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RECENT DEVELOPMENTS AND TRENDS IN THE BRAZILIAN ECONOMY

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INTRODUCTION

Scope of the present analysis

In the study on "The Economic Development of Brazil" 1/ an attempt was made to elucidate the basic factors which have brought about the changes which have taken place in the Brazilian economy during the past twenty-five years. On the basis of the conclusions drawn therein, the present analysis has been made with the object of extending research into the problems which confront Brazilian economy in its present phase of development. The period under consideration is characterized by certain features which are of great importance for economic analysis: it covers the interval between the prevalence of a war economy ending in 1945, and the beginning of/rearmament economy in 1950. It can be divided into three stages, namely, 1945-47, 1948-49 and 1950. The first (1945-47) is marked by a considerable expansion of international trade, a rise in the prices of raw materials and a general trend towards inflation. The following stage (1948-49) exhibits a disequilibrium in the balance of payments of several countries -- including Brazil -- in relation to the dollar area caused by a diminishing rate of economic activity in the United States and by the extension of exchange control measures. This stage closes with the devaluation of the pound sterling, which was followed by a number of important monetary readