African possessions. In the most recent period France increased its imports from the African possessions to 1,808,000 bags as compared with 956,000 from Latin America.

Prospects for Latin America

It is clear that there are extensive opportunities for the expansion of coffee production both in the African dependencies of the EEC countries and also in other parts of Africa. There are, it is true, certain impediments to such expansion. In the first place, the African soils in general seem to be less productive than those in the present coffee regions of Latin America. Secondly, African coffee is mostly *Robusta* rather than *Arabica*. Thirdly, the bulk of the coffee in Africa is produced by indigenous inhabitants who have but little background as managers. Fourthly, except in a few areas, such as Uganda and Kenya, the technology now used in many parts of Africa is inferior to that of Latin America. On the other hand, there seems to be no reason why technology in Africa should not gradually improve. Even with its present low level, the volume of *Robusta* coffee coming from Africa is large enough to make itself felt as a competitor. Its use in soluble coffee and in the cheaper blends of roasted coffee has a discouraging effect on any upward tendency in prices of the *Arabica* coffee produced in Latin America.

In the GATT long-term projection referred to earlier, it is estimated that the population of Western Europe will increase by 12.5 per cent between 1953-55 and 1973-75, while that of North America will increase by 26 per cent. It is also anticipated that the coffee import requirements in each area will increase by 45 per cent.[36] Since North America consumes considerably more coffee than does the EEC area, this means that the prospects are for an increase in the absolute demand for Latin American coffee if the two areas are taken together. But the question arises whether the formation of EEC will increase that demand further, or whether this area will turn more to the dependencies in Africa and reduce its coffee purchases from Latin America.

EEC imports of coffee in 1952-56 were 7 million bags (table 12). An increase of 45 per cent would therefore amount to 3.1 million, raising total European imports to

[36] GATT, *International Trade 1956*, op. cit., pages 17-20 and 30-31. The two magnitudes taken into account here on the basis of GATT projections are of an illustrative nature only and do not represent either a lower or an upper limit for future possibilities.

about 10 million bags. If Latin America participated in this increase in proportion to its 1952-56 shipments to the EEC countries, the increase would be 1.4 million bags. On the other hand, it may be thought that preferential treatment to imports from the EEC dependencies and expanded African coffee production would lead to Africa's supplying all the increased demand, so that none of it would benefit Latin America. The difference between these two limits, however, would be equivalent to rather less than 5 per cent of Latin America's present coffee exports. While this is, of course, a figure of some importance, it is exceeded by the increase in demand expected from North America. With the rapid increase in Latin American population, it is also likely to be exceeded within the 20-year period by increased consumption within Latin America itself.

A further consideration is that European consumers have shown a preference for the higher-quality coffees, when they can obtain them. If the reduction of trade barriers within Europe leads to a rise in consumer purchasing power, it is by no means improbable that the eventual European demand for Latin American coffee may increase by more than the proportionate figure of 1.4 million bags which was mentioned above.

In addition to population and income statistics, coffee imports will depend on trends in consumer habits. Coffee consumption will also be affected directly by the rates of import duties, by internal taxes and by any other factors that condition the price which the consumer finally pays.

Many difficulties stand in the way of a statistical determination of the demand curve for coffee. Some efforts in this direction have been made by comparing *per capita* rates of consumption with deflated prices over periods of years. Other studies have compared rates of consumption as between low-income and high-income groups. Each of these methods suffers from various logical defects, and it is by no means sure that the results will indicate the change in total consumption that would occur if prices changed by a given percentage under a given set of conditions.

The results of the various attempts at measuring the elasticity of demand for coffee seem to agree that the demand at any given time is relatively inelastic so far as the higher-income groups of consumers are concerned. But greater elasticity seems to exist among the lower-income than among the higher-income groups.[37] Thus consumption might well increase materially if the price were lowered by an appreciable percentage and the reduced price prevailed long enough for the lower-income groups to become accustomed to consumption levels at that price.

GATT has recently pointed out that:

"The connexion between consumption and income as revealed by family budget enquiries (and also from national time series), relating to the United States and the main coffee consuming countries of Western Europe, suggests that coffee consumption and hence the import requirements of the two areas would both rise in volume by 45 per cent between 1953-55 and 1973-75. The f.o.b. values of these future imports (including tea and cocoa) would, expressed in 1953-55 prices, work out at about $2,000 million in Western Europe and $2,600 million in North America.

"However, these estimates are somewhat uncertain. On the one hand, demand for coffee in the United States, by far the largest importer, has risen since prewar considerably more (about two pounds *per capita* per year) than could be expected on the basis of prewar experience, and there are also indications that a similar increase in demand occurred in Germany during post-war years. Moreover, coffee consumption may well be larger than estimated in other European countries as well should there be a reduction in the margin between the import price and the retail price of coffee which often includes a large tax element."[38]

The income-elasticity for coffee as adopted by this source, in the course of projections for trade over the next twenty years, is 0.5 for Western Europe and 0.3 for North America.

The formation of the Common Market tends to shift the competitive advantage in coffee exports to some extent away from Latin America to the African dependent territories of EEC. This advantage will be felt, however, only as the Common Market arrangements actually enter into effect during the transition period. In some measure the coffee-planters may anticipate adjustments in import duties (or of other types) when they know such changes are to occur at definite dates in the future. This is more likely to occur on plantations operated by Europeans than on the smaller plantations run by the indigenous inhabitants, since the latter are likely to be less well informed about the impending regulations.

In 1956, the import duties and internal taxes collected on green coffee by members of the EEC countries concerned were as given below. These are expressed as percentages of January 1957 values of green coffee.

	Customs duties (Percentage equivalent)	*Internal taxes (Percentage equivalent)*	Per capita *imports of green coffee (Pounds)*[a]
Belgium-Luxembourg	[b]	5	14.6
France	20[c]	51	9.8
Federal Republic of Germany	26	148	5.8
Italy	6.6[d]	66.3	3.5
Netherlands	[b]	none	8.4

Source: Data on customs duties and internal taxes supplied by respective embassies in Washington.

[a] Pan American Coffee Bureau, *Annual Coffee Statistics 1956* (New York, 1957), page 78.

[b] Temporarily suspended.

[c] Not applicable to imports from dependent territories.

[d] Includes 1.2 per cent administrative tax.

The average rate of customs duties applicable in the EEC countries in January 1957 was 33.5 per cent *ad valorem*. But the duties in Belgium, Luxembourg and the Netherlands were suspended until 31 December 1957, this period being subject to extension. The average of the

[37] Kathryn H. Wylie, "Production, Consumption and Price Trends of Coffee," United States Department of Agriculture, Office of Foreign Agricultural Relations, *Foreign Agricultural Report No. 33*, December, 1948.

[38] GATT, *International Trade 1956*, op. cit., pages 30-31. GATT also points out that the margin between the import price and the retail price is, in the United States (where coffee imports are duty-free), of the order of 20-25 per cent, while in Europe it ranges from 35-50 per cent in the Scandinavian countries, to 110 and 160 per cent in Italy and the Federal Republic of Germany, respectively.

rates actually in effect, weighted by values of 1952-56 dutiable coffee imports, was only 15.1 per cent.[39] The agreed rate that is finally to be applied under the Common Market tariff is 16 per cent. Shifts in the respective duties to their new level are, however, to be effected by steps. A shift of 10 per cent will occur within a year after the Treaty enters into effect, and not less than 50 per cent of the total change is to be made by the end of the second four-year period. Duties and restrictions on imports into the Common Market of commodities from EEC are gradually to be removed in the course of the transition period.

During the first transition period, Italy is to be allowed to retain its present low duty on a quota of green coffee imports equal to those registered in 1956. The size of the quota is to be reduced by 20 per cent from the sixth year after the Treaty becomes effective until the end of the second stage, and then to a 50-per-cent level during the third stage. But the low tariff rate may be continued on 20 per cent of the initial coffee quota for four years after the end of the transition period.

A similar privilege is to be extended to the Benelux countries. Throughout the second transitional stage, they may continue to import duty-free up to 85 per cent of the amount of coffee imported during the last year for which statistics are available. During the third stage this duty-free quota is to be reduced to 50 per cent.

For EEC as a whole, the ultimate adoption of a coffee import duty of 16 per cent will have different effects in the various member countries, depending on whether their previous duties were above or below this level. It will tend to discourage coffee consumption in Belgium, Luxembourg and the Netherlands, where duties on coffee are at present suspended. On the other hand, the 16-per-cent duty will tend somewhat to encourage coffee consumption in the Federal Republic of Germany, which now has a high tariff.

Favourable customs treatment of imports such as coffee from the overseas territories may be expected to shift the channels of trade so that a somewhat greater proportion of the EEC imports of coffee will eventually come from African dependencies. To the extent that this diverts more of the African *Robusta* and other coffee to the EEC countries, it will reduce the relative amount of such coffee available for the United States or the non-EEC countries in Europe. A rather larger relative volume of Latin American coffee will, correspondingly, be shipped to the United States and to non-EEC countries in Europe, and less to the EEC countries.

This rechannelling of trade that derives from the changes in import duties will not of itself increase the world supply of coffee, and it is difficult to see how it can cause any very great changes in coffee prices in Latin America. The exception is that there may be some specific types of Latin American coffee that have been used in EEC member countries, which will not be so popular in other parts of the world coffee market.

It should be noted also that the internal taxes collected on coffee in the Federal Republic of Germany, France and Italy are much higher than the import duties. These internal taxes add to the price which the consumer pays for coffee just as much as if they were import duties. Their reduction would go a long way towards encouraging increased use of coffee. However, they are not affected by the Rome Treaty.

There is another aspect of the formation of the Common Market that may place the Latin American coffee-producer at a more tangible disadvantage. The higher level of economic activity in the EEC countries is likely to increase the budgetary receipts of the metropolitan Governments available for the financing of basic social capital, especially transport, in their dependent territories. This effort will be supplemented by the creation of the special development fund for overseas territories. By rendering the producer areas in the dependent territories more accessible, these facilities will increase returns to the producers in the French and Belgian dependencies, thereby stimulating production. Exactly how great an expansion of coffee production will result after ten or twenty years cannot at present be predicted.

To the Latin American coffee producer, the most important practical question is how he can maintain his income and keep his lead in the world coffee market. It is clear from what has been said above that coffee production in Africa is increasing and that Latin America will have to face greater competition than in the past. Increased competition up to this time, however, has come as much from regions such as Uganda, Kenya, Angola and Ethiopia, which are *not* controlled by EEC members, as from the dependent territories. Furthermore, the stimulating effects of the Common Market on African production will be felt only slowly, although they may be substantial in the long run.

Latin America has at least three factors in its favour. The first is that the population of the coffee-consuming countries is increasing. Coffee consumption can be expected to continue to rise in the United States and, also, at an even greater rate, in the European countries. Sizeable increments have been reported in the United Kingdom and in the Federal Republic of Germany since the war. Increases elsewhere will depend partly on population growth and partly on the purchasing power of consumers.

A second factor in favour of Latin America is the superior quality of its coffee as compared to most of that from Africa. Not only can this qualitative advantage be maintained, but in some cases it could with relative ease be pressed still further by improved processing methods.

A third advantage is that, as a general rule, Latin America is ahead of African producers in the technology of production. If the Latin American coffee-grower should cease to make progress in his production methods, it is safe to anticipate that the African grower will gradually equal or surpass his performance.[40] On the other hand, there is in Latin America a growing awareness of the importance of introducing better methods and of the opportunities for doing so. Improved and higher-yielding strains of coffee trees are now available, and much more is known than formerly about the use of fertilizers and other improved practices. With more intensive research and prompt application of the results on coffee plantations, the Latin American growers should be able to increase

[39] More recently the weighted average may have exceeded 16 per cent as a result of a more rapid increase in the amount of coffee imported by the Federal Republic of Germany.

[40] Should political developments in Africa discourage European ownership of coffee plantations, it is likely that the improvement of production methods will continue to lag behind that achieved in Latin America.

yields per tree and to reduce their operation costs. This seems to be the only way they can keep ahead of their rivals in a world of growing competition.

3. *Cacao*

Trade in cacao will very probably be affected by the organization of the Common Market. This will be of concern to Brazil, Colombia, Costa Rica, the Dominican Republic, Ecuador, Mexico, Venezuela and two or three other Latin American countries. World demand for cacao may well be increased if the Common Market succeeds in raising consumer purchasing power in member countries. At the same time, production in the French and Belgian possessions in Africa will expand because of improved technological and economic conditions, and this will intensify competition with the Western Hemisphere.

Value of trade

The trade values at stake are shown in table 13. During the five-year period 1952-56, the EEC countries imported an average of 174 million dollars' worth of cacao beans per year. Of this amount 27.6 million dollars' worth came from Latin America, two-thirds of it from Brazil. In addition, the EEC countries imported cacao butter and paste to an average value of 1.9 million dollars, also chiefly from Brazil. Of the cacao beans, 15.4, 4.9 and 3.4 million dollars' worth went to the Federal Republic of Germany, Italy and the Netherlands, respectively, and the remainder to France and Belgium.

Table 13

CACAO BEANS: VALUE OF IMPORTS INTO COUNTRIES OF THE EUROPEAN ECONOMIC COMMUNITY

(Annual averages for 1952-56, in thousands of dollars)[x]

	EEC Total	Federal Republic of Germany	France[a]	Italy[a]	Belgium-Luxembourg	Netherlands
Total imports	173,989	63,901	41,247	14,868	7,156	46,817
Source of imports						
Latin America, total[b]	*27,589*	*15,380*	*1,711*	*4,916*	*2,167*	*3,415*
Brazil	20,013	12,338	1,296	3,497	237	2,645
Ecuador	4,032	1,712	219	1,049	839	213
Venezuela	2,961	1,144	196	345	1,091	185
Africa, total	*137,078*	*47,161*	*38,382*	*9,093*	*3,069*	*39,373*
EEC, dependencies	74,050	11,786	33,527	5,301	1,250	22,186
Other Africa	63,028	35,375	4,855	3,792	1,819	17,187
Other regions[c]	9,333	1,369	1,154[d]	859	1,921	4,030

Source: ECLA, on the basis of national statistics and others listed in the appended Note on Statistical Sources.

[a] Provisional.

[b] Latin American republics. Total for Latin America includes other countries not listed separately.

[c] Including Asia, Oceania, Martinique, Guadeloupe, and also trans-shipments through other countries.

[d] Including $233,000 from Martinique and Guadeloupe.

One outstanding fact, shown in table 13, is that the value of cacao imports from Latin America constituted only 16 per cent of total EEC purchases.[41] African dependencies of France and Belgium provided 42 per cent and other African areas, chiefly Ghana and Nigeria, another 36 per cent. France and the Netherlands were the largest purchasers from the dependencies, and the Federal Republic of Germany from the other African regions.

In 1952-56, the combined EEC countries imported an annual average of 209,000 tons of cacao beans. Of these, 92,000 tons came from African dependencies, 77,000 from other parts of Africa and 32,000 from Latin America. To keep the data in proper perspective, however, it may be mentioned that the United States imported 123,000 tons of cacao beans from all African sources, as compared to 129,000 tons from the Western Hemisphere.

Conditions in producer areas

Cacao is indigenous to the Americas, but is now grown in most of the humid tropical areas of the world, principally in Latin America and Africa.[42] The crop has spread gradually to new areas during the last couple of decades, both in Africa and in Latin America.

The typical cacao plantation covers a very small area. This is even truer in Africa than in the Americas. In Ghana and the Ivory Coast most of the cacao is produced on a small scale by African farmers. European estates are more common in the French possessions and predominate in the Belgian Congo. The figures in table 14, show the size distribution of cacao plantings in Ghana, Nigeria, and the Ivory Coast. Ninety-two per cent of the plantations in Ghana are smaller than 2 hectares, as are 75 per cent in Nigeria and 20 per cent in the Ivory Coast.

[41] These percentages would be raised slightly by the incorporation of trans-shipments of cacao via other countries, which in the table are included with cacao from Asia and Oceania under "Other regions".

[42] Cacao is grown for the most part at elevations of not over 500 metres. The trees are very sensitive to cold and may be harmed by temperatures lower than 50 or 60 degrees F (10° or 15°C).

Table 14

DISTRIBUTION OF AFRICAN CACAO HOLDINGS BY SIZE

Size of cacao plantings (hectares)	Percentage of holdings			Percentage of area	
	Ghana	Nigeria	Ivory Coast	Ghana	Nigeria
Less than 0.5	71.0		0.5	20.6	
Less than 1.0		50.0			17.0
0.5 to 2.0	20.8		19.0	39.4	
1.0 to 2.0		25.0			20.0
2.0 to 4.0		18.5			30.0
2.0 to 10.0	8.0			37.2	
2.0 to 10.0			79.0		
4.0 to 8.0		5.0			19.0
8.0 and over		1.5			14.0
10.0 and over	0.2		1.5	2.8	
TOTAL	100.0	100.0	100.0	100.0	100.0

Source: FAO, Commodity Series, *Bulletin No. 27, Cacao, A Review of Current Trends in Production, Price, and Consumption,* November 1955.

Until recently, virtually nothing was done to educate the African growers in improved methods of production. FAO reports: "The typical cacao 'farm' is a small cluster of trees, planted too close to one another, without order or system, and of different ages".[43] Another writer conveys "the essential idea that the great cacao region is still one of untidy African farms (averaging only about 3 acres in extent), largely hidden by forest—untidy, but thus escaping the evils of soil erosion".[44] Very little pruning is done and the use of fertilizers is practically unheard of.

Factors limiting production

The growth of cacao production has been retarded principally by three adverse factors. These are diseases and insect pests, soil depletion and senility of trees in the older producer areas.

Each cacao area has its own combination of diseases, insect pests and other production problems. In various parts of America are found witch's broom disease, black pod rot (*Phytohthora Palmivora*) and monilia pod rot, which result in heavy losses and have caused cacao production to disappear from some areas. Damage by witch's broom has been particularly heavy in Ecuador, Colombia and Venezuela.

In Africa the three principal causes of losses are swollen shoot disease, black pod and capsid bugs. It is estimated that in some years the losses in Nigeria from black pod may amount to 30 per cent.[45]

Very heavy losses have been caused in Africa, especially in Ghana, by swollen shoot, a disease produced by a virus of which there are apparently many different strains. The only way of controlling this disease discovered up to the present is to cut out diseased and contact trees. An extensive campaign for this purpose has been under way for several years in Ghana and Nigeria. The number of trees cut out in Ghana is reported to have reached a cumulative total of 54 million in 1956.

Production in Africa also suffers from damage done by the capsid bug to the cacao shoots and young wood. During the last few years energetic steps have been taken in Ghana and Nigeria to disseminate information among African producers regarding methods of pest and disease control. One aspect of this campaign consists in the subsidized distribution of hand spray pumps and spray materials for combating the capsid bug and black pod, and growers have taken to spraying with surprising enthusiasm. It is said that these steps are already resulting in visibly improved yields.

The second factor restricting cacao production is the rapid depletion of tropical soils, especially in Africa. The best soils for cacao are deep loams with a high content of humus and good drainage. In early African plantings high yields were obtained by clearing off the original forest and planting the cacao in virgin soil. But in the tropical climate humus decays rapidly and plant food quickly leaches out of unprotected soil. Consequently, yields fall off as the years pass. Production from trees replanted in the old soil is much lower than from original plantings. The planting of cacao, therefore, tends to decline in old areas and to shift to new ones so long as satisfactory land is available. With the competing demand for food crops, the area available for cacao has been decreasing rapidly in the older producing regions. In Ghana, according to some estimates, the area of closed forest-land suitable for cacao will be exhausted in another decade.

The third factor restricting production, especially in Africa, is the relatively high rate of senility of present bearing trees. The cacao tree begins to bear at 5 or 6 years of age, reaches its peak between 10 and 15 and begins to decline between 25 and 30 years. Both in Ghana and in Nigeria, an estimated 30 per cent of the trees are over 30 years old, and losses from senility have recently been greater than new plantings. Recently there has been a strong increase in plantings in the Ivory Coast, the French Cameroons and the Belgian Congo, but this is partly offset by the rising senility rate in the Ivory Coast.

Production trends

Approximately one-third of the world's cacao is produced in Latin America, nearly two-thirds in Africa, and

[43] FAO Commodity Series, *Bulletin 27, Cacao, A Review of Current Trends in Production, Price, and Consumption* (Rome, November, 1955), page 19.

[44] Stamp, L. Dudley, *Africa, A Study in Tropical Development,* John Wiley and Sons, New York, 1953, page 303.

[45] FAO Commodity Series, *Bulletin 27,* op. cit., page 27.

small scattered amounts in Asia and Oceania (table 15). In Latin America there has been a continuous, though rather irregular upward trend, with production in Brazil rising from an annual average of 120,000 tons, in round numbers, in 1935-39 to 135,000 in 1952-56. Production in the Dominican Republic in the same period increased from 25,000 to 33,000 tons and in Ecuador from 19,000 to 28,000 tons. The total production of Latin America rose 16 per cent from 231,000 to 267,000 tons. Meanwhile, world production increased from 717,000 to 780,000 tons.

Table 15

CACAO BEANS: WORLD PRODUCTION

(Tons)

	1935/36-1939/40	1947/48-1951/52 (Annual averages)	1952/53-1955/56
Latin America			
Brazil	119,768	126,641	135,014
Dominican Republic	24,522	28,680	32,857
Ecuador	19,225	21,767	28,269
Other Latin America	67,391	64,372	71,235
TOTAL	230,906	240,461	267,375
Africa			
EEC dependencies			
Belgian Congo	1,274	1,736	2,928
French Equatorial Africa, Cameroons	27,322	46,984	62,186
French West Africa	49,878	50,194	62,328
French Togoland and Madagascar	1,116	4,231	7,916
TOTAL	79,591	103,145	135,358
Other Africa			
Ghana	276,468	247,970	234,251
Nigeria	98,143	102,499	106,086
Fernando Pó and Río Muni	11,343	15,321	19,059
St. Thomas and Príncipe	10,206	7,940	7,757
Angola, Liberia, Sierra Leone	315	1,194	2,233
TOTAL	396,475	374,924	369,386
TOTAL AFRICA	476,067	478,069	504,744
Asia and Oceania	7,932	6,377	7,642
WORLD TOTAL	717,173	724,913	779,761

Source: United States Department of Agriculture, Foreign Agricultural Service, *Foreign Crops and Markets*, various issues, and unpublished statistics provided by the Department.

In parts of Brazil, Ecuador, Colombia, Mexico, and some other countries, conditions for cacao are relatively favourable over areas considerably greater than those now planted. Furthermore, there are opportunities for increasing yields from existing plantations by spraying to control diseases and pests, replacing old trees with improved varieties, and by other means.

In Africa there are divergent production trends in the different regions. In Ghana, there was a decline of about 15 per cent in production from 1935-39 to 1952-56 (table 15). This, as suggested earlier, is related to the aging of trees and the spread of diseases and insects. In Nigeria, production has risen about 8 per cent. In French West Africa and French Equatorial Africa, there has been an increase both in area planted and in production. Cacao planting is expanding in the Belgian Congo, and, although production is still small, a further increase in output is foreseeable for the next several years. Taken together, production of the EEC dependent territories increased 69 per cent from 1935-39 to 1952-56, while that of other African regions decreased by 7 per cent. The dependent territories expanded their share of world production from 11 per cent in 1935-39 to 17 per cent in 1952-56, while the share of other African areas shrunk from 55 per cent to 47 per cent. There is still land suitable for cacao in various parts of tropical Africa and, in addition, improvements in production techniques are already under way.

Table 16

CACAO: SOURCES OF IMPORTS INTO COUNTRIES OF THE EUROPEAN ECONOMIC COMMUNITY

(Annual averages for selected five-year periods, in tons)

Importing country and source	1934-38	1947-51	1952-56
Germany (post-war Federal Republic)	81,224	25,982	76,201
Latin America, total	16,199	2,752	17,934
Brazil	6,446	1,677	14,627
Ecuador	5,875	905	1,867
Africa, EEC dependencies	4,578	4,374	14,469
Other Africa	58,555	18,250	42,416
Other countries	1,892	606	1,382
France	43,009	58,007	48,359
Latin America, total	2,128	1,607[a]	1,667
Brazil	783	1,408[a]	1,253
Ecuador	374	79[a]	227
Africa, EEC dependencies	36,316	55,235	40,275
Other Africa	565	766	5,137
Other countries	4,000	399	1,280
Italy	9,129	9,471	17,765
Latin America, total	3,600	5,346	5,828
Brazil	3,042	4,100	4,129
Ecuador	372	693	1,196
Africa, EEC dependencies	216	1,594	6,349
Other Africa	4,563	1,120	4,743
Other countries	751	1,411	845
Belgium-Luxembourg	9,910	10,724	8,934
Latin America, total	2,883	2,995	2,579
Brazil	1,083	1,328	244
Ecuador	360	675	1,029
Africa, EEC dependencies	1,655	1,548	1,627
Other Africa	1,833	3,469	2,391
Other countries	3,539	2,712	2,337
Netherlands	64,688	44,513	58,118
Latin America, total	4,128	9,777	4,077
Brazil	3,137	8,661	3,311
Ecuador	429	370	248
Africa, EEC dependencies	5,911	11,437	29,326
Other Africa	52,136	21,072	22,143
Other countries	2,513	2,227	2,572
EEC countries, total	207,960	148,697	209,377
From: Latin America	28,938	21,999	32,085
Brazil	14,491	17,174	23,564
Ecuador	7,410	2,722	4,567
Africa, EEC dependencies	48,676	74,286	92,046
Other Africa	117,651	43,958	76,830
Other countries	12,695	7,985	8,416

Source: ECLA, on the basis of national statistics and others listed in the appended Note on Statistical Sources.

[a] Average for 1948-51.

Imports into EEC countries

In 1934-58, the EEC countries imported an annual average of 208,000 tons of cacao beans in round numbers. These imports fell off noticeably during and just after the Second World War, but recovered their pre-war level in 1952-56 (table 16). Imports from Latin America were 29,000 tons in the earlier period and 32,000 in 1952-56, or 15.3 per cent of the total. This is the trade that may be affected by the Common Market agreement. It should be pointed out that the EEC countries absorbed only 12 per cent of total Latin American cacao production in 1952-56.

The Federal Republic of Germany is the largest cacao-importing country in EEC. It is followed by the Netherlands, France, Italy and Belgium, in that order. The Federal Republic imported an annual average of 76,210 tons of cacao during 1952-56, 18,000 tons of which came from Latin America, 14,000 tons from the African dependencies of France and Belgium, and 42,000 tons from other African areas.

The Netherlands showed a different pattern. Of the 58,000 tons of cacao beans imported per year in 1952-56, it purchased only 4,000 tons from Latin America, 29,000 tons from the dependencies of France and Belgium and 22,000 tons from other African areas. Imports into the Netherlands from the non-EEC African territories declined sharply from 1934-38 onwards, while imports from the dependent territories increased from 6,000 to 29,000 tons.

France, with the largest cacao production in the dependent areas, imported an average of 40,000 tons from them out of total imports of 48,000 tons in 1952-56. Imports from other African sources were 5,000 tons and those from Latin America were less than 2,000.

Italy imported just under 18,000 tons of cacao, of which about 6,000 tons came from Latin America, a further 6,000 tons from the EEC dependent areas, and 5,000 tons from other African sources. Italy's imports from the dependencies has risen to the present figure from only 216 tons per year in 1934-38.

The EEC cacao import duty, which is to be levied on deliveries from all outside countries, is 9 per cent. This is a relatively modest tariff. Nevertheless, as it enters into force, it will tend to shift the advantage further towards the dependent territories. Cacao exports from those regions, however, have already been increasing in comparison with those from Latin America, and the bulk of their production has already been going to the EEC countries. The EEC countries imported 32,000 tons of cacao per year from Latin America in 1952-56, as compared with 29,000 tons in 1934-38. During the same interval imports from the African dependent areas increased from 49,000 to 92,000 tons. The growth of trade from the dependencies was partly at the expense of the other African regions, whose exports to the EEC countries declined from 118,000 to 77,000 tons.

4. *Bananas*

For some years Latin American banana producers have hoped to develop larger markets in Europe. The possibilities of achieving this after the coming into effect of EEC, when Latin American bananas will have to compete with the African product enjoying preferential treatment, are analysed below.

Value of trade

The total annual value of EEC member countries' banana imports in 1952-56 averaged $105 million (table 17). Of this amount, however, $55 million represents imports effected by France, which obtained $26.7 million worth of its supply from African dependencies and $28 million from Martinique and Guadeloupe. The Federal Republic of Germany was the second largest importer, with banana purchases valued at $28 million. These came in almost equal proportions from Colombia, Ecuador and Guatemala. Imports into Belgium and Luxembourg were valued at $7 million, and those into the Netherlands at $4.7 million.

Table 17

BANANAS: VALUE OF IMPORTS INTO COUNTRIES OF THE EUROPEAN ECONOMIC COMMUNITY

(Annual averages for 1952-56, in thousands of dollars)

	Total EEC	*Federal Republic of Germany*	*France*[a]	*Italy*[a]	*Belgium-Luxembourg*	*Netherlands*
Total banana imports[b]	105,106	28,043	55,295	10,123	6,985	4,660
Source of imports:						
Latin America[c]	33,603	24,662	—	32	5,198	3,711
Colombia	12,785	8,560[d]	—	32	2,270	1,923
Ecuador	11,463	8,692[d]	—	—	2,176	595
Guatemala	6,842	7,393[d]	—	—	523	926
Africa:						
EEC dependencies	37,481	422	26,688	9,185	1,080	106
Other Africa	1,875	680	551	636	—	8
Other regions	32,144	2,279	28,055[e]	271	706	833

Source: ECLA, on the basis of national statistics and others listed in the appended Note on Statistical Sources.

[a] Provisional.
[b] Details for table may not add to total because of rounding.
[c] Total, but excluding European possessions in the Caribbean.
[d] May contain small amounts of other tropical fruits.
[e] Including $27,929,000 worth of bananas from Martinique and Guadeloupe.

The total value of the EEC countries' banana imports from Latin America was $33.6 million, or about ten per cent less than their purchases from African dependencies. About an equal value of imports came from non-EEC regions, chiefly Martinique and Guadeloupe. As will be shown later, current banana imports represent an appreciable increase over pre-war years.

Conditions and problems in the producing areas

Although bananas are widely produced in the tropics for local consumption, the crop for international trade has for many years been centred in the Western Hemisphere. In 1955, world exports were reported to be 131 million standard stems of 50 lb. Of this amount 43 million stems were shipped from Central America, 16 million from the Caribbean area and 45 million from South America, making a total of 79 per cent of world exports. Of the remainder, 24 million came from Africa and its adjacent islands and the rest from Oceania and Taiwan.

Large-scale banana production requires certain well-defined natural conditions.[46] An essential for economical production and marketing is a highly organized transport system, so that the fruit can be moved from plantations to consuming centres promptly and without bruising. This means that there must be a system of refrigerator ships to carry the fruit from ports in the producing areas, closely co-ordinated with railways or highways and with port facilities equipped to load the bananas without injury.

The necessary natural conditions exist in many places in the Latin American tropics within reach of shipping ports and the needed transport facilities have been, or can be, developed at many points along the coast. In tropical West Africa, there are likewise areas where such conditions prevail. Plantations have been developed in French Guinea, the Ivory Coast, the French and British Cameroons, the Belgian Congo, Italian Somaliland and near Lourenço Marques in Mozambique. The heaviest and most concentrated production in this region, however, is in the Canary Islands.

Bananas are affected by various diseases and pests. The most serious and widespread of these are Sigatoka (*Cercospora musae*) and Panama disease (*Fusarium oxiosporum f. cubense*) which are now prevalent in most producing regions in Latin America as well as in Africa. Both of these are fungus diseases. Sigatoka attacks the leaves of the plant and is spread by airborne spores. It can be controlled by spraying every two to four weeks. This treatment is expensive but essential for the production of marketable fruit of uniform quality.

Panama disease is caused by a soil organism. Once plants are infected, there is no known way to save them. The Gros Michel banana, which is so desirable because of its uniform high quality and good shipping characteristics, is highly susceptible to Panama disease. In some producing areas, such as Brazil and Africa, the production of Gros Michel has been discontinued in most commercial zones, although Gros Michel is the principal type raised in the British Cameroons. Varieties resistant to Panama disease, such as Cavendish, have been planted instead. The Cavendish has to be sprayed to protect it against Sigatoka.

Under the conditions described, commercial banana production has been carried on most successfully on relatively large plantations, with a high degree of management skill, scientifically trained staffs, a heavy capital input, close co-ordination with transport facilities, and extensive and efficient marketing organizations. These characteristics differentiate the international banana industry sharply from the small plantations which produce bananas for local consumption. To date, commercial production in the Western Hemisphere has surpassed that of other regions in its organization and in the uniform high quality of the fruit delivered to consumers. But there does not appear to be any essential reason why the technology and the organization of the African producing areas should not approach that of the Latin American industry sometime in the future.

There are certainly more immediate problems facing banana producers in Latin America than African competition. Most of these call for changes in technology or management in one way or another. First, there are the problems which result from the Panama disease. This has already made banana-growing a transitory enterprise so far as most small-scale producers are concerned. As the soil in banana-producing regions becomes more thoroughly infested with the disease spores, the grower must either move to new land or else inundate his old fields for several months to eliminate the fungi. This treatment requires large amounts of capital as well as a nearby source of water. The decline in production in many of the old banana areas may be attributed to Panama disease. Furthermore, the same fate lies in store for the present areas unless a new and cheaper method of control is developed.

Secondly, there is a need for educating the smaller producers in methods of controlling Sigatoka. Proper methods of spraying are already well known but are not always used. Such control is essential in order to produce fruit acceptable in the international banana trade. Considerable amounts of capital are required here as well, although not so much as in the case of Panama disease.

A third problem of considerable importance, especially for the small-scale producer, is that of transporting the fruit to the port. This involves both the extension of smooth, paved roads or of railways, and also the training of producers and labourers in methods of handling the fruit in order to avoid injuring it.

A fourth problem, which is highly important in some areas, is how to utilize fruit that fails to pass inspection for shipment. Cases are reported in which over 50 per cent of bananas hauled long distances over rough roads have been rejected as unfit for export when they arrive at the side of the ship. Of course, this type of loss can be materially reduced by improving highways and handling methods. Nevertheless, there is usually an appreciable percentage of rejection of undersized or slightly damaged bunches which might be used to manufacture dried banana products or puree, or even for livestock feed, in addition to bunches that can be disposed of locally. This involves both technological problems and also questions

[46] Bananas require a deep fertile soil, preferably alluvial loam. They are rather exacting in their demand for a temperature of at least 23°C (73°F) and prefer a relatively narrow range of temperature with about 2000 mm of rainfall well distributed throughout the year. The producing area should be free from strong winds, which cause serious damage by blowing down the heavy plants and fruit.

of capital supply in developing dehydrating plants or other facilities.

Trends in commercial production

Since pre-war years there have been quite diverse trends in banana production in various countries, due, in some cases, to the opening-up of new lands. In others, banana-growing has been rendered unprofitable by spread of Panama disease or Sigatoka. Taking world commercial production as a whole, the level of production in 1952-56 was above that of pre-war by some 10 or 12 per cent. Table 18 shows exports from the principal commercial producing countries. Data on total production are not very accurate or reliable, and for the present purpose exports from producing countries can be taken as indicating general production trends.

Table 18

BANANAS: EXPORTS FROM PRINCIPAL PRODUCING COUNTRIES

(Annual averages, thousands of 50-lb stems)

Principal exporting country or region	*1935-39*	*1947-51*	*1952-55*
Latin America[a]			
Brazil	9,366	6,975	8,920
Colombia	7,475	4,773	8,056
Costa Rica	4,569	14,277	15,741
Ecuador	1,920	6,422	21,173
Guatemala	8,405	9,207	7,066
Honduras	11,723	14,051	13,573
Mexico	13,103	4,141	1,959
Panama[b]	9,779	8,136	8,559
Guadeloupe, Martinique	3,146	4,352	5,432
Jamaica	13,042	2,868	6,015
Other	9,124	4,980	3,273
TOTAL	91,652	80,182	99,767
Africa			
EEC dependencies			
Belgian Congo	73	316	1,048
Eritrea, Italian Somaliland	983	491	1,493
French Cameroons	907	1,395	3,056
French Guinea	1,882	1,859	4,434
Ivory Coast	517	756	
TOTAL	4,362	4,817	10,031
Other Africa			
Canary Islands	5,319	6,919	7,624
Nigeria, British Cameroons	2,337	2,195	3,610
Other	457	445	751
TOTAL	8,113	9,559	11,985
TOTAL AFRICA	12,475	14,376	22,016
Asia and Oceania	6,122	926	2,300
WORLD TOTAL	110,299	95,484	124,083

Source: United States Department of Agriculture, Foreign Agricultural Service, *Foreign Crops and Markets,* various issues, and unpublished statistics provided by the Department.

[a] Including Caribbean dependencies of European countries.

[b] Including Canal Zone.

Exports from the Western Hemisphere, including United Kingdom and French dependencies, averaged 91.7 million stems per year during 1935-39. After a sharp war-time contraction, exports recovered to 80.1 million in 1947-51 and then continued to rise to 99.8 million in 1952-55 (104 million in 1955). The outstanding recent development in the banana trade in the Western Hemisphere was the rapid development of production in Ecuador, from 1.9 million stems exported per year in pre-war years to over 26 million in 1955. Costa Rica increased its exports from 4.6 million stems per year pre-war to 15.7 million in 1952-55. Brazil, Colombia and Panama recovered to approximately their pre-war level of production. But Mexico was unsuccessful in controlling the Sigatoka and Panama diseases and its exports fell off from 13.1 million stems pre-war to 4.1 million in 1947-51 and to 2.0 million in 1952-55.

For Latin America as a whole it may be said that the commercial banana producers demonstrated their ability to maintain their level of production, under prevailing price and demand conditions and with what they know about disease control.

African banana exports, taken as a whole, increased from 12.5 million standard 50-lb stems in the pre-war years to 22 million in 1952-55. Exports from the dependencies of the EEC countries, however, increased more rapidly than those from other areas, rising from 4.4 million to 10.0 million.

The most striking increase in banana exports occurred in the Belgian Congo, but shipments from this region in 1952-55 amounted to only 1.0 million stems. Exports from the French Cameroons trebled between pre-war and 1952-55, and those from French Guinea and the Ivory Coast rose from 2.3 million to 4.4 million stems. Exports from Italian Somaliland increased about 50 per cent under Italian encouragement. In addition, bananas imported into Italy are handled by a monopoly which strongly favours those produced in the Italian dependencies.

Outside of the EEC dependencies, the principal African sources of export bananas are found in the Canary Islands and the British Cameroons. Exports from these areas have also been increasing but not at so rapid a rate as in the dependent regions just mentioned.

Bananas are widely grown in tropical Africa for local consumption. Many of them are of the plantain type and are produced for cooking. But high grade soils are not widespread and transport facilities are often lacking from potential producing regions to the ports.

Imports into EEC countries

In 1955, 53 per cent of the world's banana exports were consigned to the United States, 21 per cent to members of EEC, and 17 per cent to other countries in Europe. A summary of the EEC countries' imports is shown in table 19 for 1934-38, 1947-51 and 1952-56.

The total banana imports of the EEC countries before the war averaged 341,000 tons per year. In the post-war period, they recovered to 263,000 tons in 1947-51 and then continued to rise to 565,000 tons, in round numbers, in 1952-56. In the post-war period imports from the African dependencies of the EEC countries recovered more quickly than those from other sources, and in 1952-56 amounted to 154,000 tons, while imports from other African areas were only 20,000 tons. The possibilities of expanding European markets for Latin American bananas are indicated by the increase of such imports, from 60,000 tons pre-war to 224,000 tons in 1952-56. In fact, by 1956 imports into the EEC from Latin America amounted to 349,000 tons. Of this amount 277,000 tons

went to the Federal Republic of Germany and included 103,000 tons from Colombia, 111,000 from Ecuador and 34,000 from Guatemala.

Table 19

BANANAS: IMPORTS INTO COUNTRIES OF THE EUROPEAN ECONOMIC COMMUNITY

(Annual averages for selected five-year periods, in tons)

Importing country and source	*1934-38*	*1947-51*	*1952-56*
Belgium-Luxembourg	22,371	36,596[a]	46,956
Latin America	n.a.	15,401	34,880
EEC African dependencies	n.a.	6,674	7,450
Other Africa	n.a.	—	—
Other countries	n.a.	14,521[a]	4,626
France	170,878	171,145	263,747
Latin America	6,887	580	—
EEC African dependencies	58,949	80,863	104,880
Other Africa	40,932	3,094	3,418
Other countries[b]	64,110	86,608	155,449
Germany (post-war Federal Republic)	119,775	35,929	185,606
Latin America	33,315	18,133	165,718
EEC African dependencies	35,747	5,803	6,656
Other Africa	29,681	7,120	12,688
Other countries	21,031	4,873	544
Italy	19,202	9,362	39,457
Latin America	—	55	162
EEC African dependencies	19,154	8,094	34,182
Other Africa	47	969	3,546
Other countries	1	245	1,567
Netherlands	31,259	9,981	29,466
Latin America	19,335	4,366	23,645
EEC African dependencies	33	331	566
Other Africa	1,325	1,799	82
Other countries	10,566	3,485	5,172
Grand total	341,114[c]	263,013	565,232
Latin America	59,537[c]	38,535	224,405
EEC African dependencies	113,883[c]	101,765	153,734
Other Africa	71,985[c]	12,982	19,734
Other countries	95,708[c]	109,732	167,358

Source: ECLA, on the basis of national statistics and others listed in the appended Note on Statistical Sources.

[a] 1948-51 averages.

[b] Chiefly from Guadeloupe and Martinique.

[c] Excluding Belgium-Luxembourg; grand total including Belgium-Luxembourg is 363,485.

n.a. = Data not available.

Belgium and Luxembourg also materially increased their imports from Latin America. In 1952-56, they imported 47,000 tons, more than double the pre-war figure. Of this amount 35,000 tons came from Latin America. The Netherlands, on the contrary, slightly reduced its imports but three-fourths of them came from Latin America.

The pattern of France's banana imports is strikingly different. That country increased its consumption of bananas by 55 per cent. But out of 264,000 tons per year in 1952-56, 105,000 tons came from dependent territories and 155,000 tons from other areas, mostly from Guadeloupe and Martinique. Virtually none in the recent past, and only little in the pre-war period, came from Latin America.

Italy, as already mentioned, has been encouraging the production of bananas in Italian Somaliland. Its imports in 1952-56 amounted to 39,000 tons. This was double the imports in pre-war days, but only 162,000 tons came from Latin America as against 34,000 tons from Somaliland. Somaliland is shortly to become independent of Italy. The exact status of imports from Somaliland into EEC areas after independence is not clear. Member States have, however, declared themselves willing to invite Somaliland to join the EEC.

The prospects for Latin America

It seems quite probable that Latin American banana producers will encounter increasing competition from the African dependencies as organization of the Common Market progresses over the next 12 or 15 years. It is not clear, however, whether the absolute volume of Latin American banana exports to these countries will be reduced. On the contrary, the rapid increase in Europe's banana imports since the war suggests that there is still room for expanding their consumption in many countries.

The long-term GATT projection of international commodity trade anticipates a 70 per cent increase in Western European imports of fruits and vegetables, consisting largely of bananas and citrus fruits, between 1953-55 and 1973-75.[47] This projection is based on an income elasticity of 0.8, i.e., a 10 per cent increase in *per capita* income would be accompanied by an 8 per cent increase in expenditure on the components of the import class in question. Assuming that the same considerations are applied to the EEC countries as to Western Europe (OEEC countries), the minimum that could be expected of Latin American banana exports to EEC would be that they should remain at their present level of 224,000 tons and the maximum would be the maintenance of their share (39 per cent) in total EEC banana imports, which would represent 374,000 tons by 1973-75. Even this broad range may not correspond to actual facts since the pattern of banana consumption varies in the different EEC countries and since retail prices in these countries are not likely to be comparable even after the introduction of the common tariff.

Evidence that there is, in fact, a fairly high degree of elasticity in the demand for bananas is shown by the rapid increase in the imports effected by the Federal Republic of Germany and the United Kingdom since the Second World War. The wide divergence in the consumption rate as between members of EEC also suggest that there are opportunities for raising the rate in countries that have imported the fruit on a small scale in the past.

About two-thirds of the total EEC imports of bananas from Latin America in 1952-56 went to the Federal Republic of Germany, where they enter at present free of import duties. Even at this rate of importation, *per capita* consumption of bananas in that country was slightly less than half as great as was that of the United States in 1955.[48] France's total banana imports were slightly greater than those of the Federal Republic of Germany, and the *per capita* consumption was about two-thirds as great as in the United States. Italy's banana imports were only one-fifth as great as the Federal Republic's, and *per capita* consumption was far below that in any of the three countries just mentioned. From

[47] *International Trade 1956*, op. cit., page 31.

[48] Based on data on banana imports in *Banana Exports Continue Upward Trend*, United States Department of Agriculture, Foreign Agricultural Circular, 12 September 1956.

these figures, it may be inferred that there is a large potential demand for this product in Europe. But the extent to which such demand will be filled will depend on the cost of bananas to consumers, the purchasing power of the consumers, the availability of competing fruits and the general patterns of consumption.

The agreed duty on bananas imported into the Common Market area at the end of the transition period will be 20 per cent *ad valorem*. Under the Rome Treaty, the Federal Republic of Germany is to be allowed to continue to import bananas duty free up to a quota of 90 per cent of 1956 imports, less the quantities coming from dependencies, until the end of the second stage of transition. This figure for 1956 is specified in a protocol to the Treaty as 290,000 tons. During the third stage the quota is to be 80 per cent of the base figure, and after the transition period it is to be 75 per cent. Gradual imposition of the 20 per cent duty on imports above the quota would tend to increase the cost to the consumer and thus discourage further increase in banana consumption in the Federal Republic.

In Italy, the present import duty on bananas is 36 per cent. Lowering it to 20 per cent will encourage banana consumption. But this may help Italian Somaliland rather than Latin America. With Italian policy favouring development of Somaliland, and with all bananas imported into Italy handled by a national monopoly, banana consumption in Italy is likely to depend on political as much as on economic considerations. France will, no doubt, continue to obtain the greater part of its bananas from its own African dependencies and from Guadeloupe and Martinique.

There is a considerable elasticity in the potential demand for bananas in the EEC area. But the growth of banana consumption over the next fifteen years cannot be measured without knowing the degree to which consumers' incomes will in fact be raised and also what the effect will be of the various influences now restricting their use.

On the supply side, there is an obvious opportunity to produce more bananas in the EEC dependencies in Africa. Conditions there may not be as favourable as in some of the Latin American regions. Nevertheless, there are already European-owned plantations producing for export in French Guinea, the Ivory Coast, the French and British Cameroons and in the Belgian Congo. Furthermore, some time will yet be required to determine whether increasing production in these African areas will fully cover the increased consumption in the EEC countries, or whether Latin America will also continue to benefit from it. It is at least clear that there will be stronger African competition than in the past.

5. *Cotton*

Value of trade

For the period 1952-56 cotton imported by the six members of the EEC was valued at an average of $797 million per year, as is shown in table 20. Of this amount, $256 million worth of cotton was imported by France, $237 million by the Federal Republic of Germany, and $160 million by Italy. Latin America shipped to the EEC countries cotton valued at $153 million, or 19 per cent of the total. Four Latin American countries delivered cotton worth an average of more than $10 million per year. These were Mexico, Brazil, Peru and Nicaragua, in order of magnitude. Considering the values involved, it is clear that the cotton trade is one which deserves attention.

Table 20

RAW COTTON: VALUE OF IMPORTS INTO COUNTRIES OF THE EUROPEAN ECONOMIC COMMUNITY, 1952-56

(Annual averages in thousands of dollars)

	EEC total	*Federal Republic of Germany*	*France*	*Italy*	*Belgium-Luxembourg*	*Netherlands*
Total imports	797,053	237,290	256,506	160,297	81,589	61,371
Source of imports:						
Latin America	152,707	73,767	27,239	13,667	26,601	11,433
Argentina	4,547	843	279	133	2,324	968
Brazil	39,756	18,813	10,220	7,651	1,897	1,175
Mexico	59,260	30,726	7,982	4,567	12,515	3,470
Nicaragua	12,808	8,903	185	257	1,542	1,921
Paraguay	2,913	927	255	27	1,327	377
Peru	28,098	10,111	8,091	757	6,214	2,925
El Salvador	3,112	1,967	227	205	321	392
Africa						
EEC dependencies	53,178	8,822	31,866	16	12,094	380
Other Africa	140,761	40,878	52,978	37,500	4,310	5,095
Other regions	450,407	113,823	144,423	109,114	38,584	44,463

Source: ECLA, on the basis of national statistics and others listed in the appended Note on Statistical Sources.

Under the Rome Treaty, cotton is to enter the European Common Market free of import duties. Thus, the Latin American producers will be in as favourable a position as any other producers, including those in the EEC overseas dependencies.

In addition, it is probable that, with the development of a large free-market area, consumer income in the six member countries will increase to some degree, generating greater demand for textile products than at present.

Cotton growing countries would therefore seem to have no reason for serious apprehension regarding their European markets unless the African dependencies should materially increase their cotton production in competition with present established cotton growers elsewhere. The probability of such a development is analysed below.

Production trends

A long-term projection by GATT indicates that, from 1953-55 to 1973-75, there is likely to be an increase of 45 per cent in the output of textile products in Western Europe and of 67 per cent in North America.[49] But it is pointed out that the proportion of synthetic fibres used in making such products has been rising by about 2 points per year since the war and now stands at about 35 and 20 per cent of total fibre consumption in the United States and Europe, respectively. Assuming that this trend continues, virtually all of the increased fibre consumption in 1973-75 would be accounted for by the synthetics, and there would be but little need for increased production of such natural fibres as cotton, wool or silk.

On the other hand, some authorities question the continuance of this trend at its recent rate. They point to the sharp increase in world cotton exports and consumption since cotton prices dropped in early 1955. If cotton prices remain at competitive levels, they reason, this fibre may continue to hold a large, if not the largest, share of the market for textile fibres. It is clear, however, that prices would have to decline further if there were any material increase in cotton production.

Another influence that will affect the volume of cotton production is technology. The development of new and better cotton varieties, improved methods of cultivation and of controlling diseases and pests and the more extensive use of mechanized equipment all affect cost-price relationships and will influence the marginal level of cotton production in each area. This subject, however, goes beyond the scope of this study. For the present, only general production trends can be reviewed and a brief analysis made of the advantages and disadvantages of the regions principally concerned from the standpoint of cotton growing.

Trends in cotton production since 1935-39 are shown in table 21. From this period until 1952-56 cotton production in Latin America increased 53 per cent, from an annual average of 3,073,000 to 4,706,000 bales. Most of this increase is accounted for by the rapid rise in production in Mexico, although Argentina, Nicaragua, and El Salvador also expanded their output by large percentages.

At the same time, the EEC dependencies in Africa increased their cotton production by 80 per cent, from 242,000 to 440,000 bales. But it should be noted that their 1952-56 production was still less than one-tenth as great as that of Latin America, and less than one-sixth as great as the rest of Africa, including Egypt and Sudan. The percentage expansion in Latin America and that in the dependent territories both exceeded the 22 per cent rate of growth for the world as a whole and the 12 per cent increase in the United States.

It does not seem likely that cotton production in the EEC African dependencies will prove a very serious threat to Latin America in the near future. Most of the cotton in the dependent areas is produced in the Lake Chad region and in the eastern part of the Belgian Congo. It is probable that more land will eventually be irrigated in the less humid parts of French Equatorial Africa and in French West Africa, where the climate is suitable for cotton. But little cotton is likely to be produced in the humid regions of West Africa. High rainfall and a warm climate in the southern parts of French West Africa and Equatorial Africa make it difficult to control weeds and insects which thrive under these conditions. It seems likely that cotton expansion in central and western Africa will depend chiefly on the progress of irrigation in areas with moderate rainfall.

Cotton exports are summarized in table 22. For the world as a whole it will be noted that exports are only about one-third as great as the amounts produced. Most of the difference is, of course, attributable to the consumption of cotton in the countries where it is grown.

Table 21

COTTON: PRODUCTION IN SELECTED FIVE-YEAR PERIODS[a]

(Thousands of 480-lb bales, net weight)

	1935-39	1947-51	1952-56
	(Annual averages)		
Latin America			
Argentina	288	513	560
Brazil	1,948	1,532	1,540
Mexico	333	883	1,652
Nicaragua	9	20	143
Paraguay	111	52	54
Peru	377	345	480
El Salvador	9	29	96
Others	127	182	474
TOTAL	3,073	4,455	4,706
United States	13,097	13,603	14,666
Africa			
EEC dependencies			
Belgian Congo	171	212	231
French Equatorial Africa	41	115	153
French West Africa	27	25	56
Italian Somaliland	3	..	..
TOTAL	242	352	440
Other Africa			
Egypt	1,885	1,673	1,627
Mozambique	32	117	144
Nigeria	35	73	133
Sudan	247	306	434
Uganda	280	271	290
Others	97	103	180
TOTAL	2,576	2,543	2,808
TOTAL AFRICA	2,818	2,895	3,248
Europe	146	173	459
USSR (in Europe and Asia)	3,417	3,040	..
Asia and Oceania	9,009	6,731	9,887
WORLD TOTAL	31,560	30,897	38,485

Source: United States Department of Agriculture, Foreign Agricultural Service, *Foreign Crops and Markets,* various issues, and unpublished statistics provided by the Department.

[a] Reported in or converted to the equivalents of bales of 480 lb net for crop years beginning 1 August in which the major portion of the crop was harvested. Totals include estimates for minor producing countries not shown separately.

[49] *International Trade, 1956,* op. cit., pages 27-28.

Exact comparisons cannot be made throughout tables 21 and 22, because the years do not correspond exactly in the first and third periods. In addition, during the last two periods the United States was accumulating large stocks of cotton rather than exporting its surpluses. In the period 1947-51, however, the years do correspond and some rather interesting comparisons are possible.

Table 22

COTTON: EXPORTS BY COUNTRIES OF ORIGIN

(Thousands of bales of 480 lb net, for marketing years beginning 1 August)

	1934-38	1947-51	1952-55
	(Annual averages)		
Latin America			
Argentina	133	71	133
Brazil	1,065	731	849
Mexico	105	592	1,306
Nicaragua	3	11	128
Paraguay	41[a]	42	48
Peru	337	274	394
El Salvador	[b]	14	66
TOTAL	1,683	1,749	2,956
United States	5,296	4,596	3,250
Africa			
EEC dependencies			
Belgian Congo	133[a]	202	203
French Equatorial Africa	35	115	148
French West Africa	22[a]	8	18
TOTAL DEPENDENCIES	190	325	369
Other Africa			
British East Africa	334[a]	323	398
Egypt	1,747	1,470	1,432
Mozambique	25[a]	121	155
Nigeria	40[a]	49	133
Sudan	257	335	384
TOTAL OTHER AFRICA[c]	2,413	2,327	2,565
TOTAL AFRICA[c]	2,603	2,652	2,934
Asia			
India	(2,746)	287	289
Pakistan	(—)	873	881
Iran	80	38	166
Turkey	84	191	296
Syria	12	63	262
TOTAL[c]	3,192	1,522	2,064
Other countries[d]	116	731	1,260
WORLD TOTAL	12,892	11,250	12,464

Source: United States Department of Agriculture, Foreign Agricultural Service, *Foreign Crops and Markets*, various issues, and unpublished statistics provided by the Department.

[a] Calendar year average.
[b] Less than 500 bales.
[c] Including other areas not shown separately.
[d] Mostly USSR.

The United States was the world's largest cotton producing nation. But because of its large domestic market, this country exported only 34 per cent of the cotton it produced in 1947-51. Asian countries, with their large populations and relatively small cotton crops during these disturbed years, exported only 23 per cent of their cotton, and in fact some of this was traded within the same region. Latin America, with a relatively smaller population as compared with its cotton production and only a moderately developed textile industry, exported 39

Table 23

RAW COTTON:[a] IMPORTS INTO COUNTRIES OF THE EUROPEAN ECONOMIC COMMUNITY

(Annual averages for selected five-year periods, in tons)

Importing country and country or origin	1934-38	1947-51	1952-56
Germany (post-war Federal Republic)[b]	271,703	167,137[c]	259,833
Latin America	89,120	8,120[c]	90,755
Brazil	53,758	4,050[c]	23,278
Mexico	6,033	1,267[c]	37,565
Peru	17,602	2,113[c]	11,309
African EEC dependencies	3,776	1,804[c]	10,227
Other Africa[d]	43,465	15,664[c]	39,380
Other countries	135,342	141,550[c]	119,471
France	267,858	237,787	278,769
Latin America	22,290	26,263	30,093
Brazil	15,636	17,664	12,167
Mexico	1,105	6,169	8,618
Peru	1,955	1,455	8,084
African EEC dependencies	6,136	27,272	40,004
Other Africa[d]	52,518	39,176	50,189
Other countries	186,913	145,076	158,482
Italy	152,381	187,369	167,630
Latin America	7,447	25,079	16,929
Brazil	3,935	14,296	10,500
Mexico	602	6,052	5,329
Peru	748	1,620	353
African EEC dependencies	1,327	395	642
Other Africa[d]	27,488	32,842	32,372
Other countries	116,119	129,052	117,688
Belgium-Luxembourg	109,631	94,692	94,981
Latin America	8,410	16,505	34,040
Brazil	5,753	5,046	4,046
Mexico	41	5,636	15,059
Peru	5,753	5,107	6,795
African EEC dependencies	27,490	21,622	15,199
Other Africa[d]	3,645	3,528	5,080
Other countries	70,090	53,038	40,662
Netherlands	50,065	55,947	69,330
Latin America	6,864	8,813	14,111
Brazil	3,855	4,023	1,708
Mexico	55	2,236	4,201
Peru	1,243	1,624	3,176
African EEC dependencies	2,050	1,986	429
Other Africa	1,806	3,067	4,892
Other countries	39,344	42,081	49,898
Totals	851,638	742,932	870,543
Latin America	134,131	84,780	185,928
Brazil	82,936	45,079	51,699
Mexico	7,836	21,360	70,772
Peru	27,301	33,279	37,981
African EEC dependencies	40,779	53,079	66,501
Other Africa	128,922	94,277	131,913
Other countries	547,808	510,797	486,201

Source: ECLA on the basis of national statistics and others listed in the appended Note on Statistical Sources.

[a] German imports include some carded and combed cotton. French imports include small amounts of seed cotton converted to raw basis.
[b] Pre-war German cotton imports from "other countries" were largely from the United States.
[c] For Germany, a four-year average was used, 1948-51.
[d] "Other Africa" includes the following amounts of cotton imported from Algeria, in tons: 1934-38: France 79, Germany 8, Italy 2; 1947-51: France 432, Italy 13; 1952-56: France 1935, Germany 82, Belgium 18.

per cent of its output. Both the EEC dependencies and other African cotton producers exported in this period 92 per cent of the cotton they produced, since they do not yet have large textile industries. Under these conditions, if cotton production in Africa expands, a high proportion of the increase may be expected to enter directly into world trade in competition with cotton from other regions.

Imports into EEC countries

In spite of population growth and active industries during the past few years, the EEC countries imported only 871,000 tons (4 million bales) of cotton per year in 1952-56 as compared with 852,000 tons (3.9 million bales) in the five pre-war years. This represents an increase of only two per cent in imports, although the population had grown by one-sixth. The explanation is undoubtedly related to the shift in textile types and to the spreading use of synthetic fibres.

The imports into the present EEC countries from Latin America rose from 134,000 tons (616,000 bales) per year pre-war to 186,000 tons (856,000 bales) in 1952-56, with the gain going mostly to Mexico, Peru and some minor producers, such as Nicaragua. At the same time EEC imports from the African dependencies rose from 41,000 tons per year to 67,000, with France taking 40,000 tons and Belgium 15,000 tons in the most recent five years. Offsetting these increases in cotton purchases, there were declines in imports from other cotton producers especially the United States.

Prospects for Latin America

It has been shown that cotton consumption in the EEC countries has grown little during the past twenty years. Furthermore, in its projection of international trade, GATT concludes that most of the increase in textile production from 1953-55 to 1973-75 will be based on larger amounts of synthetic fibres.[50] Other authorities believe this forecast to be unduly pessimistic. For one thing, the 1955 drop in cotton prices stimulated considerably more demand. Furthermore, the cotton textile industry may be expected to develop some new products. In addition, there are other industrial uses for cotton apart from its use in wearing apparel. Nevertheless, it cannot be said that the prospects for increased utilization of cotton are very favourable, unless prices remain at their present level or decline even further.

Although most of the area of the EEC dependencies in Africa is not very conducive to cotton growing, there are opportunities for cotton production using irrigation in the medium-rainfall zones around Lake Chad and probably in some other sections as well. Therefore, as such irrigation progresses, the current growth in cotton production is likely to continue in the dependent territories as well as in Latin America. Even though cotton production in the dependencies is still relatively small, the competition it offers is likely to be felt by the other producers during the next couple of decades.

[50] *International Trade*, op. cit., page 27 *et seq.*

6. *Sugar*

The value of trade

The position of the EEC countries is different as regards their supplies of sugar, on the one hand, and of coffee, cacao and bananas, on the other. The latter three commodities are produced only outside Europe, which is, therefore, entirely dependent on imports. Sugar, on the other hand, is produced in large quantities in Europe from beet. Consequently, imports are designed to supplement local production or are intended in some cases, merely for re-export. Sugar production in the EEC countries in the crop year 1955 amounted to 4,952,000 tons and, in 1956, to 4,183,000 tons. Sugar imports in the calendar year 1956 were 897,000 tons, but in the same year, following a good beet crop in 1955, 827,000 tons were exported.

The value of the EEC sugar import trade is shown in table 24. Total sugar imports for 1952-56 averaged $123 million annually in round numbers. Of this, Latin America contributed $53 million. France imported $22 million worth of sugar from its dependencies of Martinique and Guadeloupe, and a similar amount from Réunion. Little sugar is produced in the dependencies of the EEC countries on the continent of Africa.

Table 24

SUGAR: VALUE OF IMPORTS INTO COUNTRIES OF THE EUROPEAN ECONOMIC COMMUNITY

(Values in thousands of dollars, annual averages for 1952-56)

	EEC total	*Federal Republic of Germany*	*France*	*Italy*	*Belgium-Luxembourg*	*Netherlands*
Total imports	123,300	27,746	60,589	2,554	7,168	25,243
Source of imports:						
Latin America	52,554	15,616	12,693	585	5,470	18,190
Brazil	1,271	—	350	—	183	738
Cuba	46,186	14,014	12,258	553	4,626	14,735
Dominican Republic	2,732	681	63	—	502	1,486
Africa	22,234	—	22,136	92	—	106
EEC dependencies	149	—	139	10	—	—
Other Africa	22,185	—	21,997[a]	82	—	106
Other regions	48,412	12,131	25,759[b]	1,877	1,698	6,947

Source: ECLA, on the basis of national statistics and others listed in the appended Note on Statistical Sources.

[a] Chiefly from Réunion.

[b] Including $22,521,000 from Martinique and Guadeloupe.

Among the Latin American sugar producers in 1952-56, Cuba shipped $46 million worth of sugar to EEC countries, the Dominican Republic $2.7 million, and Brazil $1.3 million.

Since the pre-war years there has been a pronounced increase in net exports of sugar from the Western Hemisphere, as is shown in table 25. From pre-war to 1952-56 there was a very slight decrease in net shipments to Europe as a whole. The EEC countries, however, in contrast with other parts of Europe, achieved a considerable measure of self-sufficiency in sugar supply. In 1935-39, as is shown by the table, net imports into these countries were, roughly, 765,000 tons of sugar per year as compared with only 196,000 tons in 1952-56. Thus, the expanding beet sugar output in the EEC countries has tended to reduce the demand for imports from Latin America.

Table 25

SUGAR TRADE BETWEEN PRINCIPAL PRODUCING AND CONSUMING COUNTRIES

(In thousands of tons, annual averages for selected periods)

	Exports			*Imports*		
	1935-39	*1948-51*[a]	*1952-56*[a]	*1935-39*	*1948-51*[a]	*1952-56*[a]
Latin America						
Cuba	2,605	5,346	5,057	—	—	—
Dominican Republic	436	437	577	[b]	[b]	[b]
Peru	299	287	409	[b]	—	[b]
Chile	—	—	—	128	174	211
TOTAL LATIN AMERICA	3,440	6,332	6,396	248	364	393
Other Western Hemisphere						
Canada	2	3	2	440	552	590
British Caribbean territories.	552	666	926	7	7	8
United States[c]	84	106	62	2,722	3,255	3,595
Guadeloupe, Martinique	102	75	165	3	3	5
TOTAL WESTERN HEMISPHERE	4,180	7,182	7,551	3,422	4,181	4,591
Europe						
EEC countries						
Germany (post-war Federal Republic)	—	—	2	505	585	285
France	238	223	530	368	270	355
Italy	18	[b]	[b]	24	65	16
Belgium-Luxembourg	109	114	128	144	89	60
Netherlands	59	130	116	147	273	257
EEC Total	423	467	776	1,188	1,281	972
United Kingdom	367	726	728	2,235	2,147	2,453
TOTAL EUROPE[d]	1,649[e]	1,795[f]	2,053	4,019[e]	4,294[f]	4,432
Africa						
EEC dependent territories						
Algeria	[b]	[b]	[b]	83	118	161
French West Africa	—	—	—	23	41	76
Réunion	75	89	161	[b]	—	—
Other dependent territories	20	4	7	4	5	10
TOTAL DEPENDENCIES	96	93	168	110	164	247
Other Africa						
Morocco	10[e]	25	25	180[e]	185	285
Mauritius	283	423	495	—	—	—
Union of South Africa	214	54	142	1	3	1
TOTAL AFRICA[d]	800	710	949	509	621	983
Asia and Oceania, Total	3,701	1,722	2,512	2,208	1,415	2,602
WORLD TOTAL	10,473	12,826	13,228	10,158	12,268	12,825
TOTAL EEC DEPENDENCIES	198	168	333	113	167	252

Source: ECLA, on the basis of national statistics and others listed in the appended Note on Statistical Sources.

[a] Preliminary figures for 1951 and 1956.
[b] Less than 500 tons.
[c] Excluding trade between the United States, Hawaii, Puerto Rico and United States territories.
[d] Including other countries not shown separately.
[e] Less than five-year averages for Austria, Czechoslovakia, Japan, Morocco, Poland and Spain.
[f] Estimates based on known imports into Czechoslovakia, German Democratic Republic, Hungary and Poland.

Production trends

Since the Second World War, from 60 to 65 per cent of the world's sugar supply has consisted of cane sugar produced in tropical and sub-tropical regions. The remainder has been produced from beet in the temperate zones, chiefly in Europe and the United States. Some Latin American sugar producers have feared that the formation of the European Common Market may stimulate production of cane sugar in the African dependencies. But consideration should also be given to the possibility of increased production of beet sugar in the EEC countries themselves, if their agricultural development plan, yet to be developed, should raise the efficiency of European agricultural production.

Sugar cane requires a warm growing season and a relatively rich soil. For highest sugar yield, however, it is desirable that the weather be relatively dry and slightly cooler, but without frost, for a period shortly before the harvest than during the main growing season. These conditions are approximated in some parts of the African dependencies. But in most of the lowlands of this region temperatures tend to remain uniformly warm. Furthermore, there is a tendency in most African regions for rain to fall rather erratically. Consequently, most of the French and Belgian dependencies are not particularly suitable for sugar cane, except for some territory in the Belgian Congo. There is, however, heavy sugar production on Réunion, and conditions for sugar cane are believed to be favourable on the east coast of Madagascar. Sugar cane production might be increased here and in some other limited areas for the benefit of the EEC countries.

Since the pre-war years there have been many improvements in the technology of producing sugar. From 1935-39 to 1952-56, world sugar production rose 46 per cent (see table 26). Production in Latin America almost exactly doubled, with all of the six major producers participating in the increase. At the same time, there was a rise of 65 per cent in sugar output in Western Europe, a 14 per cent rise in Asia and Oceania and 71 per cent in Africa. In the latter case, however, the principal increases were in Egypt, the Union of South Africa, and Mauritius. Only Réunion showed a pronounced increase among the EEC dependencies. In the dependencies on the African continent sugar production expanded from 28,000 to 39,000 tons. While this represents a relatively large percentage rise, it still leaves absolute production at a very low level, and tropical Africa still remains a sugar deficiency area.

It is evident that the growth in sugar production will continue. A survey of expansion plans in various countries early in 1957 showed that at least 70 new sugar mills are to be built in the Far East, increasing production in that area by about one-third.[51] The Middle East is to add 17 new mills, and Africa has plans for an additional nine. Europe is planning five more mills. North America is building or remodelling five. South America will have 12 more mills than in 1950 when reported plans are completed. Of the new mills planned in Africa, one is to be built in French Equatorial Africa and one in the Belgian Congo. These two will have a combined capacity of 25,000 tons of sugar. The other African mills are to be widely distributed over other parts of the continent, but only the two mentioned are to be in the EEC dependencies.

[51] *World Sugar Mill Developments*, United States Department of Agriculture, Foreign Agricultural Service, Foreign Agriculture Circular, FS 1-57, 18 February, 1957.

Table 26

SUGAR[a]: ANNUAL AVERAGE PRODUCTION FOR SELECTED FIVE-YEAR PERIODS

(Thousands of tons)

Country or region	*1935-39*	*1947-51*	*1952-56[b]*
Western Hemisphere[c]	9,853	15,113	16,578
Latin America[c]	5,464	10,144	10,945
Argentina	463	625	715
Brazil	753	1,460	2,200
Cuba	2,888	5,967	5,028
Dominican Republic	446	498	694
Mexico	320	680	887
Peru	403	464	660
Guadeloupe, Martinique	113	96	182
United States, Puerto Rico and Hawaii	3,587	3,940	4,255
Europe[c]	6,605	7,187	9,320
EEC countries	2,379	2,925	4,369
Germany (post-war Federal Republic)	554	738	1,210
France	978	1,042	1,471
Italy	376	518	911
Belgium-Luxembourg	235	291	358
Netherlands	237	336	419
Western Europe, total	3,950	4,726	6,531
Eastern Europe, excluding USSR	2,655	2,461	2,788
USSR (in Europe and Asia)	2,505	1,996	3,385
Africa[c]	1,175	1,487	2,011
EEC dependencies	110	130	194
Belgian Congo	13	15	17
Madagascar	15	13	22
Réunion	83	102	172
Other Africa[c]	1,065	1,357	1,817
Egypt	151	194	284
Mauritius	290	420	517
Union of South Africa	452	526	728
Asia and Oceania[c]	5,756	4,306	6,583
India	1,182	1,351	1,818
Indonesia	1,095	240	711
Philippines	960	694	1,156
Taiwan	1,125	485	808
Australia	811	839	1,166
WORLD TOTAL	25,894	30,088	37,877
TOTAL DEPENDENT TERRITORIES	222	226	397

Source: ECLA, on the basis of national statistics and others listed in the appended Note on Statistical Sources.

[a] Centrifugal sugar for crop year indicated.

[b] Including preliminary figures for 1956.

[c] Including other areas not shown separately.

Imports into EEC countries

A summary of the imports of sugar into the EEC countries is given in table 27. Of the annual average of 933,000 tons imported in 1952-56, 504,000 came from Latin America, with Cuba by far the most important source. About 100,000 tons came from Africa. There were substantial imports by France from Martinique and Guadeloupe. An appreciable part of the reported trade, however, consists of shipments of sugar from one country to another within Europe. France, the Federal

Republic of Germany, and the Netherlands were all large importers, while Italy has imported very little sugar.

Table 27

SUGAR: IMPORTS INTO COUNTRIES OF THE EUROPEAN ECONOMIC COMMUNITY

(Annual averages for selected five-year periods, in tons, raw basis)

Importing country and source	*1934-38*	*1947-51*	*1952-56*
Germany (post-war Federal Republic)	14,531	502,806	246,913
Latin America, total	4,494	298,069	161,617
Cuba	1,659	289,420	145,612
Africa, EEC dependencies	—	—	—
Other Africa	—	9	—
Other countries	10,037	204,728	85,296
France	363,482	243,674	351,800
Latin America, total	151,388	125,865	100,686
Cuba	90,428	100,233	95,194
Africa, EEC dependencies	8,278	—	25,129
Other Africa	76,709	36,504	74,503
Other countries	127,107	81,305	151,482
Italy	16,617	61,389	18,441
Latin America, total	257	34,976	2,145
Cuba	253	31,046	1,975
Africa, EEC dependencies	967	2	1
Other Africa	313	15	—
Other countries	15,080	26,396	16,295
Belgium-Luxembourg	133,399	92,567	59,634
Latin America, total	96,096	88,223	50,045
Cuba	57,271	79,445	39,950
Africa, EEC dependencies	7,403	2,679	—
Other Africa	—	—	—
Other countries	29,900	1,665	9,589
Netherlands	138,832	233,598	256,037
Latin America, total	55,556	224,245	189,875
Cuba	32,737	197,599	150,052
Africa, EEC dependencies	—	—	—
Other Africa	—	—	—
Other countries	83,276	9,353	66,162
Totals—EEC imports	666,861	1,134,034	932,825
From: Latin America	307,791	771,378	504,368
Cuba	182,348	697,743	432,783
Africa, EEC dependencies	16,648	2,681	25,130
Other Africa	77,022	36,528	74,503
Other countries	265,400	323,447	328,824

Source: ECLA, on the basis of national statistics and others listed in the appended Note on Statistical Sources.

Prospects for Latin America

It was said above that natural conditions in most of the dependent areas of Africa are not highly favourable to sugar cane. It is possible that the large prospective increases in production elsewhere will discourage further expansion in this region, thus averting one possible source of competition for Latin America.

In a long-term projection of international primary commodity trade made by GATT, it was estimated that the population would increase 12.5 per cent in Western Europe and 26 per cent in North America between 1953-55 and 1973-75.[52] It is assumed that there will be an appreciable increase in *per capita* income in Western Europe as well as in North America. This may be expected to lead to greater consumption of the more palatable and refined foods, including sugar. Each 10 per cent increase in *per capita* income is assumed to lead to a 5 per cent expansion in food consumption and to a consumption of sugar greater by 2 per cent in Europe and by over 3 per cent in North America. This would seem to provide an outlet for such expansion in sugar production as is foreseeable in the near future.

An influence in the contrary direction is the continued support which the European countries give to their beet sugar industry by means of tariff protection and quotas and other import restrictions. When those indirect subsidies are counted, beet sugar production appears to be much more expensive than would the purchase of cane sugar. It is possible that the European Governments may not be willing to continue this production indefinitely at its present level. On the other hand, the EEC organization is committed to the development of a programme for encouraging and stimulating agriculture in its member countries. There are appreciable opportunities for increasing agricultural productivity in Europe, and sugar beet output may well be affected.

Briefly, there is in prospect a continued growth of demand for sugar, and this seems likely to be greater in North America than in Europe. At the same time, the increased numbers and capacity of sugar factories already planned can fulfil consumption requirements for several years in the future. There is not at present any serious reason to expect that Latin American sugar exports will be threatened by competition from Africa in the near future. There is more reason to be concerned about EEC plans and policies in Europe itself, and about the growing volume of production in other parts of the world.

7. *Copper*

On the basis of available information, the creation of a European Common Market need not react adversely on the prospects for future Latin American copper exports. As in the past, Chilean, Peruvian and Mexican copper shipments will, in the aggregate, continue to receive their major stimulus from the United States rather than the EEC market. Growing levels of industrial production in either of these markets, and especially in the former, should be far more important to Latin America's copper trade than the institutional arrangements consequent upon the Rome Treaty.

International copper developments

Three important developments have characterized the international copper industry during the present century. First, there has been a substantial growth in copper supply and demand, exceeded only by aluminium among the five non-ferrous metals.[53] By 1956, for example, world mine production had increased to a record level of more than six times that of 1900, reflecting in turn the extensive use of copper in electrical, construction, transport and similar industries, whose output is particularly stimulated by high and growing levels of income and economic activity. Secondly, there has been a fairly narrow geographic concentration as regards the origin and con-

[52] GATT, *International Trade, 1956*, op. cit., pages 17-35.

[53] In order of recent importance: aluminium, copper, zinc, lead and tin. See *Metal Statistics 1956, Metallgesellschaft Aktiengesellschaft*, Frankfurt, Germany, 1956, table II. Throughout this section, data exclude the USSR.

sumption of copper, with mines in North America, Chile, Northern Rhodesia and the Belgian Congo long accounting for over 80 per cent of primary copper production, on the one hand, and the United States, United Kingdom and EEC Europe for 80 per cent or more of copper consumption, on the other[54] (see tables 28 and 29). Thirdly, copper prices have fluctuated widely over the short term, with post-1946 prices rising rapidly to an unprecedented peak of 47 cents per pound by early 1956, followed thereafter by a sharp decline to under 30 cents at present[55] (see table 30). From 1947 to early 1956, copper-aluminium price developments, in terms of both level and stability, favoured the latter metal and helped to stimulate its growing substitution in many copper-using industries. Conversely, by late 1957 price relationships should moderate the incentives for such substitution.

Trade channels

Tables 28 and 29 shows that traditionally, with the United States as a key exception, the major copper-consuming areas import the bulk of their needs, and most large producers export the bulk of their output. One important segment of the resulting international trade in copper, namely, the flow from Africa and Latin America towards the EEC countries, will be discussed below.[56]

Value of trade

Although copper shipments represented less than 4 per cent of Latin America's primary commodity exports in 1952-56, their value reached the substantial level of approximately $370 million annually during that period.

[54] Since the Second World War, two significant area shifts may be noted. Africa produced 19 per cent and Latin America 23 per cent of world production in 1936-39, whereas almost exactly the reverse ratios obtained in 1952-56. This was due to an 80 per cent increase in African production during these periods, contrasted with an increase of 22 per cent for Latin America. On the consumption side, Europe's share of the total fell from 54 per cent in 1935 to only 37 per cent immediately after the Second World War, subsequently increasing to 46 per cent in 1956, with the EEC countries contributing heavily to this recent recovery.

[55] Despite the generally depressed copper prices between 1919 and 1939, mine production nonetheless increased substantially. This was due mainly to rich new ore discoveries in Canada, Africa and Latin America, and to such important metallurgical innovations as changing from selective underground mining to open-pit stripping of lower-grade disseminated deposits, and the growing use of new flotation processes, which increased the scale of effective operations and average copper recovery rates. From the late 1930's to the initial post-war years, however, new primary mine capacity was added only gradually, as memories of inter-war price trends persisted. Faced with general reconstruction and development needs and such specific stimuli as Europe's interest in non-dollar copper and United States requirements after Korea, investment programmes steadily gathered momentum. Due to the 2-5 years required before full-scale production is reached, the heavy post-war demand pressed steadily upon supplies, and copper prices rose as indicated above. By 1956, however, the new output that had been initiated by earlier investments, especially about 1950, led to the subsequent easing of copper prices.

[56] In simplified terms, the world copper trade follows two broad patterns. One involves the flow from Latin America and Africa to Western Europe and the United States. The second comprises inter- and intra-zonal trade between the United States and Western Europe, mainly of copper in refined and fabricated forms, or as component parts of consumer durables and capital goods. Thus, since part of the United States and United Kingdom imports from Latin America are ultimately re-exported to EEC countries in more finished forms, the *final* impact of EEC direct plus derived demand on the Latin American copper trade is greater than indicated by the direct trade discussed above. For additional data on the world copper trade, including the significance of intra-company trading circuits, see *Non-Ferrous Metals in Under-Developed Countries*, United Nations publication, Sales No.: 1955, II.B.3.

Table 28

MINING OF COPPER, BY PRINCIPAL WORLD REGIONS[a]

(Annual averages, in thousands of tons)

	1936-39	1947-51	1952-56
World	*1,914*	*2,177*	*2,633*
North America	*872*	*1,006*	*1,141*
United States	622	775	869
Canada	250	231	272
Africa	*365*	*465*	*661*
Belgian Congo	124	163	225
Northern Rhodesia	223	260	373
Union of South Africa	11	35	41
Others[b]	7	7	22
Latin America	*433*	*509*	*528*
Chile	341	397	412
Mexico	41	62	57
Peru	36	26	38
Others[c]	15	24	21
All others[d]	*243*	*197*	*303*

Source: United Nations *Statistical Yearbook, 1956*, and United States Bureau of Mines.

[a] Excluding USSR.
[b] Mainly South West Africa and Angola.
[c] Mainly Cuba and Bolivia. During 1947-56, approximately 80 per cent of the amount came from Cuba.
[d] Including Europe, Asia and Australia.

Table 29

WORLD[a] CONSUMPTION[b] OF COPPER, BY PRINCIPAL REGIONS

(In thousands of tons)

	1935	Average 1948-50	Average 1951-55	1956
World total	*1,315*	*2,266*	*2,740*	*3,226*
North America	*565*	*1,229*	*1,366*	*1,461*
United States	524	1,133	1,254	1,329
Canada	41	96	112	132
Europe	*712*	*844*	*1,113*	*1,445*
France	91	109	139	184
Germany[c]	221	132	249	351
Italy	63	54	75	110
Belgium-Luxembourg	27	54	68	73
Netherlands	5	14	26	37
(EEC countries)	(407)	(363)	(558)	(755)
United Kingdom	220	343	395	509
Other Europe[d]	85	138	160	181
All others[e]	*38*	*193*	*261*	*320*

Source: American Bureau of Metal Statistics, *Yearbook*, various issues, and converted from short tons to metric tons.

[a] Excluding USSR.
[b] Including consumption of secondary copper on partial reporting basis, and hence not directly comparable with data on primary copper production.
[c] 1935 data cover pre-war boundaries; post-war data the Federal Republic.
[d] Mainly Sweden, Switzerland and Yugoslavia.
[e] Including Latin America, Japan, Australia and Asia. In 1956, Latin America accounted for less than 2 per cent of this total, mainly representing consumption by Brazil, Chile, Mexico, and Argentina.

Table 30

PRICE RELATIONSHIPS OF COPPER AND ALUMINIUM IN THE UNITED STATES

(Cents per pound, and percentages)

	Copper[a]	Aluminium[b]	Aluminium as % of copper
Average 1935-1939	10.45	20.22	193
" 1947-1951	21.53	16.89	78
" 1952-1956	36.40	22.36	61
1956: January	43.75	24.40	56
March	46.73	24.40	52
June	45.06	25.90	57
September	39.60	27.10	68
1957: January	35.53	25.00	70
March	31.45	25.00	80
June	30.30	25.00	83

Source: American Bureau of Metal Statistics, *Yearbook, 1956,* June 1957, and *Engineering and Mining Journal,* selected issues.

[a] Annual and monthly averages, electrolytic, domestic refineries, New York quotations.

[b] Annual and monthly averages, 99 per cent virgin ingots, New York quotations.

Chile is by far the principal Latin American exporter, accounting for 80 per cent of the area total. As a direct market outlet, the EEC countries have in recent years tended to absorb a relatively small proportion of such exports. Since 1952, for example, only one-sixth of Latin American copper exports by value is estimated to have gone directly to the EEC countries, with over two-thirds going to the United States, and the United Kingdom being the next most important single customer.

Copper imports into the EEC countries from all areas averaged $540 million annually between 1952 and 1956.[57] As may be seen from table 31, the Federal Republic of Germany is the largest importer ($154 million), followed by Belgium-Luxembourg ($142 million) and France ($128 million). The Netherlands and Italy absorbed only one-fifth ($116 million) of the total. A substantial amount of all EEC copper imports originates from developed countries in various finished forms. In fact, intra-EEC trade in copper, together with imports from the United States and the United Kingdom, represented $271 million or almost exactly half of the $540 million involved. The remaining 50 per cent consisted of EEC imports in forms in which Africa and Latin America are more directly competitive with one another, and of this share Africa was the major supplier, exporting $205 million annually to the EEC countries since 1952. Within Africa, moreover, the EEC dependent areas (almost exclusively the Belgian Congo) accounted for $157 million of this total. The balance of EEC imports came from Latin America, averaging $64 million annually since 1952. As might be expected, this trade is of primary interest to Chile, which provided $53 million, or more than four-fifths of all Latin American copper exports to the EEC market. Peru and Mexico shared evenly in the remaining $11 million.

[57] This section and related statistics refer to copper in wrought and unwrought forms, but excludes ores and concentrates. Total EEC copper imports of the latter averaged only $28 million annually between 1952 and 1956, with 96 per cent purchased by the Federal Republic of Germany alone. Latin America provided about $5 million of the $28 million involved, with Chile exporting almost the entire amount.

Table 31

COPPER: IMPORTS INTO EEC COUNTRIES FROM SELECTED AREAS[a]

(Annual averages for 1952-56, in millions of dollars)

	EEC total	Federal Republic of Germany	France	Italy	Belgium-Luxembourg	Netherlands
Total imports	*539.8*	*153.6*	*127.5*	*69.0*	*142.3*	*47.4*
Source of imports						
Latin America	*63.7*	*41.6*	*3.3*	*17.2*	*0.7*	*0.9*
Chile	52.7	35.5	1.5	14.3	0.5	0.9
Peru	5.7	1.6	1.8	2.2	0.2	—
Mexico	5.2	4.4	—	0.7	—	—
Africa	*205.1*	*14.2*	*39.4*	*25.2*	*126.2*	*0.1*
EEC dependencies	156.9	—	31.0	8.0	117.8	—
Other Africa	48.2	14.2	8.3	17.2	8.4	0.1
Other regions	*271.0*	*98.8*	*84.9*	*26.7*	*15.4*	*46.3*

Source: ECLA, on the basis of national statistics and others listed in the appended Note on Statistical Sources.

[a] Including copper alloys, refined and not refined, unwrought; copper and copper alloys—worked bars, rods, plates, sheets, wires, pipes, tubes, castings, and forgings (SITC Code 682). Excluding ores and concentrates, which averaged less than $28 million annually between 1952 and 1956, with 96 per cent imported by the Federal Republic of Germany. Latin America provided around $5 million of this amount, with Chile exporting almost the entire area total.

Volume of trade

After the Second World War, the initial volume of EEC copper imports was far below immediate pre-war levels (see table 32). To a considerable extent this was due to the special situation of Germany[58] and the lower levels of European industrial activity at that time. But in more recent years income and production have risen

[58] Pre-war data apply to boundaries before partition, and post-war refer only to the Federal Republic of Germany. The pre-war period included sizeable imports for military purposes.

markedly in the EEC countries, and in consequence their copper imports expanded by almost 50 per cent between 1947-51 and 1952-56. The Federal Republic of Germany has recorded by far the largest growth and, during the two post-war periods mentioned above, German imports of this metal increased 2½ times whereas in none of the other did the expansion surpass 50 per cent. During 1952-56, therefore, the Federal Republic's rapidly growing industrial output has resulted in its becoming the largest copper importer, absorbing 30 per cent of the EEC total. Belgium, which imports primarily from the Congo and subsequently re-exports copper in refined forms or as manufactures, is second with 27 per cent. France, which also obtains sizeable amounts of copper from the Congo, is third with 22 per cent. The Netherlands and Italy, despite their rapid rates of consumption in recent years, together imported only 20 per cent of the EEC total.

Table 32

COPPER: IMPORTS INTO EEC COUNTRIES[a]

(Annual averages in selected five-year periods, in tons)

Importing country and source	*1934-38*	*1947-51*	*1952-56*
Belgium-Luxembourg[b]	172,233	166,638	178,962
Latin America	254	67	1,245
African EEC dependencies	119,204	117,685	147,616
Other Africa	4,019	5,416	16,146
Other countries	48,756	43,470	13,955
France	124,119	114,295	148,884
Latin America	25,027	30,895	4,235
African EEC dependencies	—	7,686	38,525
Other Africa	3,934	12,769	9,608
Other countries	95,158	62,945	96,515
Germany[c]	228,589	58,660[d]	200,701
Latin America	28,427	6,781[d]	49,289
African EEC dependencies	24,945	228[d]	25
Other Africa	52,863	8,430[d]	18,224
Other countries	122,354	43,221[d]	133,164
Italy	81,096	64,121	87,165
Latin America	21,028	20,133	19,886
African EEC dependencies	4,022	4,567	10,379
Other Africa	20,698	8,230	21,586
Other countries	35,346	31,191	35,318
Netherlands	23,762	43,842	54,388
Latin America	727	151	1,138
African EEC dependencies	85	—	41
Other Africa	243	23	29
Other countries	22,707	43,668	53,180
EEC countries	629,799	447,556	670,100
Latin America	75,463	58,027	75,793
African EEC dependencies	148,256	130,166	196,586
Other Africa[e]	81,757	34,868	65,593
Other countries	324,321	224,495	332,132

Source: ECLA, on the basis of national statistics and others listed in the appended Note on Statistical Sources.

[a] Including unwrought and semi-manufactures, but excluding scrap, ores and concentrates.

[b] Including scrap in 1934, 1947-48.

[c] Pre-war Germany in 1934-38 and the Federal Republic in post-war years.

[d] Average for 1948-51.

[e] Imports from Algeria, averaging approximately 400 tons annually during 1952-56, are included in "Other Africa".

Not only has Africa's share of EEC copper imports risen in the course of time (from 37 per cent in 1934-38 to 40 per cent in 1952-56) but, in addition, this strengthened position has been due to expanded output from their African dependencies, which now provide 29 per cent of such imports in contrast to only 23 per cent before the war. Heavy Congo shipments to Belgium and France have led to this development, and the two latter countries by themselves at present import approximately 95 per cent of all the EEC copper that originates in EEC dependencies in Africa.

By 1952-56, the volume of Latin American copper exports to the EEC countries was almost exactly the same as in 1934-38, with Chilean shipments being slightly below pre-war levels, and the small shortfall being offset by new production from Mexico and Peru. However, since EEC imports from all areas had risen during such time, Latin America's relative position as a supplier declined from 13 per cent in the pre-war to 11 per cent in the post-war period mentioned. At present, as in the past, the Federal Republic of Germany and Italy are the two main customers, absorbing 65 per cent and 25 per cent, respectively, of total EEC copper imports from Latin America during 1952-56.

Thus four main factors are basic in assessing the possible impact of the creation of the EEC on Latin America's future copper trade. First, the six members have experienced a very substantial increase in the volume of their copper imports during recent years. Secondly, Africa has always been a far more important supplier of EEC copper than has Latin America, and due to its rapid post-war growth in production, Africa's share of total EEC imports has been further strengthened while Latin America's has declined. Thirdly, Belgium and France at present account for over 80 per cent of all EEC copper imports from Africa, and the Federal Republic of Germany and Italy for 90 per cent of all EEC imports from Latin America. In the future, Belgian and French imports will undoubedly continue to be largely met by African, especially Congo copper, and even in the absence of a Common Market, Latin America would probably not make significant inroads into this well-established trade. Latin America's prospects in the EEC countries therefore seem likely to depend chiefly upon the Federal Republic of Germany and Italy, and since the EEC common tariff does not involve any area discrimination for unwrought copper imports, Latin America's future position will hinge, not upon the institutional aspect of the Common Market but upon normal commercial considerations of prices and availability. Finally, EEC Europe will probably continue in the future to be the major market for copper from its African dependencies,[59] whereas the United States can be expected to remain the chief outlet for Latin American copper, at least in terms of the initial destination of such exports. The impact of the EEC on Latin American copper, in brief, should not be considered separately from the over-all trends of future United States and European industrial growth and requirements.

Future prospects

Considering that copper consumption has increased appreciably in response to past levels of world income and production, future industrial expansion should continue to induce a rising trend in copper requirements. This seems particularly warranted, since growth pros-

[59] The United Kingdom is also, of course, an important importer of African copper. From 1952-1955, for example, the Rhodesian Federation alone provided about three-fifths of all United Kingdom copper imports by value.

pects are especially favourable for those specific industries from which the major stimulus to copper consumption derives.[60] While lesser-developed countries will contribute to this demand, the current estimates for metal requirements in the United States and Western Europe are of major importance. Recent GATT projections, for example, consider that North America and West European consumption of four basic non-ferrous metals (copper, lead, zinc and tin) will, in the aggregate, expand by almost 50 per cent between 1953-55 and 1973-75 (see table 33). Even if it is assumed that copper shares only linearly in this expansion, the resultant trend would still compare favourably with past periods when copper consumption was increasing substantially.[61] The same source, moreover, assumes that the North American and West European import volume will grow faster, i.e, by over 60 per cent in the next 20 years. Although imports are shown on a net basis, and copper is not individually projected, such estimates and several others recently published all indicate a strong and continued stimulus to consumption and exports of this metal.[62]

[60] As pointed out in *World Minerals and World Peace* (The Brookings Institution, 1942), there has been a close correlation between long-term trends in world industrial and mineral production. During the past quarter century, comparable relationships may be noted between United States and European copper consumption, on the one hand, and the production levels of the durable goods manufactured from them, on the other.

[61] The above 50 per cent increase over 20 years represents a cumulative annual growth rate of 2 per cent. According to available long-term data, combined United States and European copper consumption increased at a cumulative annual rate of approximately 1.8 per cent between 1926-30 and 1950-54.

[62] See especially: (*a*) the list of factors leading to the conclusions that ". . . the long run trend of world copper consumption is unmistakably and strongly upward", in OAS document 5, *Commodity Market Trends*, Volume II, July 1957, and that ". . . copper is expected to be consumed in increasing quantities in the future, following much the same growth pattern as in the past . . .", in *Minerals, Facts and Problems, Copper*, Bulletin 556, United States Bureau of Mines, 1956; (*b*) the expanded level of "free-world" *per capita* copper consumption forecast for 1965 in *Iron Age*, 3 January 1957; (*c*) the estimated doubling of gross United States copper imports from 1956 to 1975, in *United States Imports and World Trade*, Henry Aubrey, Oxford University Press, 1957; and (*d*) the substantial growth in United States and other "free-world" copper requirements by 1975, in *Resources for Freedom*, Presidents Materials Policy Commission ("Paley Report"), 1952, Vol. II. It should be noted, moreover, that some of the 1975 projections in the latter study have already been nearly attained, due to the rapid increase in "free-world" production and consumption between 1952 and 1957.

Table 33

PRODUCTION, CONSUMPTION AND NET IMPORTS OF NON-FERROUS METALS INTO WESTERN EUROPE AND NORTH AMERICA, 1953-55 AND PROSPECTS FOR 1973-75

	Western Europe		*North America*		*Total*	
	1953-55	*1973-75*	*1953-55*	*1973-75*	*1953-55*	*1973-75*
	(million tons copper equivalent)					
Major non-ferrous metals						
Production[a]						
Conventional metals[b] ...	0.27	0.3	1.75	2.3	2.02	2.6
Aluminium	0.32	0.5	1.21	3.0	1.53	3.5
	0.59	0.8	2.96	5.3	3.55	6.1
Consumption						
Conventional metals[b] ...	2.10	3.5	2.66[c]	3.5	4.76	7.0
Aluminium	0.44	1.6	1.07	2.4	1.51	4.0
	2.54	5.1	3.73[c]	5.9	6.27	11.0
Net imports						
Conventional metals[b] ...	1.83	3.2	0.91	1.2	2.74	4.4
Aluminium	0.12	1.1	—0.14	—0.6	—0.02	0.5
	1.95	4.3	0.77	0.6	2.72	4.9
	(Thousands of millions of dollars)					
Value of net imports (f.o.b.) of all non-ferrous metals and ores, including iron and manganese ore	1.01	2.2	0.64	0.8	1.65	3.0

Source: GATT, *International Trade 1956*, page 270 (Geneva, June 1957).

[a] Mine production for the conventional metals, smelter production for aluminium.

[b] Copper, lead, zinc, and tin.

[c] Including about 330,000 tons in copper equivalent added to stocks.

Note: All figures (also values) refer in principle to primary metal only. Scrap is therefore excluded from the trade values.

On the other hand, economic recessions, as well as labour disputes and future tariff and tax measures could all modify the favourable trends indicated above. Since these are uncertain as regards their occurrence or effect, mention will only be made of some technological and price factors which might encourage substitution and copper-saving practices. Regarding the latter, a growing use of secondary recovery scrap and of new alloys will limit the extent to which demand is satisfied by primary copper. As for substitution, the extremely rapid growth in the use of aluminium may well be a most important development moderating the future demand for copper.

Thus, in addition to its rapid rate of expansion over time, the absolute level of aluminium production since 1954 has, for the first time in history, been equivalent to copper in terms of volume. This sharp degree of competition has been due both to the physical characteristics of aluminium, and as mentioned earlier, to aluminium-copper price movements between 1947 and 1956. In view of recent indications of a continued easing of the copper supply-demand balance, however, copper prices could remain well below their 1955-56 levels for some time to come. Certainly the post-war relative price relationships stimulating the replacement of copper by aluminium would be significantly altered if levels of the past year are maintained.

On balance therefore, the long-term prospects for world copper production and trade are favourable. Latin America seems well equipped to maintain its recent shares in both. This is based on the view that Latin America's existing installations and techniques, such as those in Chile, are well advanced in both primary production and processing; that its labour force is large and adequately trained; that its access to the facilities of United States parent companies can make modern technology and new resources available for expansion; and that its production costs compare favourably with those of other important producing areas of the world.[63] Moreover, Latin America's estimated mineral reserves are among the world's largest and have a high ore content. Again, according to a recent survey of current investment programmes for expanding world primary copper production to be completed by 1962, those for Latin America are the largest among the regions tabulated (see table 34).

Table 34

ESTIMATED NET EXPANSION IN WORLD COPPER MINE CAPACITY[a]

(In thousands of short tons)

	United States capacity	*Other capacity*[b]	*World capacity*
1956	1,130	2,183	3,313
1962	1,278	2,666	3,944

Source: Engineering and Mining Journal, February 1957.

[a] Capacity in 1956 plus net new additions to capacity until 1962 inclusive.

[b] Of the 483,000 net addition in this column, Latin America is estimated to account for 204,000; Africa for 146,000; and Canada for 63,000. Within Latin America, individual area shares are as follows: Chile, 79,000; Peru, 120,000; and Nicaragua, 5,000. Within Africa, individual area shares are as follows: Northern Rhodesia, 107,000; Southern Rhodesia, 9,000; French West Africa, 22,000; and Kenya and Uganda, 8,000.

In the United States, growing industrial requirements will press steadily upon domestic copper output, thereby requiring a continued and growing volume of copper imports.[64] The current Latin American investment programmes and a continuation of copper's present technological and pricing characteristics should help to maintain the area's position as the largest single supplier of this important market. As for Europe, the EEC countries have long relied far more on African than on Latin American copper imports. Since no tariffs are to be levied on unwrought copper (refined or not)[65] under the Rome Treaty, normal commercial considerations rather than institutional factors should continue to determine whether the relatively small share that Latin American contributes to the EEC copper trade will rise or fall. This is so particularly since there are no indications of additional new projects under way to expand primary capacity in the African dependencies. Furthermore, the expansion of industrial activity that underlies the entire Common Market scheme is expected to require a continued and substantial growth of EEC non-ferrous metal imports, including copper, over the long term, and Latin America can compete directly for part of this growing market. Even if an expansion of copper mining capacity in the Congo were to take place and if the EEC countries were to obtain a larger share of imports from that colony, their copper imports in various finished forms from the United States are also likely in increase. This in turn would ultimately stimulate additional Latin American exports to the latter country. Directly and indirectly therefore, the same factors that have influenced past demand for Latin American copper, namely growth in the European and especially United States industrial output, should influence future Latin American copper exports to a far greater extent than EEC institutional arrangements.

8. *Prospects for selected commodities*

Development of the European Common Market and the removal of trade barriers between the six member countries should appreciably raise consumer purchasing power. This should lead to an increased demand for each of the six major commodities just discussed. The African dependencies of France and Belgium have already been expanding their output of the five agricultural commodities. The rate at which such production continues to rise will depend on world demand and also on Government policies designed to increase social overhead capital. It will also be influenced by the amount of agricultural research and extension work and of new capital invested in agricultural enterprises, and by the investment in new highways, railways, port improvements and irrigation works. The rate of increase for

[63] See, for example, *ECLA, Economic Survey of Latin America, 1953, and Economic Review of Latin America*, special issue, Bogotá, Colombia, August, 1955, pages 32 *et seq.;* OAS document 5, op. cit.; and Bureau of Mines Publication 556, op. cit. The last named study offers the interesting contrast that ". . . African producers face transportation difficulties and shortages of fuel, power and skilled labour" whereas in Latin America the ". . . vagaries of local government policies" are stressed.

[64] During the decade 1931-40, the ratio of United States copper imports to domestic mine production was 45 per cent. From 1947 to 1956 this ratio increased to 63 per cent. Moreover, three-fourths of all United States domestic production comes from open pit operations ". . . which face eventual termination due to increasingly adverse ratios of waste rock that must be removed to uncover copper ore", as mentioned in the Bureau of Mines Bulletin 556, op. cit. In the event of excessively high imports or low prices, of course, there is always the prospect that stricter measures will be introduced to protect domestic producers. Under existing legislation, for example, a 2 cent excise tax can be levied if copper prices fall below 24 cents per pound.

[65] According to available sources, the only relevant EEC country tariffs now applying to such types of copper, which comprise 90-95 per cent of all EEC imports, are the duties levied by the Federal Republic of Germany and Italy on refined copper of 5 and 1-3.5 per cent, respectively. Tariffs up to 10 per cent may be levied on wrought copper under the Treaty.

each commodity will also be affected by the competition between it and other local crops for the limited supply of labour, land and capital. And it will, of course, be influenced by the speed with which plantation operators and native producers avail themselves of existing technological opportunities.

As regards *coffee,* it is apparent that Latin American producers will encounter increasing competion from Africa. African production has already been rising at a rapid rate and will continue to do so for several years as a result of new plantings. This expansion was already under way before EEC. Furthermore, expansion is also occurring in other part of Africa as well as in the EEC territories.

The bulk of African coffee is of the *Robusta* type which is in less demand than the *Arabica* coffee produced in Latin America. Most of it has been going to Europe, especially to France. But the United States has also become a heavy purchaser of *Robusta* coffee, either for blending or for use in the manufacture of soluble coffees. There is, however, some limit to the percentage of *Robusta* that can be mixed with other types without affecting consumer preference. Consequently, as the supply of *Robusta* increases, its price is likely to decline relatively to that of *Arabica.*

There are some factors which will offset the increasing supply of coffee. In the first place, population is growing in consumer areas, both in Europe and in the United States. Secondly, there has been some shift in consumer habits towards greater coffee consumption in Europe since the end of the Second World War. Thirdly, there is a possibility that the internal taxes levied on coffee in some European countries, such as the Federal Republic of Germany may be reduced, thereby placing coffee within the reach of a greater number of consumers.

Finally, the greater part, though not all, of the Latin American coffee is of a better quality than most African coffee. And the majority of Latin American producers are ahead of most African producers in technology. But there are exceptions to both statements. There are some good African producers and there is some very high quality African coffee. Latin American producers would be advised to make prompt use of the higher yielding new coffee varieties, fertilizers, and newly developed techniques if they wish to keep ahead of their African competitors. Henceforth they will find it even more necessary than before to give close attention to keeping down their costs and simultaneously maintaining the highest possible standards of quality.

Production of *cacao* in the EEC dependent areas has risen by nearly 70 per cent since pre-war years, while there was only a modest increase in Latin America and an actual decline in African areas other than the EEC dependencies. Furthermore, there are new plantings about to bear in the EEC dependencies, and there are apparently vast areas of unused land suitable for cacao. In Ghana and Nigeria, on the other hand, the supply of good cacao land is becoming quite limited. Government authorities in the Belgian Congo and the French territories are making an effort to encourage cacao planting and to teach the Africans improved methods. It would not be surprising if cacao output continued to increase for some years in the future. The expansion was, however, already under way before the formation of EEC.

Here again the Latin American producers will encounter increasing competition. Their best defence appears to be effectively applied research and extension work so that they reduce their costs and increase output under favourable conditions. The greater part of Latin America's cacao is exported to the United States. Only about one-sixth of its production has been going to the EEC countries.

The bulk of the *bananas* produced in the Western Hemisphere is also being shipped to the United States. The Federal Republic of Germany and Belgium-Luxembourg have been the principal EEC importers of bananas from this Hemisphere. France has obtained nearly all its bananas from its African dependencies or from Guadeloupe and Martinique. Italy tries to limit its imports largely to bananas produced in Italian Somaliland. While conditions in the African dependencies may not be as favourable, in general, as in the banana-growing sections of Latin America, there are already large plantations in Africa, and banana exports doubled from 1947-51 to 1952-55. Production in the EEC dependencies and in other African areas accessible to shipping facilities may be expected to expand further. Here, as with coffee and cacao, Latin American producers may expect continuing competition.

On the brighter side of the picture, the rapid increase in banana imports into the United Kingdom and the Federal Republic of Germany after the war indicates a fairly high degree of elasticity in demand. In addition, the impact of the 20 per cent duty on bananas entering the EEC countries will be softened by the arrangement whereby the Federal Republic of Germany may continue to import, during the transition period, a large quota of bananas from sources other than the EEC dependencies.

There is to be no import duty on cotton or unwrought copper imported into the Common Market territory. Thus Latin American exporting countries will be at no disadvantage as compared with producers in the African dependencies. Their principal concern is that production of these commodities may expand in the African dependencies because of the opening up of new mines, in the one case, or of regions favourable to cotton, in the other.

The humid rain forest area of the EEC dependencies is not well suited for *cotton.* But there are less humid areas farther north where it is already being grown, and where production could be materially increased by irrigation. To the extent that such development occurs in the future, these areas would provide additional competition. Production in the EEC dependent territories in the recent past, however, was less than one-tenth as great as in Latin America and less than one-thirtieth that of the United States. Cotton production in Latin America has increased rapidly since pre-war years. The greatest concern now seems to be whether or not the increasing use of synthetic fibres will limit the expansion of cotton production in general, rather than any immediate threat from Africa.

The bulk of Latin American *copper* exports has gone to the United States rather than to Europe and this will no doubt continue to be the case. Much more of the copper imported by EEC countries has come from Africa than from Latin America. The formation of the European Common Market is unlikely to affect even the relatively small share of Latin American copper that is ordinarily sold to EEC countries. Since unwrought cop-

per is to be admitted to the EEC area free of duty, Latin American producers will encounter no institutional impediments to its continued sale to this area. There seem to be no specific EEC projects for stimulating copper production in the African dependencies. The trade should therefore continue to be guided by normal commercial considerations. Nevertheless, there is the possibility that larger direct European investments in the African dependencies will be placed in exploring and opening up new sources of copper and other minerals in that area.

Sugar is produced in large volumes in the EEC countries themselves from beet. Some sugar is imported to supplement these supplies or, in some cases, for re-export. France, however, imports appreciable amounts of sugar from Martinique, Guadeloupe and Réunion. Little sugar is produced in the tropical dependencies of the EEC countries in Africa. Present prospects are for much larger increases in sugar production in other regions, including Latin America, than are likely in Central Africa. Imports into EEC countries from Latin America have not been large, and they will not be encouraged by the 80 per cent import duty to be applied under the Common Market agreement (the present average duty is 84 per cent). To some extent the expansion in sugar production may be balanced by the continued growth of population and of consumer incomes in the importing countries.

In brief, cotton and unwrought copper are to be admitted to the EEC countries free of duty. Latin American producers of coffee, cacao and bananas, however, are likely to encounter increased competition from production in the African dependencies, although this will develop gradually as the terms of the Rome Treaty enter into effect during the next 12 to 15 years. This added competition makes it even more important than in the past for Latin American producers to continue research and to introduce technological improvements promptly in order to keep down their costs and to maintain the best possible quality.

Sugar is in a class by itself. Sugar production has been expanding on a world-wide basis, but on a very small scale so far in Africa. Prospects for increased imports of sugar into the EEC countries do not seem bright, partly because of continued high import duties and partly because the EEC countries produce most of their own sugar.

V. Agricultural policy and development in the Common Market

Attention has been focused on the creation of EEC because it is believed that it may have unfavourable effects on the exports of tropical agricultural commodities from Latin America to the Community consequent upon the preferential treatment to be accorded to similar products from the EEC dependencies in Africa. While this problem has been analysed in Chapter IV, there is also another broad field in which primary commodity competition is likely to be accentuated. The agricultural policy of EEC and the revolution in agricultural technology which has been taking place in Western Europe will have a direct bearing on the world trade in temperate zone products, and, specifically, on the exports of Argentina and Uruguay. It seems likely that the impact on the exports of temperate zone commodities will be even greater than on those of tropical products.

The Rome Treaty outlines the agricultural policy and organization of EEC in considerable detail (articles 38 to 47). A list of the commodities to which this policy applies is given in Annex II of the Treaty and includes among other things: animal and dairy products, cereals, fruits, vegetables, coffee, cacao, sugar, tobacco, vegetable and animal fats and oils.[66] Within two years from the entry into force of the Treaty the Council has to decide what articles are to be added to this already extensive list. The member States are to follow a common policy (article 38). Its purpose is: (*a*) to increase productivity by rationalization in the utilization of the factors of production, particularly labour; (*b*) to ensure thereby a fair standard of living for the agricultural population; (*c*) to stabilize markets; (*d*) to guarantee regular supplies; and (*e*) to ensure reasonable prices in supplies to the consumer (article 39).

To achieve these purposes, there is to be a common organization for agricultural markets. This is to take one of the following forms: (*a*) a system of common rules concerning competition; (*b*) compulsory co-ordination of the various national market organizations; (*c*) a European market organization (article 40).

Measures may be adopted to co-ordinate occupational training schemes, research and popularization of rural economy, which may involve projects or institutions financed jointly. There may be common action to increase consumption of certain products (article 41). The Council of EEC may authorize the granting of assistance in connection with economic development programmes or to protect handicapped enterprises (article 42).

A conference of member States is to be called upon the entry into force of the Treaty to determine general lines of policy, to compare their agricultural policies and to draw up a statement of their resources and needs. Within two years from the entry into force of the Treaty proposals are to be submitted for working out and implementing agricultural policy, including the replacement of national organizations by one of the forms of common organization mentioned in article 40 (article 43).

Since abolition of customs duties between the member States may result in prices likely to jeopardize the achievement of the agricultural policy, during the transition period member States may apply minimum prices to certain products. Below those prices, imports may be temporarily suspended; or may be made conditional on their price being above the minimum price fixed for the product concerned. As soon as the Treaty enters into force, the Council is to establish objective criteria for establishing minimum price systems and for fixing such prices (article 44).

Until one of the forms of common organization provided for in article 40 replaces the national organization, expansion of trade in commodities, for which there exist

[66] Additional information on the trade prospects for these commodities may be found in FAO, Commodity Series No. 29, Agricultural Commodities and the European Common Market (Rome, 1957).

in member States (*a*) provisions designed to guarantee a market for national producers, and (*b*) a demand for imports, is to be pursued by the conclusion of agreements or long-term contracts between member States and exporting countries (article 45).

Thus, it is clear that the Common Market is conceived of as a highly organized and closely controlled one and not as a free market in the ordinary sense. Because of the size and importance of the EEC area, the market organization visualized in articles 38 to 47 should be able to exert a powerful influence in dealings with the countries that export agricultural products. This power becomes greater than ever when account is taken of the progress that has been made in recent years in increasing Europe's self-sufficiency in temperate zone products.

The agricultural revolution in Europe

Since the end of the Second World War there has been a technological revolution in Western Europe that surpasses that of any previous period in that region and compares not unfavourably with the rate of progress in the United States. This revolution is still continuing and will evidently go considerably farther in the next couple of decades. Throughout the twentieth century, United States farmers have rapidly been adjusting their methods to technological and scientific progress. This process reached its most rapid rate during the Second World War in response to economic inducements and to a rapidly declining labour supply. It was this process, together with a series of favourable seasons, that led to the great increase in agricultural production and to the current surpluses of farm products.

In Europe, the farmers' awareness of the new technological opportunities apparently developed during the years of recovery following the war. Progress, however, has been quite unequal as between different countries and regions. Some idea of this may be formed from table 35, which compares various data on land utilization, livestock, horses and tractors, fertilizers and feed used, as between pre-war years and the recent past for the EEC group of countries, the total area of OEEC, and the United Kingdom.

In the OEEC area as a whole, there was an appreciable increase in the land tilled between the pre-war years and 1952-55, an increase in the area planted to cereals, an increase in temporary pasture and a decline in the area of permanent pasture. Not all of these changes in land use are apparent from the figures for the EEC countries alone. To some extent there have been contrary movements as land in some regions is no longer used for marginal production or has been absorbed by cities, highways, or for other non-agricultural purposes. As regards the EEC countries, table 35 shows a 43 per cent annual increase in the combined tonnage of fertilizers used from the pre-war years to 1952-55. The increase for all OEEC countries was 71 per cent and for the United Kingdom it was 180 per cent. Crop yields have also been affected by improved techniques and by better pest and disease control. Larger yields of forage and feed grains have led to increases in the numbers of cattle, especially of milch cows, and of pigs. Bigger crop yields have enabled farmers to use greater amounts of coarse grains as cattle feed to offset reduced imports both of grains and of oilcake.

One of the most far-reaching changes has been in the type of farm traction. Numbers of horses, mules and asses have declined 17 per cent since pre-war years in the EEC area and 67 per cent in the United Kingdom. Offsetting these declines there were increases of over 800 per cent in the numbers of tractors on farms both in the EEC area and in the United Kingdom. Since the substitution of mechanical for animal traction is more recent in the EEC countries, the reduction in the number of horses has not gone as far there as it has in the United Kingdom. As more horses are disposed of, labour formerly expended on them can be shifted to other livestock or to the production of crops for direct human consumption. At the same time, feed formerly used by horses can be shifted to dairy cattle, hogs and poultry. The broad effect of the shift to mechanical traction on farms has been a transfer of the economic effort formerly needed to provide farm traction to the factories that produce tractors and the petroleum refineries that produce fuel.

The farmer will now need to purchase tractors rather than raise colts as draught animals, and he must buy tractor fuel instead of producing forage for horses. The result is that he is more dependent than before on his commercial relationships and more vulnerable to fluctuations in economic activity.

It is apparent that the great increase in productivity and the shift in the use of economic resources on farms will have profound effects on the international trade between Europe and the predominantly agricultural countries such as those of Latin America.

The revolution in agricultural technology is, however, much more than a mere shifting from animal power to tractors. A recently completed study by the Foreign Agricultural Service of the United States Department of Agriculture points out that the post-war expansion of Western European industry and trade has effected agriculture, in many ways.[67] The growth of population and of *per capita* income has stimulated agricultural output. The urban demand for labour has drawn away partly employed persons from rural districts, while increased wages have made it profitable for the farmer to adopt labour-saving methods and appliances. In 1955-56, Western European agricultural production was about 25 per cent above the pre-war level, while population had increased only about 13 per cent. During the late 1940s agriculture made a rapid recovery from the low levels of the war years. This was followed by a further expansion in output of approximately 2.5 per cent per year from 1950 to 1955-56, a remarkable rate for this large area. Furthermore, even though there was new investment in mechanical equipment among other things, it is apparent that much of the increase represents a greater output per unit of total input.

The report[68] draws attention to the rates of expansion in the output of some of the principal products since the mid-thirties. Fruit output has grown 70 per cent, sugar 50, eggs 25, milk 10, principal grains 20 and potatoes 10 per cent. Striking advances have been obtained in the yields of grains per hectare. A 12 per cent increase has been obtained in yields of milk per cow despite smaller feed imports.

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[67] Foreign Agricultural Report No. 102, *Technology and Agricultural Expansion in West Europe*, Foreign Agricultural Service, United States Department of Agriculture, August 1957.

[68] Foreign Agricultural Report No. 102, *Technology and Agricultural Expansion in West Europe*, Foreign Agricultural Service, United States Department of Agriculture, August 1957.

Table 35

SHIFTS IN THE AGRICULTURAL ECONOMY OF EUROPE, PRE-WAR TO 1955

Item	Unit (Thousands)	EEC countries			Total OEEC countries[m]			United Kingdom		
		Pre-war	1948-51	1952-55	Pre-war	1948-51	1952-55	Pre-war	1948-51	1952-55
Population	persons	140,545	153,523[a]	163,685[b]	244,822	267,177[a]	285,020[b]	47,100	49,300[a]	50,900[b]
Agricultural area	hectares	77,904	78,337	78,418	192,094	187,992	187,872	19,552	19,521	19,432[c]
Arable land	"	49,641[d]	47,410[d]	47,798[d]	87,405	90,286	95,436	5,296	7,425	7,246
Land in tillage	"	41,502[g]	39,487	39,333	73,703[e]	74,790[f]	79,373[f]	3,604	5,129	4,826
Temporary grassland	"	6,929[g]	7,923	8,465	13,702	15,496	16,063	1,692	2,296	2,420
Permanent grassland	"	20,480	21,192	21,210	58,492	51,457	46,589	7,588	5,159	5,337
Rough grazings	"	9,783[h]	9,735[h]	9,410[h]	46,197	46,249	45,847	6,668	6,937	6,849
Total cereals	"	24,394	20,903	21,665	40,550	40,154	44,177	2,144	3,281	3,167
Sugar beet	"	653	836	995	983	1,233	1,420	136	171	170
Horses, mules and asses	head	7,244[l]	6,649[l]	5,953[l]	14,906	13,669	12,514	1,305	707	427
Cattle, all	"	39,834	39,617	42,985	75,182	77,587	82,432	8,675	10,286	10,519
Milch cows	"	15,354	16,263	18,042	28,928	30,410	32,333	3,281	3,673	3,678
Pigs, all	"	26,195	23,907	28,634	42,267	36,903	47,326	4,674	3,386	6,028
Poultry	"	266,320	235,117	268,829	473,090	455,401	489,190	91,300	110,617	105,947
Tractors on farms	Units	107	230[j]	1,001[k]	198	598[j]	1,801[k]	50[l]	280[j]	430[k]
Fertilizer used										
Nitrogenous	tons	822	974	1,257	1,002	1,416	1,853	66	202	254
Phosphate	"	1,270	1,327	1,684	1,694	2,123	2,553	178	402	376
Potash	"	1,112	1,307	1,656	1,238	1,779	2,313	74	211	260
Used for feed:										
Total cereals	"	19,832	16,008	21,335	36,853	31,933	41,197	6,464	6,418	8,247
Imported	"	4,988	2,942	4,124	10,706	6,373	8,845	3,789	1,947	2,980
Coarse grains	"	15,906	13,207	17,022	30,867	27,690	35,062	5,528	5,600	6,824
Imported	"	4,289	2,855	3,780	9,817	6,160	7,884	3,649	1,868	2,556
Oilcake, imported	"	2,476	1,407	1,934	5,490	3,243	4,358	1,748	1,029	1,395

Source: Agricultural and Food Statistics, OEEC, Paris, 1956.

[a] For 1947-48.

[b] For 1954-55.

[c] Including arable land and permanent grassland temporarily out of use because of flooding, 20,000 hectares.

[d] For Netherlands, area of orchards included under "Permanent grassland": pre-war 34,000; 1948-51, 26,000; 1952-55, 21,500 hectares.

[e] Including temporary grassland in Belgium and Portugal.

[f] Including temporary grassland in Portugal.

[g] Pre-war data for Belgium-Luxembourg not available.

[h] France and Italy only.

[i] Netherlands, Belgium-Luxembourg animals on farms only. Italy excludes army animals.

[j] For 1948.

[k] For 1955.

[l] Estimated from results of incomplete census taken in 1937-39.

[m] Including Austria, Belgium-Luxembourg, Denmark, Federal Republic of Germany, France, Greece, Iceland, Ireland, Italy, Netherlands, Norway, Portugal, Sweden, Switzerland and Turkey.

Improved plant varieties and growing methods and the application of greater amounts of fertilizer per hectare largely explain the increased crop output. Greater attention is being given to seed testing and certification. Agricultural agencies now give farmers more advice and guidance in the control of pests and diseases and the use of chemical weed-killers is spreading.

In livestock production, greater attention has been paid to breeding, including the use of artificial insemination. In most countries campaigns have been organized for the eradication or control of such diseases as bovine tuberculosis, foot-and-mouth disease, brucellosis and hog cholera.

Agriculture is a complex of many production factors and methods. A change in any one is quite likely to entail eventual readjustment in several other phases before a new equilibrium is established. It is obvious that the introduction of known technological improvements is by no means complete; the continued existence of farms and regions that have lagged behind in the adoption of improved methods, the strong interest that has developed in the minds of farmers and officials and the present momentum of the change, together assure its continuation at a rather high rate.

There is a possibility that the direction of progress may shift. The Department of Agriculture report points out that the growth of productivity may be forced to slow down because of limitations in the absorptive capacity of the market. Imports of temperate zone products such as cereals and oilcake have already been appreciably reduced. It is considered possible that Western Europe may before long produce all of these crops that it needs for its own consumption. This may be a rather optimistic assumption. It may be argued that there are still many European families that could use greater amounts of farm products if they had the purchasing power to obtain them. There will probably be a tendency on the part of the European countries to continue importing from overseas in order to keep markets open for European manufactures. Nevertheless, the supply of farm products might for a time outrun the increase in demand, thus greatly reducing the need for imports. In fact, the volume of production has already been exceeding consumption during the past several years, producing an unfavourable effect on the exports of Argentina, Canada, Australia and the United States. This trend may well continue for some years yet.

The improvement in European farm technology discussed above occurred prior to the formation of the European Common Market. The removal of trade barriers, however, may be expected to speed the readjustment in the use of farm resources in at least three ways. First, the wider markets will open new opportunities to farmers as regards the production of various specialized products. This will make rationalization and readjustment even more advantageous than heretofore. Secondly, the unification of agricultural agencies and their closer co-operation can hardly fail to speed up research and extension work, thereby increasing the need for later readjustment. Thirdly, the strongly centralized agricultural marketing and purchasing agencies foreshadowed in the Rome Treaty, will constitute a powerful asset for this region in the reshaping of agricultural foreign trade.

The prospect thus appears to be that the trade in such temperate zone products as cereals, oilcake, tobacco, meats, dairy products and fruits will shrink still further and that European fruits will compete more strongly with imports. The marked increase in European production of sugar has reduced the market for that product. The growing European population and rising purchasing power promise a growing market for coffee and cacao. Whether the bulk of these products is imported from Latin America, however, will depend on the rate of development in Africa and on how closely its future is identified with that of Europe.

Note on statistical sources

A. SOURCES FOR TABLES ON EEC IMPORT VALUES

1. Coffee (table 9) cotton (table 20), sugar (table 24) and copper (table 31)

1952-55

ALL COUNTRIES: United Nations, Statistical Office, *Statistical Papers, Series D. Commodity Trade Statistics,* vols. II-V.

1956

FRANCE AND ITALY: Organization for European Economic Co-operation, Paris, *OEEC Statistical Bulletins,* Series IV, 1956.

BELGIUM-LUXEMBOURG: Ministère des Affaires Economiques, Institut National de Statistique, *Bulletin Mensuel du Commerce Extérieur de l'Union Economique Belgo-Luxembourgeoise,* December 1956.

FEDERAL REPUBLIC OF GERMANY: Statistisches Bundesamt, *Der Aussenhandel der Bundesrepublik Deutschland,* 1956.

NETHERLANDS: Centraal Bureau voor de Statistiek, *Maandstatistiek van de in-, uit- en Doorvoer per Goederensoort,* December, 1956.

2. Bananas (table 17) and cacao (table 13)

1952-56

FRANCE: Direction Générale des Douanes et Droits Indirects, *Tableau Général du Commerce Extérieur,* annuals and December 1956 monthly issue.

ITALY: Istituto Centrale di Statistica, *Statistica Annuale del Commercio con l'Estero,* annual and December 1956 monthly issue.

BELGIUM-LUXEMBOURG: Ministère des Affaires Economiques, Institut National de Statistique, *Bulletin Mensuel du Commerce Extérieur de l'Union Economique Belgo-Luxembourgeoise,* December issues.

FEDERAL REPUBLIC OF GERMANY: Statistisches Bundesamt, *Der Aussenhandel der Bundesrepublik Deutschland,* December issues.

NETHERLANDS: Centraal Bureau voor de Statistiek, *Maandstatistiek van de in-, uit- en Doorvoer per Goederensoort,* December issues.

B. SOURCES FOR TABLES ON EEC IMPORT VOLUME

1. Coffee (table 12) and cacao (table 16)

BELGIUM-LUXEMBOURG

1934-38

Ministère des Finances de Belgique, Service de la Statistique Commerciale, *Bulletin Mensuel de Commerce avec les Pays Etrangers,* December issues, 1947, and, in part, 1938 and 1948; Ministère des Affaires Economiques, Institut National de Statistique, *Statistique Annuelle du Commerce Extérieur de l'Union Economique Belgo-Luxembourgeoise,* 1949.

1948-56

Ministère des Affaires Economiques, Institut National de Statistique, *Bulletin Mensuel du Commerce de l'Union Economique Belgo-Luxembourgeoise*, December issues.

1951-55 (in part)

United Nations, Statistical Office, *Statistical Papers, Series D. Commodity Trade Statistics* (quarterly), January-December issues.

1956 (in part)

Organization for European Economic Co-operation, Paris, *OEEC Statistical Bulletins, Series IV, Foreign Trade, Belgium-Luxembourg* (bi-annual), January-December, 1956.

FRANCE

1934-38 and 1947-55

Direction Générale des Douanes et Droits Indirects, *Tableau Général du Commerce Extérieur* (annual).

1956

Organization for European Economic Co-operation, Paris, *OEEC Statistical Bulletins, Series IV, Foreign Trade, France* (bi-annual), January-December, 1956.

GERMANY *(post-war* FEDERAL REPUBLIC)

1934-38

Statistisches Reichsamt, *Monatliche Nachweise über den Auswärtigen Handel Deutschlands*, December issues.

1947

United Nations, Food and Agriculture Organization, Rome, *Yearbook of Food and Agricultural Statistics, 1950, Part 2, Trade.*

1948-56

Statistisches Bundesamt, *Der Aussenhandel der Bundesrepublik Deutschland*, part 2 (monthly title varies for 1948-49, showing bi-zonal area data only), December issues.

ITALY

1934-38

Istituto Centrale di Statistica, *Commercio di Importazione e di Esportazione del Regno d'Italia*, vol. I, *Analisi per Merci e per Paesi* (annual—title varies for 1934-36).

1947-55

Istituto Centrale di Statistica, *Statistica Annuale del Commercio con l'Estero.*

1956

Istituto Centrale di Statistica, *Statistica Mensile del Commercio con l'Estero*, December 1956, and (in part) Organization for European Economic Co-operation, Paris, *OEEC Statistical Bulletins, Series IV, Foreign Trade, Italy* (bi-annual), January-December 1956.

NETHERLANDS

1934-38

Centraal Bureau voor de Statistiek, *Jaarstatistiek van den in-, uit- en Doorvoer*, Part 1.

1947-56

Centraal Bureau voor de Statistiek, *Maandstatistiek van den in-, uit- en Doorvoer per Goederensoort*, December issues.

2. Bananas (table 19)

Same as in B above, with the following exceptions and additions:

BELGIUM, FRANCE AND ITALY

United Nations, *Commodity Trade Statistics*, and Organization for European Economic Co-operation, Paris, *OEEC Statistical Bulletins, Series IV, Foreign Trade*, are not included.

BELGIUM-LUXEMBOURG

1947

Food and Agriculture Organization of the United Nations, Rome, *Yearbook of Food and Agricultural Statistics, 1950, Part 2, Trade.*

FRANCE

1956

Direction Générale des Douanes et Droits Indirects, *Statistique Mensuelle du Commerce Extérieur*, December 1956.

3. Cotton (table 23)

Same as in B-1 above, except that the following is not included.

ITALY

1956

Organization for European Economic Co-operation, Paris, *OEEC Statistical Bulletins, Series IV, Foreign Trade, Italy.*

4. Sugar (table 27)

Same as in B-1 above, with the following exceptions and additions:

BELGIUM-LUXEMBOURG

United Nations, *Commodity Trade Statistics*, and Organization for European Economic Co-operation, Paris, *OEEC Statistical Bulletins, Series IV, Foreign Trade, Belgium*, are not included.

FRANCE

1956

Direction Générale des Douanes et Droits Indirects, *Statistique Mensuelle du Commerce Extérieur*, December 1956, and (in part) Organization for European Economic Co-operation, Paris, *OEEC Statistical Bulletins, Series IV, Foreign Trade, France*, January-December 1956.

FEDERAL REPUBLIC OF GERMANY

1949-56 (in part)

International Sugar Council, *Pocket Sugar Yearbook*, 1956.

ITALY

1955 (in part)

United Nations, Statistical Office, *Commodity Trade Statistics*, January-December 1955.

NETHERLANDS

1953 (in part)

International Sugar Council, *Pocket Sugar Yearbook*, 1956.

5. Copper (table 32)

Same as in B-1 above, with the following exceptions and additions:

Yearbook of Food and Agricultural Statistics is not included for any country.

BELGIUM, FRANCE, ITALY, NETHERLANDS

1951-55

United Nations, Statistical Office, *Statistical Papers, Series D. Commodity Trade Statistics* (quarterly), January-December issues.

ITALY

1952-55

Sources in table B-1 for corresponding period are not included.

NETHERLANDS

1953 (in part only)

Sources in table B-1 for corresponding period are not included.

FEDERAL REPUBLIC OF GERMANY

1952-56

Statistisches Bundesamt, *Der Aussenhandel der Bundesrepublik Deutschland*, part 5 (monthly), December issues.

DEVELOPMENT POLICIES AND PROGRAMMES*

HOLLIS B. CHENERY

Professor of Economics, Stanford University, California

INTRODUCTION

In all parts of the world, Governments of the less developed countries have become increasingly concerned with policies to promote economic growth. One of the most popular techniques used for this purpose is the adoption of a development programme, whose function it is to provide a consistent framework for different types of policy. Even where over-all programmes have not been formulated, the extent and diversity of Government intervention in decisions affecting the course of economic activity in the long run—especially in the field of investment—has greatly increased.

The questions raised by this trend in policy, which may be observed in Latin America as well as Asia and Africa, are quite different from the earlier debates over socialism versus capitalism as ideal forms of economic organization. Outside the communist bloc, the advantages of private initiative are widely recognized in even the most socialistically inclined countries. The basic approach of most democratic countries is to limit intervention to those aspects of economic activity where free-market forces do not appear to give the best results. Since present investment determines the future pattern of growth, development policies are primarily focused on the magnitude and composition of investment although they are also concerned with the quality of labour and other productive factors available and with the distribution of income among various social groups.

The purpose of this paper is to examine the grounds for Government policy towards economic growth. It will take up in summary form: (i) defects in the free-market mechanism for determining the best use of resources; (ii) the logical basis for a development policy; (iii) the range of policy instruments used by Governments; (iv) some of the analytical techniques available for formulating development programmes; and (v) some of the problems of executing development policy.

The main theme of this discussion is derived from Tinbergen's pioneering work on economic policy:[1] that the choice of a policy must be made on the basis of objective criteria and its implications tested against those of alternative policies. In earlier views of economic policy, from *laissez-faire* to Marxist, it was assumed that *a priori* theorizing based on very general premises would lead to policy recommendations of general applicability. For the problems that are typically the concern of development policy, however, the practical conclusions that can be reached by *a priori* reasoning seem to be very limited indeed.[2]

The traditional view of economic policy in Western countries is derived from the classical theory of competitive equilibrium, which has been refined over the past century. The main policy implication of this model is that, under static conditions of perfect competition, market forces will tend to bring about the best use of a country's resources in the sense that the greatest total output consistent with individual choices will be achieved. Nobody can be made better off without making someone else worse off. To the extent that this theory is applicable, it follows that Government policy towards growth should be limited to establishing the institutional conditions for perfect competition, controlling monopolies, redistributing income, and providing services which are essentially public in nature. The allocation of resources should otherwise be left primarily to market forces.

The Keynesian revolution of the nineteen-thirties successfully challenged the adequacy of the classical theory for dealing with short-term fluctuations in income and employment, while leaving its conclusions as to resource allocation in the longer run practically unaffected. In nearly all countries, the scope of Government action has been enlarged to include the maintenance of stability in income, prices, and the balance of payments. There has been a corresponding development of macroeconomic analysis as a guide to these policies.

In the past ten years there has been a similar attack on the adequacy of the classical analysis of resource allocation under dynamic conditions. Such writers as Rosenstein-Rodan,[3] Nurkse,[4] Lewis,[5] Prebisch[6] and Myrdal,[7] have pointed out the extent to which the classical

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[1] J. Tinbergen, *On the Theory of Economic Policy*, 1952, and *Economic Policy: Principles and Design*, 1956.

[2] Alternative approaches to policy are discussed in H. Tyszynski, "Economic Theory as a Guide to Policy; Some Suggestions for Reappraisal", *Economic Journal*, June, 1955.

[3] Rosenstein-Rodan, P. N., "Problems of Industrialization in Eastern and South-Eastern Europe", *Economic Journal*, June-September, 1943.

[4] Nurkse, R., *Problems of Capital Formation in Underdeveloped Countries*, Oxford, Blackwell, 1953.

[5] Lewis, W. A., *The Theory of Economic Growth*, Richard D. Irwin, 1955.

[6] United Nations, *Theoretical and Practical Problems of Economic* Growth, ECLA, E/CN.12/221, 1951.

[7] Myrdal, G., *Economic Theory and Underdeveloped Regions*, London, Gerald Duckworth, 1957.

assumptions of equilibrium and perfect competition are not fulfilled in the less developed countries, and the inadequacy of policy recommendations based on the implicit use of the static competitive model. An alternative form of analysis has not yet been developed, however, and in its absence development policy tends to be guided by partial analyses and improvised principles.

The elements of a new approach to development policy are to be found in various places. Tinbergen[8] has provided a logical framework for the analysis, in which the selection of policy instruments and the analysis of their effects are determined by the nature of the problem. In this approach, the classical model is one among several alternatives, each of which can be weighed in terms of the adequacy of its analysis and the workability of its policy implications.

A policy of Government intervention in certain sectors requires an analysis of the economy which can explicitly take into account some of the elements that are lacking in the classical model. It is not sufficient to point out that competitive equilibrium rarely exists; to improve on the results of this assumption it is necessary to determine the nature of the departures from equilibrium and how they affect the optimal resource allocation. Among the tools of economic analysis that may be used for this purpose, inter-industry analysis is one of the most promising, since a development programme must take into account the inter-relations among industries, the composition of final demands, and the availability of labour, capital, and other resources. The use of the input-output model for this purpose has been discussed in an earlier issue of this *Bulletin*.[9] In Part II of this paper, I will explore the possibilities of using the more powerful techniques of linear programming, which have the advantage of determining an equilibrium set of prices for the economy as well as a consistent set of production levels. Even where it can not be applied in detail for lack of adequate statistics, this method provides an improved theoretical framework for development policy.

The real test of the new development policies will only come from experience with their operation over a long period of time. Few countries have accumulated much experience of this type, and what there is has not been systematically analysed. Since my discussion is mainly concerned with the theoretical aspects of development policy, I will have only a few scattered comments to offer on this subject. This does not imply a belief that policy conclusions can be derived mainly from theoretical considerations, or that non-economic factors may not outweigh the economic considerations, but merely reflects the limits of this essay.

[8] Op. cit.

[9] "The Input-Output Model", *Economic Bulletin for Latin America, September* 1956.

I. Approaches to development policy

Economic policy consists of the actions taken by Governments to influence economic activity. Policies are customarily identified by the economic variables which they are designed to influence: price policy, employment policy, trade policy, monetary policy, etc. Because of the inter-dependence of the economic system, however, any such classification is at best approximate and may be misleading because the secondary effects of a given action on other parts of the economy may be quite significant.

Development policy is concerned with the rate of growth and future structure of the economy. It is therefore distinguished from policies aimed at preventing short-term fluctuations in prices, employment, and trade, which may be called stabilization policies. Here again, the dividing line is arbitrary because all short-term measures have some effect on growth rates and the pattern of resource use. The distinction is nevertheless a useful one. The requirements of stabilization limit the alternatives available for development policy by putting restrictions on the total investment, the balance of payments, and the allowable demands for other resources. Within these limits, development policy tries to achieve various long-term objectives, of which the most important is the growth in total income.

In reality, development policy should encompass much more than the part of economic policy just assigned to it. It should be as much concerned with the institutional setting of economic activity and with the quality of management and labour available as with the use made of existing resources. There is, however, some justification in this field for the traditional separation between economic and non-economic factors.[10] Government activities in this broader field are complementary to the more narrowly defined economic policies except as they compete for scarce resources of Government revenue and technicians. The balance among these various types of Government activity will in any case be decided outside of the market sector of the economy, and with less reliance on an economic calculus. For the purposes of this paper, therefore, I will identify development policy with the decisions as to the way in which the supply and use of investment funds (i.e., public and private saving plus foreign investment), foreign exchange, and other scarce resources are to be determined.

As has already been indicted, a central problem of development policy is the adequacy of free market forces in allocating investment resources. This question will be taken up first, before other alternatives are considered.

A. *Defects of the market mechanism in determining investment decisions*

The idealized model of a perfectly competitive economy which is always in equilibrium is the best starting point for a study of resource allocation, even though it may never be approximated in actuality, because its characteristics and effects on resource use can be reduced from a simple set of premises. Even when the assumption of rational planning is substituted for that of compe-

[10] An examination of the inter-relations between economic and non-economic factors is made by Arthur Lewis, *The Theory of Economic Growth*, 1955, and by Gunnar Myrdal, *Economic Theory and Underdeveloped Regions*, 1957.

tition, similar conditions for optimal use of resources can be deduced. This model therefore provides a standard with which actual economic systems can be compared.

Under the assumptions of perfect competition, it can be demonstrated that individual choices of producers and consumers will result in prices which, under static conditions, lead to maximum economic efficiency (a Pareto optimum).[11] Maximum efficiency is a condition in which the welfare of one group cannot be raised without reducing that of another. Since under these assumptions any interference with the price mechanism results in a lowering of the social welfare (unless offset by gains in equity), such interference must be justified by identifiable deficiencies in the working of the price mechanism.

There are three kinds of defects in the free-price mechanism as an instrument for achieving the maximum social welfare. They may be classified as (i) departures from the assumptions of perfect competition; (ii) dynamic causes; and (iii) equity considerations.

(i) *Departures from perfect competition.* Perfect competition assumes complete knowledge of available alternatives by producers and consumers, the absence of obstacles to entry into different occupations or industries, access on equal terms to factors of production, no monopoly positions, etc. All actual economies depart from these idealized conditions to some extent, but in almost all respects the under-developed countries are farther removed from the competitive assumptions than are most developed countries. Information as to consumer and producer demands, alternative productive techniques, factor supplies etc. is less widely available. Entry into some occupations is limited by social factors and by lack of educational opportunities. Access to capital and natural resources is very unequal. This list could be greatly extended, but the examples given illustrate the pervasiveness of the problem. These factors combine to produce a rigid market structure, prevalent monopoly positions, immobile labour and capital, and consequently great inequalities in the returns to labour and capital in different uses.

(ii) *Dynamic effects.* The effects of change are also more important in the less industrialized countries because one or two new plants may double or triple production of a given commodity where they would only constitute a marginal increase in a more industrialized country. In cases of successful development, rates of growth of the industrial sector as a whole are usually high, and in individual branches of industry they are often discontinuous.

The most important of these effects for investment decisions are imperfect anticipations of future demands and of commodity and factor costs. These are particularly important in the production of commodities for use by other sectors and for investment having a long planning and construction period. As a result of uncertainty, risks to private investors in some sectors may be increased and investment resources devoted to less productive uses. Inexperience in certain types of production and aversion to risk act to exaggerate this tendency.[12]

The supply of various skills to the economy is also determined in a very imperfect way by reactions to present prices. Until a certain type of production is established, there may be little demand for some skills, but without them the likelihood of its being established may be much less. Here the lag in adjustment is longer than in the case of investment. In both cases, there may be no tendency to move toward the optimum position.

(iii) *Equity considerations.* There is no demonstrable tendency for competition to reduce inequality in income distribution among economic classes or geographical regions, and it can be argued that in fact it has tended to operate in the opposite direction in the poorer countries. Some form of intervention to reduce income inequalities is an accepted policy in all countries, but here again the problem is more acute in the less developed countries, where regional differences are likely to be of greater importance.[13]

The effect of all three sets of factors is to produce a structure of prices which does not provide the best available guide to resource allocation in a number of sectors. Private investment decisions made on the basis of this price structure often lead to structural disequilibrium, in the sense that productive factors are not used in the proportions in which they are available. Usually, labour is not fully employed or natural resources may be inefficiently exploited for lack of complementary investment. The marginal productivity of investment may be substantially lower than it could be with a better mechanism for resource allocation, either through improved prices or direct allocation.

The factors enumerated above often occur in combination. In countries which have policies for promoting development, the following cases can be identified where intervention in investment decisions is commonly thought to be justified:

(i) When there is serious structural disequilibrium in the use of labour, natural resources, or foreign exchange;

(ii) In investment in overhead facilities—power, transport, etc.—which depends primarily on an evaluation of future production patterns and where economies of scale (and monopoly tendencies) are important;

(iii) In the promotion of investment in new types of production, where dynamic factors are particularly important and the risk to private investors may be much greater than with some form of Government co-ordination of investment plans;

(iv) To prevent the establishment of monopolies;

(v) Where export markets are notably unstable and the balance of payments is subject to great fluctuations;

(vi) When it is desired to improve the distribution of income by region or class.

A number of policies that Governments may undertake to offset these defects in the market mechanism do not require an over-all economic programme to guide them. These include control of monopoly, employment services,

[11] This is only a rough statement of the central proposition of welfare economics, which has been much refined in recent theoretical discussion. A good summary of the conditions required for efficient resource allocation is given in Scitovsky, Shaw and Tarshis, *Mobilizing Resources for War*, appendix II.

[12] This set of factors has been discussed by Rosenstein-Rodan, op. cit., and by R. Nurkse, *Problems of Capital Formation in Underdeveloped Countries*, chapter 1.

[13] Myrdal, G., stresses this argument in op. cit., Chapter 3 and 5.

removal of obstacles to entry, and other measures of an institutional nature. Most types of intervention in the price system and measures to anticipate the effects of change do require some kind of analysis, however, in order that they may be consistent.

B. *The logic of development policy*

We need a consistent set of concepts and an idea of their formal properties in order to discuss alternative forms of economic policy. Such concepts have been defined by Tinbergen for the general field of economic policy, and these can readily be adapted to the specific problems of development policy.[14]

To analyse the effects of a given type of Government action, it is necessary to formulate an economic model which states the relationships among the aims of the policy makers, the means which they employ, and their impact on the economy. These terms may be clarified as follows:

(i) *Policy-makers* may be one or several. Initially, it is assumed that the central Government functions as a single policy-maker, but at a later stage it will be necessary to examine the means by which a co-ordinated policy can be achieved when decisions are decentralized.

(ii) The *aims* of any type of policy represent in various ways the ultimate objectives which a society is trying to achieve through a given set of measures. The aims of development policy are almost always multiple, and they may be either *quantitative* (e.g., maximizing national income), or *qualitative* (e.g., improving the distribution of income among regions). The multiple objectives[15] of development policy are one of its most characteristic features—in contrast, say, to stabilization policy—and they often require a more detailed analysis to reveal their inter-relations.

(iii) The *means* of economic policy consist of the measures which the Government may take to achieve given aims. They may be quantitative or qualitative. *Quantitative means* (to be called *instruments*) may achieve the goals of policy *directly*, as by Government production and investment, relief programmes, etc., or *indirectly*, through the reactions of firms and consumers to taxes, subsidies, exchange rates, and other variables. *Qualitative means* comprise changes in the economic structure, such as land reform or anti-trust action, and their effect is both more difficult to determine and less subject to economic analysis. I will be mainly concerned with quantitative means, both direct and indirect.

(iv) *Economic relations* describe the structure and behaviour of the economy. When reduced to mathematical form they become *equations*, which can be variously classified as definitional, technological, behavioural or institutional. For policy analysis, the variables in these equations can be classified as *instruments*, over which the Government has some control; *targets*, which represent the aims of and restrictions on policy; *data*, which are taken as given; and *uncontrolled* (or irrelevant) variables. These distinctions will be clarified in Part II.

(v) An *economic model* consists of a set of economic relations. All economic analysis is based on some kind of model of the economy, although the relations may be stated in terms of functions whose properties are only specified in a general way. The model of a well-functioning *laissez-faire* economy, which is widely used as a basis for policy analysis, is of the latter type.

(vi) *Directives for action* are derived by using a given economic model to analyse the possibilities for achieving stated goals. These guides may be in the form of *targets, priorities, prices,* or other magnitudes which make possible specific choices by those who execute policy. Sometimes the instrument which the Government controls appears as a variable in the model used—e.g., the level of electric power production—but more often the magnitude taken as a policy guide must be translated into a more directly usable form by the agencies which execute policy. (For example, a development programme may require a certain amount of Government revenue, but the tax rates required are to be determined by the fiscal authorities.)

These concepts are quite general in nature. Some further comments may be useful as to their applicability to the analysis of development policy.

1. *The nature of development aims*

Of the ultimate aims which may be achieved by economic means, the following are most commonly taken as the goals of development policy:[16]

(i) Maximum income (or production or expenditure) *per capita* over time.

(ii) Improved distribution of income by regions and social classes.

(iii) Reducing the risk of fluctuation in income due to crop failures, variation in export markets, etc.

(iv) An acceptable limit to unemployment.

The last of these, reduced unemployment, may logically be included as part of an improved distribution of income, but a number of countries recognize full employment as a goal in itself apart from its effect on the distribution of monetary income.

Since consumer choice is recognized as a separate objective in democratic societies, the maximizing of income over time must be subject to the condition that consumers' choices are satisfied at any given level of income. In practice, this involves translating aggregate consumption into its components at foreseeable levels of income and relative prices, and taking these demands as goals for a programme of production. (In theory a more acceptable procedure would be to maximize income subject to specified demand functions, but a practical technique for doing so is not available.) The consumption goals arrived at in this way should not be confused with the ultimate aim of maximizing welfare, for which they serve as an approximate representation, subject to revision in the process of working out an optimum programme.

Factor supplies constitute a second set of restrictions on the programme, whether or not we consider employment or balanced payments to be separate goals. Because

[14] Tinbergen, J., *On the Theory of Economic Policy*, chapters 1-4, and *Economic Policy: Principles and Design*, chapters 1 and 2. Since Tinbergen is mainly concerned with stabilization policies, I have made some modifications in his definitions to fit development policy better. A more general approach to policy is given by R. A. Dahl and C. E. Lindblom, *Politics, Economics and Welfare*, to which reference is made below.

[15] More properly, some of these objectives should be considered as restrictions on the choices available, as indicated below.

[16] Other goals of social action, such as freedom and democracy, will be taken as given.

of the ambiguity in the common usage of the terms "objectives", "goals" and "targets", I will use the neutral term "restrictions" (which has a precise technical meaning in linear programming) to describe all limitations on the size and composition of a development programme. Each such restriction, whether on inputs or outputs, can be identified with an equation in an econometric model.

2. *Instrument variables*

The relations between the actions of a Government and the instrument variables affected by these actions may be more or less direct. The interest rate on the government debt can be directly controlled by the state, as can the income tax rates or the amount of steel produced by a government-owned plant. Other instrument variables, such as the wage rate or the amount of private investment which may result from tax exemption, can only be controlled approximately and within definite limits. Nevertheless, it is convenient to treat all variables that the government may influence as potential instruments and later introduce qualifications as to the nature of this influence. One result of such qualifications is that several instruments may be required to achieve a given result because one cannot bear the full weight of the action needed.

3. *The choice of analytical model*

The choice of model depends on the goals of policy, the instruments to be considered, and the information available. To insure consistency, the values of the instrument variables must either appear in the models used or must be derivable from them. In aggregate models, where the only variables are national income and its components, levels of production and imports in particular sectors are not uniquely determined, and policies depending on particular values of these variables cannot be evaluated. This defect is remedied in input-output analysis, but this model contains no explicit indication of the effect of prices on the levels of production and investment. Prices must either be introduced in supplementary sector analyses, or in the more general framework of linear programming, if they are to be used as instrument variables.

4. *The consistency of targets and instruments*

In general, consistency requires that there be at least as many instrument variables, representing various policy measures, as there are restrictions on the programme. If there are fewer, the system is "over-determined" and there will in general be no feasible solution. If there are more instrument variables than restrictions, some choice of instruments is possible.[17]

The implications of these principles may be illustrated by some examples. In the classical view of policy, with its model of a competitive economy and policy of *laissez-faire*, the economic objectives of the society may be taken as stability in prices and in the balance of payments. The classical policy instrument is the interest rate. Employment is an "irrelevant variable" in Tinbergen's terminology, and the objective of stability may be achieved at the expense of unemployment. If full employment is added as an objective of policy, then at least one additional instrument—such as the level of government expenditure—must be added, and often further instruments are needed because the values required of the first two instrument variables may be unrealistic in practice.[18]

When the objectives of economic development are added to those of stabilization, the number of restrictions on the economy is increased. The possibility of inconsistent policies becomes greater, and hence the greater the need for an explicit analysis of their implications. This is the main function of a programme. Before trying to define this function more concretely, however, I will first survey the instruments commonly used for implementing development policy.

C. *The choice of policy instruments*

There has been little systematic analysis of the relative merits and defects of the policy instruments available to under-developed countries. Since control of international trade is administratively simpler than many other types of policy, there has been a tendency to rely heavily on it as a way of influencing the pattern of domestic production, without recognizing the drawbacks to exclusive reliance on this set of instruments. Colonial areas have been forced to devise other measures, since protection was denied to them, but they have rarely pursued over-all development policies. The need for a greater variety of measures to promote development has now been widely recognized, but there is still inadequate consideration of the range of alternatives available.

In its need to change the pattern of resource use over a relatively short period of time, the promotion of development resembles (in lesser degree) the problem of mobilization for war. The suitability of various instruments for the latter purpose has been widely discussed, and the experience of the United States and other countries has been analysed in some detail.[19] A similar study of the actual effects of development policies is needed before very firm recommendations can be made to the under-developed countries, but some general comments may be in order.

1. *Characteristics of instruments*[20]

Policy instruments may be classified in various ways: by the sectors of the economy on which they operate, by their use of prices or quantities as variables to be manipulated, by the extent to which they can be effectively controlled by the government, by the effect that they have on private incentives and freedom of choice, etc. In table 1 representative instruments are classified according to the extent of their application (general versus specific) and their mode of operation (through prices or quantities). The general instruments act on broad aspects of the economy—the money supply, the government budget, investment, consumption—and are

[17] These statements apply to a linear model and correspond to basic principles of linear programming although they were independently demonstrated by Tinbergen.

[18] See Tinbergen, J., *Economic Policy*, Chap. 4, for further discussion of this case.

[19] See, for example, Galbraith, J. K., "The Disequilibrium System", *American Economic Review*, June, 1947; Scitovsky, Shaw and Tarshis, op. cit., chaps. 2 and 3; Chester, D. N. (editor), *Lessons of the British War Economy*.

[20] An excellent discussion of the characteristics of measures for controlling resource allocation under different institutions is given in Dahl and Lindblom, *Politics, Economics and Welfare*, chapters 14 and 15. The effectiveness of instruments of control is discussed further in Part III.

Table 1

CLASSIFICATION OF POLICY INSTRUMENTS

	Area of policy	Price Variables: Instrument	Price Variables: Variables affected*	Quantity Variables: Instrument	Quantity Variables: Variables affected
General	*Monetary*	interest rate	(1) level of investment (2) cost of production	open market operations	(1) money supply (2) prices
	Fiscal	personal income tax	(1) consumption and saving	Government expenditure	(1) national income (2) price level
		corporate income tax	(1) profits (2) investment		
	Foreign Trade	exchange rate general tariff level	(1) cost of imports (2) price of exports (3) balance of payments	exchange auctions	exchange rates
	Foreign Investment	taxes on foreign profits	level of foreign investment	foreign loans and grants	(1) investment resources (2) exchange supply
	Consumption	general sales tax	consumption	social insurance, relief, other transfers	(1) consumption (2) income distribution
	Labour	wage rates	(1) labour cost (2) profits and investment (3) labour income	emigration and immigration	labour supply
Specific	*Production*	taxes and subsidies price control	(1) profits and production (2) investment	Government production	level of production
				Government research and technical assistance	cost of production
	Investment	interest rates tax exemptions	(1) profits (2) investment by sector	Government investment capital rationing	level of investment
				restrictions on entry	(1) prices and profits (2) level of investment
	Consumption	specific sales taxes	consumption by commodity	Government services (health, education)	(1) consumption (2) income distribution
	Trade	export subsidies	(1) price to consumer (2) profits on domestic production	import quotas and prohibitions exchange controls	(1) level of imports (2) domestic prices
		tariffs	(1) profits and investment		
	Labour	wage subsidy	(1) labour cost and use (2) profits and investment	labour training	supply of skilled labour
	Natural Resources	taxes and subsidies	(1) cost of production (2) rate of exploitation	surveys, auxiliary investment, etc.	rate of development

* All taxes affect Government revenue and saving in addition to the variables cited.

widely used in developed and under-developed countries alike. The specific instruments are applied differentially to individual sectors of the economy, as illustrated by subsidies, tariffs, or Government investment.

To achieve a given effect on production, or use of any commodity, there is a choice between controlling a price and controlling a quantity. In this respect, tariffs are an alternative to quotas, differential interest rates are an alternative to capital rationing, and subsidies to private producers are an alternative to production by the government. These measures differ in their effects on prices and consumer choices, in administrative convenience, in the predictability of their results, and in other respects. A choice between quantity and price variables as instruments must therefore be made by balancing the advantages and disadvantages in each case.

Some of the main issues of economic policy are concerned with the choice between general and specific instruments and between using prices and quantities as control variables. There is a strong case to be made for using general instruments rather than specific ones. The rates of interest, taxation, and exchange are the orthodox means for exerting Government influence in a *laissez-faire* economy. Their immediate objectives are stability in prices and the balance of payments and the prevention of unemployment. Growth is left to free market forces. The manipulation of interest rates and exchange rates allows market forces in each sector to determine where expansion or contraction of production and consumption will take place. These instruments therefore interfere less with the choices of producers and consumers than do measures which discriminate by sector. They also require a less detailed analysis for their use and do not substitute Government judgement of what is desirable for the action of market forces.[21]

The need for specific instruments to supplement general measures derives from the deficiencies in the price mechanism[22] which apply primarily to specific sectors of the economy. When these factors prevent the achievement of a satisfactory rate of growth, the problem is to devise policy measures which will improve on the working of the competitive economy without losing the advantages of private initiative and the automatic adjustment of the price system.[23]

In designing policies for specific sectors, there is an argument for using price rather than quantity instruments which is based on reasoning similar to the case for general over specific instruments. Taxes and subsidies distort the choices open to producers and users of a commodity less than do allocation systems or other quantitative restrictions and hence are conducive to greater flexibility and over-all economic efficiency. Fur thermore, the administrative requirements for price intervention of this type are generally less than for quantitative controls.

Despite the general case in favour of using the price system, there are several situations in which quantitative measures may be needed:

(i) When it is necessary to limit consumption of an essential commodity in short supply (e.g., imported goods), the tax needed to bring about a given reduction in use might result in such high prices that the burden of the reduction would fall on lower income groups. In this case, price controls and rationing may be preferable on welfare grounds.

(ii) Where a minimum increase in production is essential to production in other sectors—as in the case of power, transport and various auxiliary facilities—the price needed to ensure adequate private investment may be too high or the response of private investors too uncertain. In this case, quantitative measures, such as Government investment, may be more efficient because the cost to the society is less or the outcome more predictable.

(iii) In general, where controls are needed for only a short period, as in the case of temporary shortages, it may be desirable to allocate supplies to more essential uses rather than upset the general price structure and distort investment decisions by allowing prices to rise. Quantitative measures are also likely to have more predictable effects in this case.

In these examples, it is the dynamic elements in the situation and the deviation from a desirable income distribution which provide the principal arguments for using quantitative measures of control.

2. *Specific measures for investment allocation*

Although the specific measures listed in table 1 affect both current production and the allocation of investment resources, it is the latter aspect that is crucial for the future course of development. The various instruments affect investment decisions through the availability and cost of primary inputs (labour, natural resources, imported commodities); through the supply of inputs from other sectors (raw materials, overhead facilities); through the demand for output (sales taxes, export subsidies); through profits (taxes, subsidies); and through measures directly related to the process of investment (interest rates, capital rationing, restrictions on entry, direct Government investment). There is therefore a considerable variety of choice between quantity and price instruments and among measures more or less directly related to a particular investment.

The *a priori* arguments concerning some of the principal measures for influencing investment decisions run somewhat as follows:

(i) *Measures of protection.* As indicated earlier, protective devices are perhaps the most common instruments for influencing the pattern of investment. For this purpose, tariffs are generally preferable to quantitative restrictions—quotas, prohibitions, exchange controls, etc. —for reasons already indicated. Quantitative restrictions prevent competition with domestic producers regardless of price, raise prices to users and limit demand, and require an elaborate administrative mechanism and detailed economic analysis to be effective.[24] Quotas also involve a loss of revenue to the Government, as compared with the use of tariffs, unless the profits of importers can be recovered through taxes.

[21] The case for relying primarily on market forces to promote development is given in Bauer and Yamey, *Economics of Underdeveloped Countries*, 1957, Part II.

[22] See Part I, Section A.

[23] See, for example, United Nations, *Measures for the Economic Development of Underdeveloped Countries*, chapter 9.

[24] For these and other reasons, elaborate quantitative systems have recently been dismantled in several Latin American countries—Argentina, Brazil, Chile, etc.

The cases where quantitative measures may nevertheless be needed derive from the principles given in the previous section. In cases of extreme shortage of foreign exchange, tariffs (or devaluation) may be too uncertain in their results and quotas or exchange restrictions may be adopted as emergency measures.

The effect of quantitative restrictions on investment in domestic substitutes for imports or in sectors using imported commodities is generally less certain than that of tariffs. Allocations are subject to variation according to the amount of exchange available, and the profitability of domestic production is harder to determine than in the case of a tariff.

As instruments for inducing investment in new types of production, subsidies may be preferable to either quantitative restrictions or tariffs because the price is not raised above the level of world prices. Total demand is therefore greater and using sectors are not penalized in export markets. The cost of this technique in Government expenditure must be weighed against its benefits, however.

Protection from foreign competitors is only one factor in the expansion of domestic production. Also required are entrepreneurs, capital, skilled labour, raw materials, etc. When some of these are lacking, the restriction only serves to reduce imports and raise prices to consumers. Trade restrictions are therefore a rather uncertain method of directing investment unless combined with other measures affecting factor supply, and they frequently have undesirable secondary effects.[25]

(ii) *Government investment versus incentives to private investment.*[26] Although the arguments concerning trade restrictions are based mainly on economic considerations, the choice between Government investment and incentives to private investors involves social and political factors to a large extent. In countries that do not have strong ideological preferences for either private or Government enterprise, the usual approach is to rely on private investment except in cases where it cannot be expected to work in the public interest (e.g., monopoly) or in which its performance has been demonstrably deficient. Since the reaction of investors to various incentives (tax reduction, guaranteed markets, low interest rates, etc.) is subject to considerable uncertainty, such incentives are more likely to be adequate when a general objective is to be achieved—e.g., import substitution, increase of industrial employment—than when increases in output in specific sectors are required. Because of this uncertainty, the extent to which reliance on private investment is desirable can be determined only by an actual trial of specific measures.

Another alternative for securing investment in given sectors when tax incentives are thought to be inadequate or too costly to the treasury is the intervention of a Government agency as entrepreneur but not as a long-term producer. This may be done through development corporations, which sell their investments to private enterprises as they become profitable, or through mixed corporations, in which the role of the Government declines as the enterprise becomes established.

The assumption underlying all these measures is that it is bad for the Government to continue permanently as a producer in most fields. There is a widespread view (shared by the present writer) that the lack of incentives to efficiency in Government operations makes private operation preferable even where conditions are not favourable to the initial undertaking of the investment by private enterprise. In the absence of more objective evaluations of the experience with Government and private enterprise in various countries, it is impossible to support this conclusion empirically, and it is by no means universally held among democratic Governments. In countries such as India, for example, an attempt is made to ascertain the relative merits of public and private investment in specific fields rather than starting from this premise. Even in these cases, however, the sectors that are chosen for Government investment are limited in number and characterized by specific structural features (economies of large scale production, importance of the product, tendency to monopoly, etc.).[27]

The possibility of attracting foreign investment adds a further element to the problem. To the argument against Government investment must be added the loss of additional investment resources, while the argument against private foreign investment must include the removal of profits from the economy and the future burden on the balance of payments. A purely economic evaluation would probably weigh the value of the additional investment resources and managerial talents more heavily than the cost of obtaining them (particularly where there are unemployed labour and natural resources because of lack of these factors), but the decision is infrequently made on purely economic grounds.

3. *Quantitative analysis and choice of instruments*

The preceding discussion has been entirely in qualitative terms, which at best leads to the establishment of certain cases to which particular policies apply. The identification of an actual situation with the relevant case often depends on the results of quantitative analysis. Such factors as the extent of the excess demand for imports, the future amount of unemployed labour, the magnitude of the shift in resources needed in particular sectors, and the importance to the rest of the economy of a given investment, can only be determined from such an analysis. The initial study of development possibilities should be designed to permit a choice of policy instruments in different fields. Once this has been done, the long-term programme can be formulated in more specific terms which take account of the instruments chosen.

The importance of a quantitative analysis for the choice of policy instruments will be determined in part by the presence or absence of the following factors:

(i) Economies of scale in production;

(ii) The possibility of imports and exports;

(iii) The use of the product in other sectors of production;

(iv) The predictability of demand.

[25] See Nurkse, R., *Problems of Capital Formation in Underdeveloped Countries*, chapter V, "Commercial Policy and Capital Formation".

[26] There is actually a whole series of choices ranging from Government ownership and operation through Government contracting, public utility regulation, and subsidization. See Dahl and Lindblom, op. cit. pages 9-11. Here I indicate only some of the principal alternatives used in the under-developed countries.

[27] See United Nations, *Some Problems in the Organization and Administration of Public Enterprises in the Industrial Field*, (ST/TAA/M/7) United Nations Publication, Sales No.: 1954, II.H.1, chapter 1.

In the production of consumer goods, the main objective of the development programme is likely to be a certain degree of substitution of domestic production for imports, but the choice of sector can be left to market forces. Quantitative analysis may be needed to determine the amount of employment and exchange saving which should be aimed at in the consumer goods industries, but not to determine the choice of sector.[28]

At the other extreme, the amount and distribution of investment in overhead facilities must be determined entirely from a quantitative analysis of future production because the alternative of imports is not available and output is needed to permit investment and production in other sectors. In some cases the choice between public and private investment will also depend on the amount of output required.

Choices among policy measures in the intermediate goods sectors are more affected by the outcome of the quantitative analysis than are those in consumer goods because demands derive from the planned outputs of the using sectors. Economies of scale are also more prevalent, and there is thus more interdependence among investment plans in earlier and later stages. While imports provide alternative source of supply for many intermediate goods, some investments will not be undertaken unless there is a domestic supply of materials available. To ensure the carrying out of several interconnected projects, Government intervention in some form is likely to be necessary because the risk to private investors would be too great. Investments centring on steel production—ore, transport, power, iron and steel, fabricating—provide a good example. Once the initial investments have been made, however, most of them will prove suitable for private ownership and operation.

The advantage to the economy—in terms of the social productivity of the total investment—of inter-related projects of this type cannot be accurately determined from a partial analysis of each investment taken separately because the profitability of one may understate its contribution to the total. This dynamic type of external economy[29] (as opposed to the technological external economies of static analysis) can only be taken account of adequately in the framework of an over-all analysis.

D. *Types of development programme*[30]

A development programme is an analysis which provides a basis for designing and carrying out development policy. There is, however, no sharp distinction between programming and policy making, since each influences the other. The main function of a programme is to make different policies consistent with each other. Ideally, it should go further and help to select the best policies and the best means of carrying them out. The decision to make a development programme does not constitute an endorsement of increased Government intervention, or of any other particular set of policy instruments, therefore.[31]

The nature of the analysis contained in a development programme is determined in part by the information available and in part by the instruments which are being considered. For simplicity, three general types can be distinguished, which I will call aggregate programmes, sector programmes, and over-all programmes. A few comments on each of these may be useful as in introduction to the discussion of analytical techniques in Part II.

(i) *Aggregate programmes* consist mainly of national accounts analyses and projections of other magnitudes such as industrial production, labour force, average productivity, etc. These projections are often combined with a more detailed analysis of certain aspects of the economy, such as the balance of payments, the sources of Government revenue, etc.

Programmes of this kind were used by most Western European countries during their period of post-war recovery as a guide to the use of general policy instruments affecting investment, employment, and the balance of payments. The technique of making such programmes has reached a high degree of perfection in the work of the Netherlands Planning Bureau.[32] In the Western Hemisphere, Puerto Rico has prepared a long-term programme of this kind each year since the war to guide its development policy.

Aggregate programmes provide a fairly adequate basis for the use of general policy instruments, but they do not furnish a check on the consistency of the results in specific sectors nor on the balance of payments. They are more likely to be adequate when the composition of production and consumption does not change too much as income increases, and when the market mechanism works well in directing investment and production decisions. From this point of view, the reconstruction of the European economies was easier to analyse than the pattern of growth of the under-developed countries of Asia and Latin America.

(ii) *Sector programmes* are analyses of the demands and investment prospects in individual branches of production. Their main function is to determine the relative priority of investments within the sector. Investment programmes for the whole economy (or for all resources controlled by the Government) are sometimes constructed by merely adding up the high priority projects in each sector.

The sector approach is generally recognized to be inadequate as a basis for development policy because it does not provide a test of the consistency of the decisions made in each sector, nor a way of comparing high priority projects in one sector with those in another. It has nevertheless been the principal basis for development policy in Latin America[33] and in most

[28] This statement is not true where economies of scale are important, as in the case of automobile production, because then the profitability of investment depends on an estimate of the quantity that would be demanded at the expected level of income.

[29] See Scitovsky, T., "Two Concepts of External Economies", *Journal of Political Economy*, April, 1954, pages 143-151.

[30] The nature of development programmes actually used by various countries has been described in a number of United Nations studies, many of which are listed in the bibliography. Alternative approaches are discussed in ECLA, *Analyses and Projections of Economic Development* (E/CN.12/363), and ECAFE, *Economic Development and Planning in Asia and the Far East* (E/CN.11/412), with reference to problems in Latin America and South-East Asia.

[31] The development programmes of India, Italy, and Puerto Rico (see bibliography) may be mentioned as representing quite different approaches to development policy, each of which makes use of an over-all analysis.

[32] See *Scope and Methods of the Central Planning Bureau*, The Hague, 1956.

[33] The need for more over-all analysis of development in Latin America, regardless of the policy instruments used, has been argued in ECLA, *Theoretical and Practical Problems of Economic Growth*, and in several more recent studies.

under-developed countries until quite recently. The defects in the sector approach are less serious in primary-producing economies than in those which have reached a high degree of industrialization and hence have a greater amount of inter-dependence among the various sectors.

(iii) *Over-all programmes* combine the elements of aggregate programmes and sector programmes in varying degrees. The analysis may start from over-all projections or from sector analyses, but in the final result they must be reconciled. It is only by some check of this kind that the consistency of the simpler models used in the two partial approaches can be tested.

Over-all programmes combining aggregate and sector analyses have been prepared in several countries of Europe (e.g., Norway, Netherlands, Italy) and South-East Asia (e.g., India, Pakistan, Philippines).[34] In Europe, the main purpose of the sector analysis is to check the consistency of the over-all analysis, since Government intervention on a sector basis is limited, but in South-East Asia the programmes are intended to co-ordinate specific investment policies affecting a number of sectors. In Latin America, the ECLA studies of Colombia and Argentina have a similar purpose although they are more illustrative in nature.

The need for over-all development programmes is most acute when large structural changes are required to establish or restore a process of balanced growth. Large balance of payments deficits, unemployment, bottlenecks in over-all facilities, and lack of growth may each be evidence of such conditions.[35] These conditions may of course be merely symptoms of an excess or deficiency of total demand, and the diagnosis of structural disequilibrium must try to identify the problems which would exist if inflationary (or, less often, deflationary) forces were offset. The design of policy in such circumstances is likely to call for an over-all analysis, however, whether the policy measures selected are general or specific in nature.

Development policy should include measures to increase the volume of specific resources available, especially the level of saving, as well as their allocation among alternative uses. The first type of policy relies more on general than on specific instruments and thus depends less on the establishment of a programme, and to a large extent the two aspects of policy are separable. Since I am mainly concerned with the relations between programmes and policies, I will take up only the allocation problem in my subsequent discussion.

[34] References are given in the bibliography.

[35] Practically all of the countries which have made use of over-all development programmes appear to have done so because of the existence of one or more of these factors. An additional cause may be regional imbalance, which in the case of Italy has led to a special regional development programme of the south. Regional balance is a subsidiary concern of most countries having development programmes, especially the balance between rural and urban development.

II. The formulation of development programmes

Despite the widespread use of development programmes as a guide to policy-making, there has been relatively little study of the techniques by which they are actually formulated. The official publications which summarize the analyses provide only limited guidance for such a study, since they are primarily intended to explain development policy to the public and are not usually burdened with the theoretical aspects of programming. Even when one goes beyond the published documentation, however, it appears that the practice of programme formulation has not yet been reduced to a very systematic basis.[36]

A development programme must be at the same time detailed enough to permit judgements about individual projects, and comprehensive enough to determine whether the results are consistent with the various over-all restrictions. This is true even when Government intervention is limited to certain sectors of the economy because allowance has to be made for the probable responses of the uncontrolled sectors and their need for resources. Since it is not feasible to construct a single model of the economy which satisfies all of these requirements, the formulation of a development programme proceeds on a trial-and-error basis in which parts of the analysis are done separately and then tested for consistency with the various restrictions and objectives of policy.

[36] The programmes previously referred to all contain some indication as to the methods followed, and personal discussions with planning officials in these countries also support this conclusion.

The analyses leading up to an over-all programme are made initially at different levels of generality, of which it is useful to distinguish at least three: (i) project analysis; (ii) sector analysis; (iii) aggregate analysis. the nature of the last two has been indicated in the preceding section. Project analysis is essentially a process of preparing technological information in a consistent way; projects can then provide the basis for a study of a whole sector of production—electric power, steel, etc. This is an essential first step in sectors in which production does not now exist or in which production will be increased by different methods than those now used, but it will not be discussed here.[37]

The central analytical problem in formulating a development programme is the relation between the project and sector analyses on the one hand and the aggregate analyses on the other. These analyses must satisfy the following three conditions:

(i) *Consistency*, which refers to the balancing of demand and supply, both for produced commodities and for primary factors (labour, capital, foreign exchange, and natural resources) of which the initial stock is given.

(ii) *Efficiency*, which consists of making the best choice among alternative programmes in the light of the aims of the society.

(iii) *Workability*, which consists of translating the analysis into guides for policy that are adequate for the actual execution of the programme by various agencies.

[37] The preparation of projects is taken up in ECLA, *Manual on Economic Development Projects* (E/CN.12/426), 1957.

The requirement of consistency has already been discussed above. If the restrictions are formulated as equations, consistency can be tested by whether or not the values of the variables (instrumental and other) satisfy these equations. Some restrictions cannot be formulated in this way, however, and the consistency of the result with some established criterion—such as a desirable income distribution or the allowable rate of inflation—can only be tested in more qualitative fashion.

The problem of achieving the maximum efficiency in a programme will be the main concern of this section. It has so far only been discussed in a context of partial equilibrium analysis, from which conflicting "criteria" for determining investment priorities have been established. The main difficulty with this approach is that it ignores the requirement of consistency, which must be imposed simultaneously.

The third condition, workability, means that the analysis must be extended to include the effectiveness with which various alternative measures can be carried out and that the concept of efficiency must be interpreted in the light of the results which can actually be realized under various alternative policies. By way of illustration, an analogy may be drawn to the choice of machinery for a factory. One machine may have a high output per unit of capital and labour input but may also require a high level of co-ordination with other activities in the factory to obtain this output. If this co-ordination cannot be achieved, a simpler machine having a lower output per unit of input may turn out to be more efficient in terms of its actual contribution to total output.

Workability can only be determined from experience under similar conditions although some indication of workability can be gained from the experience of other countries. Some comments on this subject will be made in the final section of this paper. In general, however, the workability of a set of policies cannot be evaluated except in qualitative terms and by the use of judgement rather than formal analysis.

The present section will discuss the contribution that the recently developed techniques of mathematical programming can make to the formulation of development programmes. The advantage of this approach is that it simultaneously takes account of the requirements of consistency and efficiency. The insight which the methodology of programming provides into the nature of this problem may, at the present stage of statistical knowledge, be more important than the empirical results.

A. *An empirical approach to programming*

Present techniques of establishing development programmes all use some form of trial-and-error method for reconciling the several parts of the analysis in the light of the three criteria just discussed. The formal programming methods which have been developed in recent years offer the possibility of achieving this reconciliation in a more efficient way. More important, however, they provide tests of the efficiency of any given programme and indicate how it can be improved.[38] This is not true of the more intuitive methods now used for development programmes.

[38] The need for a formal programming technique for this purpose has been stressed by Dagmar Frisch in a number of memoranda. See, for example, *Generalities of Planning*, Oslo, 26 February, 1957.

The objection usually made to the use of formal programming methods in the analysis of development is the lack of adequate data for their application. More properly, this is a limitation to any form of analysis and does not handicap a systematic approach to programming any more than an unsystematic one.

One of the obstacles to the ready adoption of more systematic programming methods is the fact that they have been presented in a rather abstract mathematical form whose relation to the pragmatic methods now used is not readily apparent. In this section, therefore, I will start from the techniques of testing consistency and efficiency which have been proposed for development programmes and try to show the modifications needed to ensure that the process will lead to the optimum programme. In so doing, I will stay as close as possible to established procedures so that the importance of the additional steps needed and the nature of the formal programming approach will be more clearly revealed.

I. *Formulating a trial programme*

In most development programmes, there is a considerable discussion of priorities, but little explanation of how they are to be applied in a consistent programme. The Indian Second Five Year Plan, for example, lists four objectives—increasing national income, rapid industrialization, expansion of employment, reduction of inequalities in income—and derives from these a number of priority sectors for investment.[39] These competing claims have been reconciled in the final plan, but the process of securing consistency has not been explained. Much the same comment applies to most published programmes.

In its pioneering study of the techniques of programming,[40] the Economic Commission for Latin America outlined in some detail the steps needed to arrive at consistent sector projections on the basis of an initial estimate of the growth in national income. A rather similar approach was used by the present author and his collaborators in a projection of the structure of the Italian economy.[41] The steps in this procedure can be outlined as follows:

(i) To make *initial projections* of the growth in national income, the supply of resources (labour, domestic saving, foreign investment, etc.) and the balance of payments.

(ii) To determine the *composition of final demands* for consumer goods, investment goods, and exports on the basis of expected domestic demand and foreign demand.

(iii) To make a tentative *selection of investment projects* in each sector, based on the partial criteria of contribution to national income and the effects on the balance of payments.

(iv) To formulate a *trial programme* composed of levels of production and imports consistent with the preceding estimates, using the input-output method or some approximation to it.

(v) To determine the *total uses of scarce factors*—labour, capital, foreign exchange, and specific resources

[39] *Second Five Year Plan*, 1956, chapter 2.

[40] ECLA, *Analyses and Projections of Economic Development, I. An Introduction to the Techniques of Programming;* see also the ECLA studies of Colombia and Argentina.

[41] H. Chenery, P. Clark and V. Cao Pinna, *The Structure and Growth of the Italian Economy*, 1953.

—required by the trial programme and compare them to available supplies of each.

(vi) To revise steps (i), (ii) and (iii) in the light of the excess demands for factors of production and repeat the process.

In practice, this procedure is rarely carried beyond one or two revisions, however, and it provides no way of determining how close the result is to the best programme available.

The logic of the first five steps, culminating in a trial programme, will now be illustrated by means of an example (table 2). I will then take up the revisions necessary to secure an optimum programme. To show the problem in its simplest form, I include only two commodities and two factors of production and ignore the possibility of importing and exporting.[42] For each of the two final commodities, three possible production techniques or projects are assumed in order to provide a variation in factor proportions. These are written in the form of "activities" as used in linear programming, to facilitate the discussion in section B. Inputs are indicated by a minus and outputs by a plus sign, the activity level X_j being taken as the net output produced (joint products are excluded). Activity A_3, for example, indicates that to produce 1 unit of commodity 1 by this technique requires .5 units of commodity 2, 6.0 units of labour, and .3 units of capital.[43] It is assumed that each technique can be operated at any scale with constant costs.

[42] The latter problem will be considered at length in section C.

[43] The example is taken from H. B. Chenery and P. G. Clark, *Interindustry Economics* (to be published by J. Wiley), chapter 4. The programming concepts are further discussed there. The capital input is positive for reasons given below.

Table 2

EXAMPLE 1: CHOICE OF TECHNOLOGY

Inputs and Outputs	*Production Activities*						*Restrictions*	*Market Prices*
	Industry 1			*Industry 2*				
	A_1	A_2	A_3	A_4	A_5	A_6		
(1) Commodity 1	1.0	1.0	1.0	—0.2	—0.5	—0.8	100	1.00
(2) Commodity 2	0	—0.25	—0.50	1.0	1.0	1.0	50	1.00
(3) Labour	—12.5	—7.5	—6.0	—15.0	—5.0	—4.0	—2000	.08
(4) Capital	1.10	1.25	0.30	1.00	2.50	0.60	Minimum	

The steps leading to a trial programme can be carried out as follows:

(i) and (ii) *Estimate final demands and factor supplies.* The "restrictions" in table 2 indicates the quantities demanded (plus) or the supplies available (minus). The magnitudes are derived from separate projections of national income, foreign demands, and labour supplies.[44] The amount of savings and foreign investment to be expected over the given period is also estimated. I have assumed that the problem is approached through the minimization of capital needed to achieve the assumed increase in income (final use), and that the output targets will be adjusted upward or downward at a later stage as indicated by a comparison of the capital required to the investment resources available.

(iii) *The choice of investments.* Since I have ruled out the choice between imports and domestic production for the time being, the only choice to be made is among different investment possibilities in each sector, each technique having different requirements for the two factors (labour and capital) and for inputs from the other sector.

A variety of methods has been suggested for making the choice among investment alternatives when market prices do not provide a reliable guide, but almost all of them involve making corrections for the fact that some factors are overvalued.[45] The methods which have the best theoretical justification consist in computing the contribution of each investment possibility to the national income, valuing inputs and outputs at their opportunity costs rather than at their market prices wherever possible. Since labour tends to be overvalued and capital and foreign exchange undervalued in under-developed countries, the principal corrections consist of using a somewhat lower price of labour (based on an estimate of the marginal use from which it would be withdrawn) and valuing commodities which move in trade at the price of imports, converted at an estimated equilibrium exchange rate. The prices used will be called *accounting prices,* following Tinbergen. The return to capital computed thus may be called the "social profit", and the social profit per unit of investment the *social marginal productivity* (SMP) of the investment.[46]

The social marginal productivity criterion as applied to data in the form of activities can be stated symbolically as follows:[47]

$$(\mathrm{SMP})_j = \frac{(\Sigma_i a_{ij} P_i + l_j P_l)}{k_j} \quad \begin{matrix}(i = 1 \ldots 2) \\ (j = 1 \ldots 6)\end{matrix} \quad (1)$$

[44] For simplicity I assume present capacity to be fully employed and consider only increases in demand and capacity, but excess capacity can easily be taken into account in this procedure.

[45] The various approaches are surveyed in ECLA, *Manual on Economic Development Projects,* 1957, Part II.

[46] This approach has been developed in A. E. Kahn, "Investment Criteria in Development Programs", *Quarterly Journal of Economics,* February 1951, 38-61; H. B. Chenery, "The Application of Investment Criteria", *id.,* February 1953; J. Tinbergen, *The Design of Development,* 1956, chapter III. The fallacy of using simpler criteria such as capital/labour or labour/output ratios is shown in the first two articles. The use of long-run equilibrium prices for labour and foreign exchange was suggested in the last two. A good summary of the case for using "accounting prices" is given by J. Tinbergen, pages 23-25.

[47] Formula (4) in Chenery, op. cit., reduces to this form if (direct and indirect) imports are treated as a separate input and valued by the equilibrium price for foreign exchange; the price for the output of commodities exported or substituting for imports is determined in the same way.

Where:

P_i and P_l are the estimated accounting (equilibrium) prices of commodity output or inputs i, and labour, respectively;

a_{ij}, l_j, k_j, are the input coefficients of commodity i, labour, and capital per unit of output of activity j, with signs as in table 2.

Since there is no way of determining the accounting prices in advance with any accuracy, it is necessary to revise them in the light of the results of the first trial programme. For example, we might start by using the market prices in example 1 as a first approximation to equilibrium prices, which would lead us to choose production activities 2 and 5 (trial *a* in table 3), which have the highest SMP in each sector. On the other hand, we might assume an opportunity cost for labour of 0 as a first approximation (trial *b* in table 3), which would lead to a choice of activities A_3 and A_4. Since some of each of commodities 1 and 2 is required, it is necessary to choose at least one investment in each industry, even though the SMP in one may be much lower than in the other.

Table 3

SOLUTION TO EXAMPLE 1 BY REVISING ACCOUNTING PRICES

Trial	Accounting prices			Marginal product of investment (SMP)					
				Industry 1			Industry 2		
	P_1	P_2	P_l	1	2	3	4	5	6
a	1.0	1.0	0.08		0.12*	0.07	—	0.04*	—
b	1.0	1.0	0.0	0.9	0.60	1.67*	0.80*	0.20	0.33
c	1.0	1.0	0.05	0.34	0.30	0.67*	0.05	0.10*	0.0
d	1.0	1.0	0.046	0.39	0.32	0.75*	0.11*	0.11*	0.02
e	0.82	1.0	0.046	0.22*	0.18	0.14	0.15	0.14	0.27*
f	0.82	1.0	0.035	0.35	0.25	0.37*	0.31	0.16	0.38*
g	0.82	1.0	0.038	0.32*	0.23	0.32*	0.27	0.16	0.32*

QUANTITY SOLUTION

Trial	Production levels						Capital	Labour	Excess demand	
	x_1	x_2	x_3	x_4	x_5	x_6	K	L	(L—2000)	ΔP_l
a		143			86		393	1500	—500	—.08
b			122	111			148	2400	+400	+.05
c			167		133		383	1667	—333	—.004
d			146	51	73		276	2000	0	0
e	140					50	184	1950	—50	—.011
f			233			167	170	2067	+67	+.003
g	80		100			100	178	2000	0	0

* Most profitable activities (included in current solution).

(iv) *Formulating a trial programme.* Once a choice of sources of supply for each commodity required has been made, the activities selected can be used in an input-output system to determine the amount of production in each sector. (In an actual application of this approach, some commodities would be both produced and imported in many sectors, and the proportions of imports to domestic production would also have to be fixed.) In example 1, if we choose A_2 and A_5 for a trial programme, the corresponding input-output system is:

$$1.0\ X_2 - 0.5\ X_5 = 100$$
$$-0.25\ X_2 + 1.0\ X_5 = 50$$

where X_j is the output of activity $_j$, the solution for production levels is: $X_2 = 143$, $X_5 = 86$.

(v) *Factor use.* The solution for production levels serves to determine requirements for capital and labour:

$$L = 7.5\ X_2 + 5.0\ X_5 = 1{,}500$$
$$K = 1.25\ X_2 + 2.5\ X_5 = 393$$

The complete statement of this trial programme is given as trial *a* in table 3. Since there are 2,000 units of labour available, 500 will remain unused. This indicates that the initial assumption of the market price for labour (.08) overstated its opportunity cost and that a lower price should be taken.

2. *Improving the trial programme*

Improvements in the trial programme can be determined by putting the problem in linear-programming form and applying the simplex method. This will be done in the next section. Since this procedure may not be feasible in practice, however, I will first determine the extent of the improvement in resource allocation that results from making revisions in the price system and applying the marginal productivity criteria already used in drawing up the trial programme. It will be shown that, if pursued far enough, this approach leads to the same result as the simplex method.

The following tests, derived from general equilibrium theory, must be satisfied by an efficient allocation of resources.[48]

[48] See, for example, Scitovsky, Shaw and Tarshis, *loc. cit.*

(1) *Demand must equal supply* for:

(*a*) Commodities produced;

(*b*) Factors of production, unless their price is zero (in which case excess supply may exist).

(2) *Capital* must be allocated to the most productive of alternative uses.

(3) *Prices:*

(*a*) Commodity prices must equal the cost of the inputs used to produce them (i.e., profits in excess of the marginal productivity of capital must be zero);

(*b*) Factor prices must be equal to their opportunity costs.

The first condition must be met by any feasible programme, and if the second and third are not met, there may be a possibility of improving on the trial programme.

The steps leading to the first trial programme only necessarily satisfy (1*a*) and (2). The other criteria can be applied in various ways. If changes in prices are used for this purpose, they may all be varied simultaneously or criteria (3*a*) and (3*b*) can be applied in either order. I will follow the latter procedure, which seems closer to the approaches in use, and in a first stage will revise the price of labour and then the commodity prices in a second stage.[49]

Stage 1: Revise the price of labour until its demand equals its supply. Since the price of labour affects the marginal productivity calculation, if it is raised sufficiently a less labour-intensive activity will appear more profitably and vice versa. A programme consistent with the resource limitations (1*b*) can therefore be arrived at by varying the price of the resource (labour) and repeating the steps given for trial *a*. If there is an access demand for labour the price must be adjusted upward, if an excess supply it must be lowered (unless it is already at zero).

Since there is a large excess supply of labour in trial *a* the price is lowered to zero for trial *b* and the calculation is repeated. A_3 and A_4 are now the most profitable activities, and the resulting solution requires 2,400 units of labour, constituting an excess demand of 400 above the 2,000 available. We must now raise the price of labour by enough to cause one of the other activities to become more profitable. By experimentation (e.g., raising the price by .01 units at a time) it can be found that at a price of labour of .05, A_5 is slightly more profitable than A_4, as shown in trial *c*. However, the solution for the new combination, A_3-A_5, results in an excess supply of 333 units of labour.

We have now found a range of prices for labour (0 — .05) over which the choice of activity in industry 1 (A_3) is unaffected, and the choice in industry 2 changes from A_4 to A_5, with a corresponding shift from an excess demand to an excess supply of labour. The solution which uses exactly 2,000 units of labour must therefore involve the use of both A_4 and A_5 in industry 2, which will only be efficient if they are equally profitable. This condition of equal profitability can be used to determine the opportunity cost of labour in industry 2 (and hence in the whole economy):

$$(\mathrm{SMP})_4 = (\mathrm{SMP})_5$$

$$\left(\frac{0.8 - 15\ P_l}{1.0}\right) = \left(\frac{0.5 - 5\ P_l}{2.5}\right) \qquad (2)$$

$$P_l = 0.046$$

The price thus determined is the lowest which will not lead to excessive demand for labour with existing commodity prices when criterion (2) is applied.

The corresponding quantity solution is given by solving the following system of 3 equations in 3 unknowns (X_3, X_4 and X_5) which constitute trial *d*.

$$\begin{aligned} 1.0\ X_3 - 0.2\ X_4 - 0.5\ X_5 &= 100 \\ -0.5\ X_3 + 1.0\ X_4 + 1.0\ X_5 &= 50 \\ -6.0\ X_3 - 15.0\ X_4 - 5.0\ X_5 &= 2{,}000 \end{aligned}$$

$$\begin{aligned} X_3 &= 146.4 \\ X_4 &= 50.5 \\ X_5 &= 72.6 \\ L &= 2{,}000 \\ K &= 276 \end{aligned}$$

By using 3 activities, we have arrived at a solution which uses exactly 2,000 units of labour. It is clear that this is an improvement over trials *a* and *c*, the other feasible trials, because the use of capital is substantially reduced.

Stage 1 is terminated by trial *d* because conditions (1*a*), (1*b*), (2) and (3*b*) are all satisfied.

Stage 2: Revise the commodity prices and repeat stage 1. In the final iteration of stage 1, the marginal productivity of capital was .75 in industry 1 and .11 in industry 2. This indicates that the market price of commodity 1 overstates its value in relation to commodity 2 because equilibrium prices should be based on an equal return to capital in each use. If we set the SMP of capital in the two sectors equal to each other and define P_k in this way, we can use equation (1) to solve for the equilibrium prices:

$$P_j = \Sigma_i a_{ij} P_i + l_j P_l + k_j P_k \qquad (3)$$

Since there are four prices to be determined and only three activities, it is necessary to take one price as given and determine the other three in relation to it. In linear programming solutions by the simplex method it is customary to use the criterion (capital) as the basis of the price system, but it is more in keeping with the SMP approach to allow the productivity of capital to vary and use one of the outputs as the numeraire. I therefore take $P_2 = 1.0$ and calculate the other three prices from the three simultaneous equations corresponding to equation (3):

$$\begin{aligned} A_3: \quad & P_1 - 0.5\ P_2 - 6.0\ P_l - 0.3\ P_k = 0 \\ A_4: \quad -0.2\ & P_1 + P_2 - 15\ P_l - 1.0\ P_k = 0 \\ A_5: \quad -0.5\ & P_1 + P_2 - 5\ P_l - 2.5\ P_k = 0 \end{aligned}$$

The result is:

$$\begin{aligned} P_1 &= 0.82 \\ P_2 &= 1.0 \\ P &= 0.046 \\ P_k &= 0.146 \end{aligned}$$

[49] This order is selected because it follows the intuitive method of successive approximations suggested in previous references (Tinbergen, Chenery) and seems more readily understandable. From a mathematical point of view, it might be better to revise all prices together, as in the "gradient methods" of Arrow and Hurwicz ("Gradient Methods for Constrained Maxima", *Operations Research*, May, 1957).

With the new lower price for commodity 1, the relative profitability of the activities is affected. Using the price of labour from trial *d* for the next iteration, we find A_1 and A_6, which had not previously been chosen, to be the most profitable activities. Revising the price of labour in the light of the excess demand in trials *e* and *f* as before, we arrive at a solution for the given commodity prices which includes activities A_1-A_3-A_6. The SMP in each activity is .32. Since this solution *g* satisfies all 3 conditions—no excess demand for labour, capital used in the most profitable way, and equal productivity of capital in each industry (no excess profits) —it is the optimum programme which we have been seeking. (It might have been necessary to repeat stage 2 a number of times to reach the optimum point in a larger system, but it can be shown that the procedure outlined here will converge to the solution which minimizes the use of capital.)

It should be noted that in the present example the economy of capital use resulting in stage 1 from using the true opportunity cost of labour rather than its market price amounted to (393—276) or 117 units. In stage 2, revising the prices of outputs to eliminate excess profits gave an additional reduction of 98 units. What the relative importance of these two types of revision in the price system would be in practice can only be estimated by experimentation with actual data in a realistic model, but the limited experiments already made suggest that the changes in commodity prices will have an important effect in some sectors.[50]

In the above example I have illustrated the types of change in prices and choice of investments that result when the requirements of feasibility and efficiency are applied simultaneously. Alternate applications of these two tests in an empirical approach has been shown to lead to the optimum result in the example chosen although the method may not always be very efficient from a computational point of view. For purposes of comparison, I will now illustrate the solution to the same problem by the simplex method.

B. *Economic rationale of the Simplex method of solution*[51]

1. *Concepts*

The development of linear programming as a tool of empirical analysis starts with the discovery, by Dantzig, of the simplex method for determining optimum solutions.[52] Since then, the application of this technique to a variety of problems has suggested different formulations and methods of solution. The relationship of the programming approach to the classical analysis of resource allocation is discussed in a recent book by Dorfman, Samuelson, and Solow.[53]

The simplex method is commonly thought of as merely a technique for carrying out mathematical operations leading to a solution to a certain kind of optimizing problem. In studying approximate techniques for the analysis of resource allocation, however, the rationale of the adjustment process as well as the final solution are of economic significance.

Linear programming makes use of the following concepts:

(i) An *activity* is any possible transformation of inputs into outputs. It is represented mathematically by a column of coefficients (vector), with outputs positive and inputs negative. The production activities of example 1 illustrate this form. Transportation, sales, storage, imports, exports, and a variety of other economic functions can also be represented as activities.

(ii) The *activity level* defines the intensity of use of an activity. In inter-industry systems, the level of output (gross or net) is most conveniently taken as the activity level, as in example 1. The amount of each input used or produced in the activity is calculated by multiplying the activity level by the input coefficient.

$$X_{ij} = a_{ij}X_j$$

(iii) The *restrictions* in a linear programming system are the constant terms, B_i, in a set of equations of the form:

$$\Sigma_i a_{ij}X_j \gtreqless B_i \qquad (4)$$

In inter-industry models, the restrictions consist of the final demands of input-output analysis, which have positive signs, and of factor supplies, which are negative.

(iv) The *criterion function* is any function of the activity levels which enables us to state a preference for one solution over another. It may written:

$$C = \Sigma_j c_j X_j \qquad (5)$$

In inter-industry analysis, the criterion function may be taken either as the value of the national product (to be maximized) or the total use of a factor of production, such as capital (to be minimized). In general, any problem can be formulated in either way, but the minimizing form is often simpler.

(v) A *programme* is a set of activity levels. If the activity levels satisfy the restraint equations (4), they constitute a *feasible programme* or *solution.*

(vi) The *optimal programme* is the feasible programme which maximizes or minimizes the criterion selected.

(vii) A *basic solution* is one in which there are only as many positive activity levels as there are restraints.

(viii) A *disposal activity* consists of the non-use of some of the available resources or the overfulfilment of one of the required outputs. By the use of disposal activities, it is possible to replace the inequalities of (4) with equations.

2. *Solution to example 1*

Example 1 can be put in the form of a linear programming problem by adding a disposal activity for labour (A_7) with activity level X_7:

(*a*) To minimize capital required:

$$C = 1.1\ X_1 + 1.25\ X_2 + 0.3\ X_3 + 1.0\ X_4 + 2.5\ X_5 + 0.6\ X_6 + 0\ X_7$$

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[50] The results of comparisons of this type in a 14-sector model are given in H. B. Chenery, "The Role of Industrialization in Development Programs", American Economic Association, *Proceedings*, May, 1955.

[51] This section is concerned with the rationale of computation and may be omitted by the reader who is only interested in the nature of the results achieved.

[52] G. B. Dantzig, "Maximization of a Linear Function of Variables Subject to Linear Inequalities", in *Activity Analysis of Production and Allocation*, T. Koopmans, ed., 1951.

[53] *Linear Programming and Economic Analysis*, 1958.

(*b*) Subject to:

$$1.0\,X_1 + 1.0\,X_2 + 1.0\,X_3 - 0.2\,X_4 - 0.5\,X_5 - 0.8\,X_6 = 100$$
$$-0.25\,X_2 - 0.5\,X_3 + X_4 + X_5 + X_6 = 50 \quad (5)$$
$$-12.5\,X_1 - 7.5\,X_2 - 6\,X_3 - 15\,X_4 - 5\,X_5 - 4\,X_6 - X_7 = -2000$$
$$\text{and } X_j \geqslant 0 \ (j = 1 \ldots 7)$$

The last restriction, that activity levels should be non-negative, is obvious from an economic point of view but is necessary mathematically to prevent nonsensical solutions.

The simplex method uses the three tests of an optimal programme that were given in the previous section, but they are applied in a different order. It considers only basic solution—in which there are as many positive activity levels as restraints—because it has been shown that the optimal solution must be a basic solution.[54] The simplex method therefore starts with a trial solution which satisfies all of the equations in the model, such as trial *a* in table 3. The prices corresponding to this set of activities are then determined. Only after this has been done is the second criterion—the allocation of capital to the most efficient uses—applied.

This version of the simplex method can be stated in four steps, comparable to those of the SMP approach:

(i) *Choose a feasible basis* and determine the corresponding quantity solution. Assume that we start from the same trial *a* as before, which was a combination of activities A_2 and A_5. To make this a *basis* it is necessary to add the disposal activity for labour, A_7, since otherwise the third equation would not be satisfied. The first basic solution is then:

$$X_2 = 143$$
$$X_5 = 86$$
$$X_7 = 500$$

These figures are recorded as trial *a* in table 4.

(ii) *Determine the "shadow prices" corresponding to the basis.* "Shadow prices" may be defined as the set of prices which result in zero profits in each activity in the solution. Algebraically, they are determined by solving the following set of simultaneous equations, one corresponding to each activity in the basis:

$$\Sigma_i a_{ij} P_i - l_j P_l - c_j = 0 \quad (6)$$

The concept of "shadow price" is thus the same as that of "equilibrium price", defined by equation (3) above, if the price of capital is taken as unity. In the simplex procedure, a new set of shadow prices is determined for each trial while in the SMP procedure a new set of equilibrium commodity prices is only computed at the end of each stage.[55]

[54] See Dorfman, Samuelson and Solow, op. cit., chapter 4, for a good discussion of the method of solution. The procedure followed here, which uses prices, and its applications to the present example, are given in Chenery and Clark, *Interindustry Economics*, Chapter 4. The solution to the problem of maximizing national income is also given there.

[55] A distinction is made here between shadow prices and accounting prices. The former have a precise mathematical meaning as equilibrium prices corresponding to a given set of basic activities. Accounting prices serve the same purpose of evaluating the activities available for the solution, but only in equilibrium (e.g., in trials *d* and *g*) are they equivalent to shadow prices.

Table 4

SOLUTION TO EXAMPLE 1 BY THE SIMPLEX METHOD

	Quantity solution									
Trial	x_1	x_2	x_3	x_4	x_5	x_6	x_7	*Capital*	*Labour*	
a		143			86		500	393	1500	
b		118		71	8			240	2000	(i)
c		124		68		14		231	2000	
d	131			14		36		180	2000	
e	80		100			100		178	2000	
	Shadow prices									
Trial	($P_k = 1$)				($P_2 = 1$)					
	P_1	P_2	P_l	P_k	P_1	P_2	P_l	P_k		
a	2.14	3.57	0	1.0	0.60	1.0	0	0.28		
b	5.20	6.63	0.306	1.0	0.79	1.0	0.046	0.15		(ii)
c	3.24	3.76	0.141	1.0	0.86	1.0	0.038	0.27		
d	2.03	2.52	0.074	1.0	0.81	1.0	0.029	0.40		
e	2.60	3.16	0.120	1.0	0.82	1.0	0.038	0.32		
	Social profitability									
Trial	π_1	π_2	π_3	π_4	π_5	π_6	π_7			
a	1.04	0	0.06	2.14*	0	1.26	0			
b	0.28	0	—0.25	0	0	0.65*	—0.31			(iii)
c	0.38*	0	0.22	0	—1.07	0	—0.14			
d	0	—0.41	0.02*	0	—1.37	0	—0.07			
e	0	—0.34	0	—0.16	—1.24	0	—0.12			

* Activity to be added in next iteration.

The price solution corresponding to the first basis is determined by solving the following equations of the form of (6):

$$\begin{array}{lrrrrrrr} (A_2) & P_1 & - & 0.25\,P_2 & - & 7.5\,P_l & - & 1.25 = 0 \\ (A_5) & -0.5\,P_1 & + & P_2 & - & 5\,P_l & - & 2.5 = 0 \\ (A_7) & & & & - & P_l & & = 0 \end{array}$$

From which: $P_1 = 2.14$
$P_2 = 3.57$
$P_l = 0$

(iii) *Determine the profitability of the activities outside the basis and add the most profitable* (if none is profitable, the optimum solution has been reached). The *gross profit* of an activity is defined as before as the difference between the value of its output at the given prices and the cost of its inputs excluding capital.

$$Z_j = \Sigma a_{ij}P_i - l_jP_l \qquad (7)$$

The *net (social) profit*, π_j, is equal to gross profit minus direct use of capital or

$$\pi_j = Z_j - c_j \qquad (8)$$

Since the assumption of zero profits was used to determine the price system, all basic activities—A_2, A_5 and A_7—have $\pi_j = 0$ by definition. If any excluded activity has positive profit, it indicates that adding it to the solution would reduce the amount of capital required. The logic of this test is the same as that of the SMP procedure except that equilibrium prices of the trial basis are used for all inputs.

The profits on each activity in example 1, using the prices of the first basis, are shown in line *a* of table 4. The most profitable activity, A_4, is chosen to form the new basis for the next iteration. (in the simplex procedure, activities can only be changed one at a time in order to maintain a feasible programme.)

(iv) *Determine the activity to be replaced.* If it is profitable to add A_4 to the solution at all, it is profitable to increase its activity level until one of the activities in the old basis becomes zero and the solution again consists of only 3 activities at positive levels. In the present example, the disposal activity A_7 drops out and the new basis is composed of A_3, A_4 and A_5.[56] The procedure is then repeated for this new set of activities.

The complete solution to example 1 by the simplex method using prices is summarized in table 4.[57] The fact that the prices in the last trial are the same as in the solution by the SMP method (when converted to a comparable basis with P_2 as numeraire) enable us to interpret the accounting prices of the optimum solution as shadow prices.

The theorems underlying the simplex method provide the justification for the conditions that were added to the more intuitive SMP approach in order to make it lead to an optimum programme. Although the necessity of these conditions is derivable from general equilibrium theory, the linear programming analysis shows that they are also sufficient to identify an optimal solution.

C. *The problem of import substitution*

After expected demands and factor supplies have been established (steps (*a*) and (*b*) in the procedure outlined in section A), there are two principal types of choice to be made in arriving at the optimum development programme. One is the choice of techniques of production (or alternative projects) in each sector, which has been discussed in the last two sections. The second is the choice between satisfying demands from domestic production or from imports, which in turn involves an increase in exports. The real choice in the latter case is then between expanding exports and expanding production for home consumption. This second type of choice is commonly known as "the problem of import substitution".

In my opinion, the solution to the problem of import substitution is at once the most important and most difficult aspect of development programming. It can rarely be avoided by sticking to the existing pattern of imports and exports because the demand for imported goods tends to outrun the increase in national income for a variety of reasons (the change in the composition of consumption as incomes rise, the increase in investment and demand for imported investment goods, the development of new products by foreign producers, etc.). The proper balance between investment in import substitutes and in exports must periodically be reassessed in the light of supply and demand conditions for exports as well as the possibility of economically producing goods for which formerly the local demand may have been too small.

Only under the best of circumstances is the problem of import substitution solved in an ideal way by the working of free-market forces. For this to happen the exchange rate must reflect the future demand for and supply of foreign exchange resulting from the changes now going on in the economy in order to provide an accurate guide to present investment decisions. In addition, capital, labour and entrepreneurs must be available for the sectors in which investment would be most desirable, whether in exports or in import substitutes. Under free markets, these conditions are much more often satisfied in the export sectors (by foreign capital) than in the production of import substitutes. Countries in which the growth of exports has not kept up with the demand for imports have therefore been particularly inclined to take measures to direct investment into fields which they consider most desirable. In many cases the proper working of the market to direct investment has also been seriously impaired by inflation and balance-of-payments deficits and by the short-run measures taken

[56] The activity which drops out is found by determining the effect on each basic activity of increasing the level of the new activity while maintaining a feasible solution (see Dorfman, Samuelson and Solow, op. cit., chapter 4). The possibilities are limited in the present example because it is necessary to have at least one activity in each industry in each basis.

[57] Starting from the same point, it takes five trials to arrive at the optimal solution, as compared to seven trials by the SMP approach. Each trial in the latter method is somewhat simpler, however, because only the quantity solution to the input-output system is required and shadow prices are only determined at the end of each stage. It would require further experimentation to determine whether the SMP approach is computationally as efficient as the simplex method in other cases. For purposes of comparison to table 3, the prices are given with $P_2 = 1.0$ as well as in the conventional form in which the price of capital is equal 1.0. It may be observed that, while the first and last trials are the same as in table 2, the intermediate points are entirely different. This is because the simplex method goes from one *feasible basis* to another and changes only one activity at a time, while the SMP and other gradient methods adjust prices on the basis of excess demand and can change several activities.

to control them. The present market price of foreign exchange and the prices of commodities for which imports are restricted then become a very imperfect guide indeed to investment decisions.

1. *A programming model for import substitution*

The methods of linear programming already discussed can be used both as an analytical basis for the choice of import substitutes and as a guide to empirical research. As compared to the problem of choosing among technological alternatives, the empirical possibilities of using this technique in the analysis of import substitution are somewhat better because a comparison can be made between imports and production by existing techniques, for which data are already available.[58]

[58] The approach which will be outlined has been tested on an empirical model distinguishing fourteen sectors of production, and the empirical obstacles to large-scale studies do not seem too great. See H. B. Chenery and K. Kretschmer, "Resource Allocation for Economic Development", *Econometrica*, October, 1956; and H. B. Chenery, "The Role of Industrialization in Development Programs", *American Economic Review*, May 1955.

A programming model (example 2) designed to show the nature of the choice between domestic production and exports is given in table 5. To simplify the exposition, no alternative production activities are included although in principle it is perfectly feasible to combine this model with the type illustrated in example 1. The example contains four productive sectors instead of the previous two, since the difficulty of the analysis stems in part from the indirect ways in which foreign exchange enters the cost of production.

In example 2, production activities are indicated by X_j, their activity level, and are the same type (i.e., no joint products) as in example 1. Export activities are designated E_j, have inputs of 1.0 unit of a domestic commodity (measured in domestic prices), and produce the number of units of foreign exchange indicated by the export price. If we use the existing exchange rate for this calculation, an output coefficient of less than one indicates that world prices (net receipts) are less than the domestic price. Import activities follow a similar rationale. They produce one unit of output and use foreign exchange equal to their c.i.f. cost delivered to the country (less any domestic inputs).

Table 5

EXAMPLE 2: PROGRAMMING MODEL FOR IMPORTS AND EXPORTS

Inputs	*Activities*										*Restrictions*
	E_1	E_2	E_3	X_1	M_1	X_2	M_2	X_3	M_3	X_4	
(1) Finished goods	—1.0			0.8	1.0						320
(2) Agricultural products		—1.0		—0.3		0.9	1.0				105
(3) Basic materials			—1.0	—0.1		—0.1		0.7	1.0		40
(4) Services				—0.2		—0.1		—0.1		0.9	60
(5) Foreign exchange ..	0.9	1.0	0.8		—1.0		—1.1		—0.9		—20
(6) Capital	0	0	0	0.7	0	2.0	0	1.8	0	0.55	Minimum

Example 2 differs in several important respects from the input-output model on which it is based:

(*a*) Imports and production are separate variables whose proportions are to be determined by an optimizing solution;

(*b*) Exports are variables rather than being fixed in advance;

(*c*) The foreign exchange (and labour) restrictions are incorporated in the model.[59]

2. *Solutions to example 2*

This type of model can readily be solved by the revised simplex method discussed in the last section. The solution is summarized in table 6. The first basis contains no exports, and imports of commodity 3 are made only to the extent of the available foreign exchange. This is the solution of maximum autarchy. The opportunity cost of foreign exchange (2.95) is determined by the capital cost of producing commodity 3, for which imports are partially substituted.[60] In subsequent trials, imports replace production of commodity 3 entirely, and the shadow price of foreign exchange (in terms of capital) is determined by the resources needed to produce exports. The marginal productivity of capital therefore rises, since capital is withdrawn from the sector where it is least productive (X_3) and devoted to exports, with the necessary readjustments in other sectors.

[59] This example is taken from Chenery and Clark, *Interindustry Economics*, chapter 11, which contains a more extensive discussion of the problem and the simplex method of solution. Labour has been omitted here for simplicity.

[60] $P+ = \frac{2.66}{1.1} = 2.95$, since 1.1 units of foreign exchange are required for a unit of inputs.

Table 6

SOLUTION TO EXAMPLE 2 BY SIMPLEX METHOD

	Quantity solutions									
Trial	X_1	M_1	X_2	M_2	X_3	M_3	X_4	E_1	E_2	K
a	400	0	250	0	113	22	196	0	0	1101
b	400	0	394	0	0	115	194	0	83	1070
c	524	0	291	0	0	122	215	99	0	1068

	Shadow prices ($P_f = 1.0$)						*Shadow prices* ($P_k = 1.0$)					
Trial	P_1	P_2	P_3	P_4	P_f	P_k	P_1	P_2	P_3	P_4	P_f	P_k
a	0.79	0.88	0.90	0.21	1.00	0.34	2.33	2.59	2.66	.61	2.95	1.0
b	0.89	1.00	0.90	0.24	1.00	0.395	2.27	2.54	2.29	.61	2.54	1.0
c	0.90	1.01	0.90	0.24	1.00	0.40	2.26	2.54	2.26	.61	2.51	1.0

	Profitability ($P_k = 1.0$)									
Trial	E_1	E_2	E_3	X_1	M_1	X_2	M_2	X_3	M_3	X_4
a	.33	.37[a]	—.53	0	—.62	0	—.66	0	0	0
b	.02[a]	0	—.26	0	—.28	0	—.20	—.26	0	0
c	0	—.03	—.25	0	—.25	0	—.17	—.28	0	0

[a] Activity to be added.

Table 7

SOLUTION TO EXAMPLE 2 BY REVISING ACCOUNTING PRICES

	Quantity solutions									
Trial	X_1	M_1	X_2	M_2	X_3	M_3	X_4	E_1	E_2	K
a	0	320	544	0	0	94	127	0	385	1159
b	524	0	291	0	0	122	215	99	0	1068
c	524	0	291	0	0	122	215	99	0	1068

	Accounting prices ($P_f = 1.0$)					
Trial	P_1	P_2	P_3	P_4	P_f	P_k
a	1.00	1.10	0.90	1.00	1.00	0.35
b	1.00	1.00	0.90	0.24	1.00	0.39
c	0.90	1.01	0.90	0.24	1.00	0.40

	Marginal product of investment									
Trial	*Export sector*			*Import substitutes*						
	E_1	E_2	E_3	X_1	M_1	X_2	M_2	X_3	M_3	X_4
a	0.14	0.35[a]	0.25	0.28	0.35[a]	0.40[a]	0.35	0.30	0.35[a]	1.63[a]
b	0.40[a]	0.39	0.30	0.52[a]	0.40	0.39[a]	0.37	0.34	0.40[a]	0.39[a]
c	0.40[a]	0.39	0.30	0.40[a]	0.36	0.40[a]	0.37	0.34	0.40[a]	0.40[a]

[a] Activities in solution.

This type of problem can also be solved by the SMP approach using accounting prices, as outlined in section A of this part. In following this method, it is necessary to specify the alternatives with some care, and also the meaning of the SMP of import activities. Since all exports are alternative ways of earning foreign exchange, under perfect competition one will be the most profitable under any set of prices and will be chosen.[61] The productivity of investment in the most profitable export sector therefore determines the SMP that should be assigned to importing, with correction made for differ-

[61] If the unrealistic assumption of elastic export markets is not made, a similar iterative procedure can be used in which exports from each sector are made up to the point at which marginal revenue equals marginal cost (see Chenery and Kretschmer, op. cit.). The principal difference from the present example is that exports will be made from several sectors rather than only the most profitable.

ences in import prices and domestic (accounting) prices.[62]

The result of the SMP calculation is shown in table 7. Trial *a* uses accounting prices equal to import prices in all sectors, with the price of foreign exchange equal to 1.0. The productivity of investment in the most profitable export sector (0.35 in E_2) determines the SMP in the import sector by the formula given in footnote 62. On this basis, imports are more profitable for commodities 1 and 3 and domestic production for commodity 2 (there is no choice for commodity 4, which must be produced domestically). The quantity solution for this choice of activities shows a use of 1,159 units of capital. (Trial *a* corresponds to the end of the first stage in example 1 because the assumption of an elastic export demand permits the foreign exchange restriction to be met exactly in all cases.)

In trial *b* (stage II) the accounting prices are revised to equal the shadow prices from trial *a*. The largest change comes in commodity 4, for which the market price had been used in the absence of an import price. The two imported commodities continue to have prices determined by the price of foreign exchange, which is held constant. With these new prices it is shown to be profitable to export commodity 1 instead of commodity 2 and to produce commodity 1 instead of importing it. A recalculation of prices (trial *c*) shows that this is the optimum solution, which is verified by a comparison to the result of the simplex method; the accounting prices now are identical with the final shadow prices of the simplex method.

[62] The logic of this procedure is illustrated in the following example calculation. I assume prices for trial *a* as shown in table 7, in which foreign exchange has a value of 1.0 and the importable commodities have prices determined from the import activities.

(i) The SMP of domestic production in sector 2 is calculated as in example 1:

$$a_{22}P_2 = 0.9 \times 1.1 = 0.99$$
$$a_{32}P_3 = -0.1 \times .9 = -0.09$$
$$a_{42}P_4 = -0.1 \times 1.0 = -0.10$$
$$\text{Social profit} = 0.80$$
$$k_2 = 2.0$$
$$(\text{SMP})_2 = 0.40$$

The SMP of other domestic production activities is determined in the same way.

(ii) The SMP of exports from sector 2 is determined by using the value of the foreign exchange earned as the value of the output of the domestic production activity:

$$\text{Value of foreign exchange} = 0.9 \times 1.0 = 0.90$$
$$\text{Social profit} = 0.71$$
$$K_2 = 2.0$$
$$\text{SMP of } E_2 = 0.355$$

(iii) The SMP of exporting commodity 2 and importing commodity 3 is determined by carrying step (ii) one step further and using the value of the *imported commodity* as the value of output for X_2. Activity X_2 produces 0.9 units of commodity 2, which is converted by E_2 into 0.9 units of foreign exchange, which is converted by M_3 into 1.0 units of commodity 3. The resulting productivity to be assigned to any import sector (i) is given by the formula:

$$\text{SMP } 0 + M_i = \frac{(\text{SMP of exports}) \ (\text{Price of commodity i})}{(\text{Foreign exchange input into } M_i)}$$
$$= \frac{0.355\ (0.9)}{(0.9)} = 0.355 \text{ for } M_3.$$

In practice, the over-all approach of linear programming is probably more important in analysing import substitution than in the choice of alternative techniques. In the latter case, the greatest improvement is likely to come from the estimation of the true opportunity cost of labour in terms of capital. For the problem of import substitution, the crucial relationship is the opportunity cost of foreign exchange in terms of capital. Of the two, the opportunity cost of labour can be better estimated by cruder methods than can the cost of foreign exchange. Furthermore, direct comparisons of import substitutes to exports are more difficult than are comparisons among alternative techniques for producing the same good. On both grounds, an over-all analysis is more urgently needed in the foreign trade sector.

The solution to example 2 suggests a practical procedure which can be followed when data are not available for a complete programming model. In sectors where imports and exports are possible, world prices provide a convenient basis for accounting prices, and if the price of foreign exchange is kept equal to 1.0, these prices will not change unless domestic production substitutes completely for imports. An examination of the export sectors, using these accounting prices for inputs, provides a basis for estimating the marginal capital cost of earning foreign exchange (marginal productivity of capital in this case), which can then be used to choose between imports and domestic production. The end of this first stage should, in a more realistic example, provide a fairly close approximation to the final solution. The main source of difficulty is likely to be the fact that export demands are not perfectly elastic and that the price of capital determined in this way will have to be adjusted for the level of exports.

The further improvements introduced by revising commodity prices will affect only industries using commodities that are entirely produced domestically[63]—in this case commodities 2 and 4. In practice, there are only likely to be important changes in the products of localized industries which are not easily transportable. It should therefore be possible to arrive at a structure of accounting prices after one or two trials which is not far from the optimum. Furthermore, changes in these prices will always be downward since they are passed on the price of imports, so that the error can be allowed for to some extent in the fabricating sectors where they are most important.

D. *Relations between over-all and partial analysis*

The previous discussion has shown the interdependence of investment decisions in the several sectors of the economy and their effect on the equilibrium set of prices. I will now take up the usefulness of these results in formulating more adequate criteria for partial analysis and in the more detailed study of sector programmes.

A number of partial criteria have been proposed for comparing alternative investment possibilities in the absence of an over-all analysis.[64] These are designed to remedy some of the defects in the existing price structure and to take account of external economies which

[63] In table 7, substitution of domestic production of commodity 1 for imports only became profitable when this change in import prices was made.

[64] These criteria are summarized in the ECLA *Manual on Economic Investment Projects*, part II.

are not reflected in market prices. Some of these criteria are stated in terms of returns to single factors (the productivity of capital or labour), while others relate total benefits to total costs (the benefit-cost ratio). The estimate of social benefits is sometimes made through corrections to prices, sometimes in terms of "indirect benefits".

If it is possible to carry out the adjustments leading to an equilibrium set of prices, these several approaches will give the same results. This can be shown from the preceding calculations. The SMP approach uses a single-factor test of the net value attributable to capital,[65] while the simplex method can be restated as a benefit-cost ratio. This form is shown in the last line of table 8. Here the output and inputs are valued at the shadow prices of the optimum solution to example 1 (from table 4), and the benefit-cost ratio is the ratio of the value of output to the cost of inputs. In equilibrium, when the price of capital is 0.32, A_6 is the most profitable investment and its ratio is 1.0 (corresponding to zero profit). If the equilibrium price of capital is not known, however, this result does not necessarily follow, and either of the other alternatives may appear the most advantageous even though equilibrium prices are used for the output and all the other inputs.[66]

Table 8

A COMPARISON OF PARTIAL CRITERIA FOR INVESTMENT[a]

Investment alternatives

	Price	A_4	A_5	A_6
Value of output	(1.0)	1.00	1.00	1.00
Materials purchased	(0.82)	0.16	0.41	0.65
Labour cost	(0.038)	0.57	0.19	0.16
Social profit		0.27	0.40	0.19
Capital required		1.0	2.5	0.6
(1) Productivity of capital		0.27	0.16	0.32
(2) *Benefit-cost ratio*				
(i) (Price of capital = 0.05)		1.28	1.38	1.18
(ii) (Price of capital = 0.15)		1.13	1.03	1.11
(iii) (Price of capital = 0.32)		0.95	0.72	1.00

[a] From table 3, industry 2, prices of trial *g*.

[65] W. Galeson and H. Leibenstein ("Investment Criteria, Productivity, and Economic Development", *Quarterly Journal of Economics, Aug.* 1955) have criticized the SMP approach as being static and not taking into account the difference in saving rates which may be produced by different projects because of different profit levels. To the extent that this factor cannot be offset through tax policy, it can be included in a programming model by measuring the savings attributable to each type of production and valuing them at the productivity of capital. A more balanced analysis of the problem of valuing present versus future income is given by O. Eckstein, "Investment Criteria for Economic Development and the Theory of Intertemporal Welfare Economics", *Quarterly Journal of Economics*, Feb. 1957.

[66] At equilibrium prices, the simplex criterion (social profit) is zero for all activities of the optimal programme, and negative for others. It follows from the algebraic relation of social profit to the benefit-cost ratio and the SMP of capital (or of any other factor or intermediate product) that, at equilibrium prices, all of these measures must be equal to unity for all activities in the optimal programme, and less that unity for others. However, even at equilibrium prices, these measures do not necessarily give the same ranking for non-optimal activities.

The productivity-of-capital measure does not suffer from this defect because it uses only the prices of other inputs but not that of capital. It is therefore more accurate for partial analysis if a better initial guess can be made as to the prices of labour and other inputs than of the true productivity of capital. When this is not true, it is easy to construct examples in which the benefit-cost ratio gives results that are closer to the optimum solution. (See, for example, trial *c* in table 3, in which the SMP test is further from the correct evaluation than benefit-cost because the prices of inputs are too high.) The choice of a criterion for partial analysis must therefore depend on the accuracy with which various prices can be estimated.[67]

The use of equilibrium prices also makes it unnecessary to make estimates of secondary benefits, as is the practice of the United States Bureau of Reclamation in its evaluation procedures.[68] The existence of underemployed (or overpriced) resources will be adequately taken into account by the lower opportunity cost given to these factors and the higher profits in projects which use them. Indirect benefits result from the use of other than equilibrium prices, and they disappear when proper future prices are substituted.[69]

It is unlikely that formal methods of programming can be applied in a very detailed model of the whole economy. At best they can be used to determine the proper accounting prices for some of the principal inputs-labour, capital, foreign exchange, and a few industrial materials—and to revise sector programmes. For the latter purpose, accounting prices are very important, since they make it possible to decentralize the analysis while maintaining the consistency of the results. If the same set of accounting prices is used in all sector programmes, it is possible to revise the latter after the first trial has been made by changing the price assumptions, as in the methods illustrated above. The use of the same prices for labour, capital, and foreign exchange is particularly important in the formulation of sector programmes, and even this degree of consistency would bring about a considerable improvement in resource allocation in many cases.

E. *Summary*

The main lines of my discussion of the rationale of programming can be summed up as follows:

(i) The main analytical problem in formulating a development programme is to find a solution which is at once consistent with the expected demands and resource limitations and efficient in its use of resources. Methods currently used in drawing up programmes do not ensure that the best use is made of resources.

[67] Tinbergen, *The Design of Development*, chapter 3, and J. Ahumada, *"Preparación y Evaluación de Proyectos de Desarrollo Económico"*, *Trimestre Económico*, July, September 1955 have both advocated a form of benefit-cost ratio using equilibrium prices in preference to using the productivity of capital, but the above analysis does not support their conclusion. The issue is not a matter of theory, however, since with perfect price estimates the two would give the same results.

[68] A criticism of this procedure along similar lines is given in J. Margolis, "Secondary Benefits, External Economies and the Justification of Public Investment", *Review of Economics and Statistics*, August, 1957.

[69] The use of future prices to evaluate investment is not always adequate when there are economies of scale, and it may be necessary to calculate the total investment required by alternative feasible programmes.

(ii) The techniques of linear programming suggest ways of extending the social marginal productivity criterion for investment allocation in order to secure both consistency with the various restrictions and maximum efficiency of resource use. A comparison of this approach to the simplex method for solving such problems shows that the same criteria are applied in each case but in a different sequence. The final result is therefore the same, but the route by which it is attained is different. The comparison also shows that there is no theoretical reason to prefer either the productivity-of-capital approach or the benefit-cost approach to partial analysis since they will both give the same result if properly applied. In the absence of complete information, however, there may be reasons to prefer the former.

(iii) Of the choices made in setting up an investment programme, that between exports and domestic production is both the most difficult analytically and the most important, since it determines the future pattern of development. The linear programming framework is peculiarly suited to the analysis of this problem. It should clarify thinking on this subject even when it cannot be applied empirically in great detail. The principal contribution of the programming approach is to determine an equilibrium (shadow) price for foreign exchange rate at this level until the results of the development programme as well as existing structural disequilibria. Since it will often not be feasible to set the exchange rate at this level until the results of the development programme have been accomplished, the use of the equilibrium price instead of the current exchange rate in evaluating investment proposals is desirable.

(iv) The prices which emerge as a by-product of the programming analysis, either by the simplex method or the SMP approach, should also have value as a means for decentralizing both analysis and policy. They provide a consistent basis for sector studies of resource allocation, which are an essential supplement to any over-all analysis, and which can in turn improve the over-all results. Their role as variables for policy guidance will be considered in Part III.

III. The execution of development policies[70]

All economic policies have two essential aspects. First, they require calculations as to the ways in which social goals can be achieved; secondly, they must provide for sufficient control of the responses of the various participants in the economic process to bring about the desired result. The first of these functions, the making of rational calculations, was taken up in Part II. Some problems raised by the second will be considered here.

The market mechanism has the great advantage of performing both these functions automatically. Prices serve as guides to rational calculation, as rewards for efficiency, and as a punishment for mistakes. A policy which is not guided by the market mechanism must specify not only the method of calculation which is to be used but also the controls which may be substituted for those of the market.

A development programme is primarily a technique for rational calculation. It has been shown above that for certain allocation decisions, particularly those involving large changes in the structure of the economy, this kind of calculation may point the way to substantially larger increases in output than would the calculation of the market mechanism. To achieve this possibility, however, it is necessary to have a control mechanism which does not suffer too much in comparison to the working of market forces. Among the elements required are adequate incentives, information, and flexibility. The execution of development policies often falls short of expectations for lack of each of these elements. This failure is largely attributable to the fact that development plans[71] are not always designed with the needs of execution in mind, so that they are not adequate as control devices whatever their merits in pointing out potential improvements.

One of the common weaknesses of development plans is their statement in terms of targets, which require centralized control if they are to be achieved. In the present section, I will investigate the possibilities for decentralization and greater flexibility which are presented by a greater use of prices. The basic problem is to offset the defects in the market mechanism as a calculating device without losing its advantages as a control mechanism.

A. *Decentralization and co-ordination*

As in the analysis of efficient resources allocation, it is useful to begin the study of control mechanisms by recalling how this function is performed by the free market. In the ideal case of perfect competition, prices act to clear the markets for both factor supplies and commodities produced through the signals which they provide to individual producers and consumers, each guided by his own interest. The only need for an agency of centralized control is to make markets more perfect and see that the participants follow the rules of the game—i.e., to prevent the exploitation of monopoly power, disseminate information, etc. Market prices are at once the means for determining how much of each good will be produced, what techniques of production will be used, and how incomes will be distributed.

Prices provide such a powerful means of co-ordinating the actions of individual decision makers that they have been advocated as the most rational control device for socialist economies. The well-known Lange-Lerner[72] rules for the operation of such an economy would require the managers of state enterprises to act like perfect competitors—to expand production until marginal cost equals price—while the co-ordinating agency manipu-

[70] The framework of this discussion is derived from that of Dahl and Lindblom, op. cit.

[71] The term "development plan" is used here to include both the analysis (which I have called a programme) and the set of measures by which development policies are carried out. This follows common usage in countries having such plans. The term "programme" is sometimes used in this broader sense, but I have preferred the narrower definition, given above, which indicates the distinction between analysis and execution.

[72] See Abba Lerner, *The Economics of Control*, New York, 1944.

lates prices so as to clear the market. A host of practical objections can be raised to this suggestion, but it contains an idea which is worth pursuing as an alternative to target setting in sectors where Government intervention of some kind is needed.[73]

1. *Functions of co-ordinating and operating agencies*

Development policy is carried out by governmental agencies which are given authority to intervene in specified ways in the process of resource development and resource use. In the United States, the Bureau of Reclamation, the Tennessee Valley Authority, the Federal Power Commission, the Atomic Energy Commission, and the extension service of the Department of Agriculture are examples of agencies which have this type of function. In Europe, the National Coal Board in the United Kingdom, the Monnet Plan organization in France, and the *Cassa per il Mezzogiorno* in Italy exemplify agencies for carrying out development policy.

The examples just given from the more advanced countries all illustrate a type of development agency which is concerned with levels of production and investment in particular sectors of production. Some of them, such as the TVA and the *Cassa per il Mezzogiorno,* are concerned with regional development, involving several types of production. The under-developed countries frequently have development corporation responsible for a range of sectors in addition to more specialized agencies of this type. Although some of the agencies listed are also in charge of current production, they all have responsibilities for some aspects of the long-term development of a given sector or region of the economy.

There is a second type of operating agency which has an important role in the execution of development policy although it typically deals with particular resources rather than with particular sectors of the economy. Thus specialized credit institutions, exchange control authorities, ministries of health and education, etc., are also concerned with improving the quality of resources or with controlling their allocation.

In the under-developed countries, the importance of both of these types of development agency is generally greater than in the advanced countries. A larger proportion of investment is made directly by the Government, and the extent of government influence over the remainder through tariff policy, exchange control, etc., tends to be greater whether there is an over-all development policy or not. In most under-developed countries, therefore, the main question is not whether the Government should intervene in the process of resource allocation but how it can control its various forms of intervention to make them more effective.

One of the greatest deficiencies in the execution of development policies is lack of co-ordination. Co-ordination is less important in a country like the United States, where the Government only intervenes directly in a limited number of sectors and where the penalties for lack of co-ordination are not serious because of the wealth and diversity of the economy. It is also less needed at the opposite extreme of primitive economies with little interdependence among sectors and relatively few choices. In countries in process of industrialization, such as most of those of Latin America, however, the need for co-ordination is particularly acute.

In the present section, I will take as given the institutional framework of a number of semi-autonomous operating agencies and consider possible forms of co-ordination to make development policy effective. The minimum objective of co-ordination is consistency in the actions taken by the various agencies in the sense defined earlier. Ideally, coordination should also lead to some changes in the institutional structure and the selection of better policy instruments. In any case, a co-ordinating agency is required with some degree of authority over the actions of the operating agencies.

Within this institutional framework, the procedure for executing policy must specify the division of functions between the central co-ordinating body (which I call the Planning Board) and the operating agencies, the form of the directives from the Planning Board to the operating agencies, and the establishment of specific guides to action by the latter.

The first phases of a rational procedure have already been discussed in principle from the point of view of the Planning Board. They involve (i) a mechanism for comparing alternative types of investment, and (ii) the selection of policy instruments based on the analysis. In this first stage, the operating agencies provide information on the alternatives available, either in the form of sector programmes (based on general policy guides provided by the Planning Board) or as raw material (projects) from which such programmes can be constructed. Operating agencies may also provide information on the effect of certain instruments—e.g., tax incentives—on their sectors, and perform other specialized studies—of alternative production techniques, manpower requirements, etc. The exact division of labour between the Planning Board and the research staffs of the various operating agencies is not important at this stage, since the essential problem is to prepare a co-ordinated programme based on the best available information.[74] As this is a basic political as well as economic decision, it will normally have to be ratified by the cabinet and perhaps by the legislature before the next steps can be taken.

The next stage is the preparation of a set of rules to guide the actions of individual agencies, which may collectively be called an operating programme. The latter differs from the long-term programme in covering a shorter period of time (one or two years), in taking the instruments of policy as given, and in using variables more closely related to the policy instruments chosen. The Planning Board contributes to the preparation of an operating programme by issuing policy guidance and by co-ordinating the work of the operating agencies. This guidance may take the form of targets, priorities, or prices. The choice among them is discussed in the next section. These policy directives provide the link between the long-term programme and the first drafts of the several operating programmes. The Planning Board then

[73] The problem of control in an under-developed economy is different from that considered by the theorists of either perfect competition or socialism. Since the economy does not start from a position of equilibrium, in which resources are optimally used, policy cannot be carried out through control mechanisms which are designed merely to maintain equilibrium.

[74] The procedure to be described assumes that an over-all programme is desirable as a basis for co-ordination. Where intervention is limited to a few sectors, a less complete analysis may be sufficient.

co-ordinates these programmes to the degree necessary to make them consistent with each other and with the long-term programme. Typically, this process takes place in connexion with the preparation of the Government's annual budget, and political control of the result is exercised in parliamentary debate on the budget.[75]

The final stage is the execution of policy by the operating agencies through lending, taxing, investing, allocating foreign exchange, etc. Since planning is never perfect, an essential function of the operating programme is to guide the several agencies when they must deviate from the anticipated course of action. It is at this point that centralized control runs the risk of bogging down in a maze of detail. The operating programme must anticipate departures from quantitative targets and must provide for them. The process involves a continuous exchange of information between the operating agencies and the Planning Board in order to ensure consistency among the changes made by various agencies. While these objectives are never entirely achieved, it is worth considering methods of improving performance in this field.

2. *The form of co-ordination*[76]

Whatever the institutional structure established, the form of the directives given by the Planning Board to the operating agencies (and its ability to enforce them) will determine the extent to which decentralization is actually achieved without loss of efficiency in the programme. Three "pure" forms of co-ordination can be distinguished:

(i) *Bargaining*, in which the Planning Board acts primarily as an arbiter among the agencies claiming scarce resources;

(ii) *Target setting*, in which the operating programme takes the form of quantitative production goals set by the Planning Board; and

(iii) *Price setting*, in which the operating directives take the form of accounting prices.

Actual operating programmes combine all three of these features to some extent. *Bargaining* predominates when the operating agencies are strong and the central authority weak and when there is little over-all analysis to go on. The bargaining process then centres on the preparation of the annual budget, and short-run considerations are likely to predominate. I will not try to analyse this form of co-ordination further, but will discuss the other two methods in their pure forms and then in possible combinations, such as priority systems.

(a) *Target setting.* When the policy directives from the Planning Board consist of targets for production, consumption, imports, etc., the range of choice left to the operating agencies is at a minimum. The agency can only decide among alternative ways of achieving the assigned level of production, for example, within the factor supplies allocated to it. Some method of evaluating those limited alternatives is required, and market prices will normally be used in the absence of other information.

The operating programme in this form can only be adjusted to take account of the difference between plan and performance by changes in targets. Unless these changes are made promptly and efficiently by the Planning Board, the agencies affected are likely to make their own revisions, which may not be consistent. Prices will tend to fluctuate widely when there is only quantitative planning, or alternatively they may be kept constant by government decree. In either case, they do not provide the best guides to investment decisions. Consumer choices are also distorted, which makes calculations of future demand more difficult.

(b) *Price setting.* Although there is some experience in Soviet planning and in wartime planning in the democracies with targets as control devices, there is no similar example of a Government which has tried to guide the decisions of Government agencies primarily by administrative determination of prices. We might expect that this method would provide some improvement over the free price mechanism if it were well executed, but that it would suffer from some of the same defects.

Under a "pure" price system each sector agency would try to invest in all projects which appeared profitable at the accounting prices set, using the same prices to choose the best technique of production. It would be remarkable if the Planning Board were able to calculate future prices so accurately as to just clear the market for investment funds, foreign exchange, and other scarce factors. Frequent changes in price are a feasible way of adjusting production and consumption, but they are not so effective in regulating investment plans, whose influence is only felt over a longer period.

Despite the impracticability of a programme consisting only of accounting prices, the theoretical advantages of the price mechanism point the way toward combinations of prices and quantity controls which should be an improvement on both.

(c) *Priorities.* Priorities are one of the most popular control devices because of their relative simplicity in operation. This simplicity is achieved at the expense of considerable ambiguity as to their real nature and difficulty in relating them to an over-all programme. The essential feature of priorities is that rankings are given to different categories of use, and that scarce commodities are allocated to different uses according to their ranks. The ambiguity of priorities derives from the fact that additional amounts of the same commodity—steel or electric power—have declining value to the economy and should, in principle, receive successively lower priorities. The analytical basis for a rational priority system is therefore very complicated.

Priority systems eliminate the need for quantitative targets at the expense of considerable uncertainty as to the amounts of resources to be allocated to the lower priority sectors. Priorities have therefore worked well mainly in cases where some uses (e.g., military production) were clearly much more important than others, and where not too many commodities were allocated (e.g., the Controlled Materials Plan in the United States, which allocated only three metals because more elaborate schemes had proved unworkable).

[75] Since some of the most effective types of control are embodied in the annual appropriation of government funds, the participation of the agency responsible for long-term policy (the Planning Board) in the review of the annual budget is essential to efficient execution of development policy. The inevitable conflicts between long-run and short-run goals can only be reconciled in this way. The implementation of a long-run programme requires coordination of a much wider range of government activities than public expenditures and taxation, however.

[76] This analysis draws considerably on Dahl and Lindblom, op. cit., chapter 14, which is, however, mainly concerned with wartime planning.

Priority systems for carrying out development programmes have arisen mainly from the lack of over-all analysis and from existing structural disequilibria. It is administratively simpler to concentrate on a few high priority sectors, which often are those that have been neglected in previous programmes. A marked tendency to alternate between giving high priority to industry and to agricultural can be discerned in the recent history of many countries—the Soviet Union, India, Turkey, Argentina, Mexico, to mention only a few. Broad priorities of this kind indicate the previous failure to achieve a balanced advance, in which scarce resources have the same marginal productivity in all uses.

If used in conjunction with accounting prices, priorities could provide a useful simplification of the mechanism of evaluation to permit more decentralized control. The basis for the priority system in a development programme should be the contribution which a given use makes to the main objective of the programme: the increase in national income. The importance of other objectives (e.g., reducing a payments deficit) could be measured by assigning them appropriate prices. Each sector agency in charge of production would be asked to establish priorities for the various resource uses (projects) under its control, using the accounting prices indicated to it by the Planning Board. These priorities would then be made the basis of allocations of government investment funds, foreign exchange, and other resources under government control.

The rationale of this procedure is given by the solution to the examples in Part II A, in which the SMP indicates the priority *within* the sector. To the extent that accounting prices can be adjusted toward the long-run equilibrium values, the result would tend to approximate a pure price-setting approach, since the SMP would also tend to be equated *among* sectors. The imperfections in accounting prices and changes in underlying conditions would require allocations of some resources, for which demand currently exceeds supply, however. Consistency would be achieved by allocating commodities which were temporarily in short supply (at the established accounting prices), but future changes in allocations and prices would be designed to eliminate such shortages. The scope for initiative and decision by the sector agencies would be much greater under this system because they would not have targets prescribed for them, except in potential bottleneck sectors (power, transport, cement, etc.). Discrepancies between demand and supply of most other commodities could be made up by imports or variations in stocks.

In summary, under a control system designed for decentralization, accounting prices would be the main type of guidance provided by the co-ordinating agency, and priorities (based on marginal uses in each sector) would be used only when accounting prices did not have the effect of clearing the market. Except in a few sectors, quantitative targets would be established by the sector agencies in the light of the profitable investments available to them. Quantitative checks would only be needed to assure that future supplies of commodities required to be produced locally were consistent with future demands. The opportunity cost assigned to foreign exchange, capital, and labour would be the principal means of achieving balance in foreign trade and securing full employment.

B. *Revision of policies and programmes*

The proper relation between the long-term programme and the directives comprising the operating programme depends on the existing economic situation and the nature of the control devices adopted. When the supply of foreign exchange provides a cushion against shortfalls in execution, for example, the relation need not be so close as when the balance-of-payments limitation is more restrictive.

The discussion of control techniques in the operating programme suggests that more attention should be given in long-term programmes to the effects of structural change on equilibrium prices. Since targets do not provide the best control devices for many sectors, the long-term programme would be a more useful guide to execution if it put less emphasis than is customary on the setting of targets and more on the determination of opportunity costs and accounting prices. These cost and price relationships may be expected to change over time as the market expands, resources are developed, and overhead facilities are installed. Anticipation of these changes would lead to a better assessment of comparative advantage in a dynamic setting and reduce the need for controls in the future.

My previous discussion of programming may have given the impression that if the design of development policy is not yet on a scientific basis, it may be in the near future. This is far from being the case. Formal analysis does provide an indispensable framework for policy, but even "purely economic" decisions must be based as much on intangible factors, such as the expected reactions of producers and consumers to various measures, as on econometric studies. When development programmes are first drawn up, these qualitative judgements are likely to be particularly important because the formal analysis will be deficient in many respects. In fact, I would hazard the guess that the most that can be expected of the first programme in any country is to establish machinery for analysis and co-ordination which in time may have a beneficial effect on the use of resources.

Since it takes time and experience with a particular society to devise an effective development policy, plans should err initially on the side of making smaller changes and adopting less drastic measures until the initial response to various instruments can be evaluated. It is, for example, much easier to proceed from free enterprise to tax incentives to government investment than it is to reverse the process, and the more indirect measures have a better chance to work if there is not the immediate threat of more drastic intervention. Whatever policy is adopted initially, however, the evaluation of the effectiveness of the instruments used is an essential—but often neglected—step toward better policy in the future.

Once a policy is in operation, conditions are likely to be much more favourable for securing the information needed for adequate analysis than they were at the outset. The operating agencies themselves are an important source of such information, and the projects submitted to development banks and similar agencies are often the most accurate indication of production costs and capital requirements for different types of production. Similarly, the response of demand to increases in income and price changes can be determined more accurately as the plan proceeds.

Since the structure of the economy is constantly being changed and the information for analysis is constantly being improved, the revision of programmes and policies must be thought of as a continuous process. The existence of a programme in operation makes this procedure much easier than the drawing up of the first programme because the range of alternatives to be considered is normally less. Efforts can therefore be concentrated on refinement of the analysis, the study of alternative instruments, and improved methods of co-ordination.

One important aspect of the process of revision should be a study of the effects of deviation from the programme set up originally. Among import substitutes, for example, there may be a wide range of investments which show approximately equal returns, and the choice among them would not be of great significance to the total outcome. In other sectors the opposite may be true, since the establishment of a certain type of production may be critical to the development of other sectors. This type of "sensitivity analysis" is very useful in deciding on the choice of policy instruments and the extent to which co-ordination among sectors is needed.

Finally, a word may be added on the subject of time. Economists have not been notably successful in predicting the rate at which expected changes will take place because their tools of analysis are based more on the conditions of equilibrium than on the process by which equilibrium is established. While this is a serious defect, it need not be so damaging in the case of development policy as it is in the control of the business cycle, where the timing of policy measures is crucial. In fact, I would argue that it is much more important to have a clear idea of the nature of the changes in the structure of the economy that will be required by economic development than of the speed at which these changes will take place. An overestimate of the rate of growth may cause investment to be made too soon, with consequent under-utilization until the anticipated level is achieved, but this waste of resources is less serious than that resulting from investment in a sector in which the economy does not have a prospective comparative advantage. A mistaken analysis of the proper pattern of growth may lead to protection and high prices for a long period, while an error of even 40 or 50 per cent in estimating the rate of growth is usually wiped out in a few years. A development programme can therefore serve its main function of guiding the direction of resource allocation even if it does not turn out to be a good forecast of the rate of growth; deficiencies in the latter respect can be partially overcome by a constant comparison of plan and realization. It is much harder to shift resources from one sector of the economy to another, however, than it is to slow up or accelerate the rate of production and investment.

The study of economic policy for the under-developed countries is still in its infancy. It requires a reexamination of the body of economic theory and policy which has grown up in the more advanced countries in order to avoid both inappropriate analogies and the disregard of relevant experience. The development programme appears to be a promising innovation to guide the type of government intervention needed to promote economic growth in a democratic society.

So far, discussion of development programmes has stressed the improvement in resource allocation which they offer and has tended to ignore the problems of co-ordination which they raise. The more effective use of development programmes will be promoted by an appreciation of their main function as a co-ordinating device and by a more realistic assessment of the means available for this purpose.

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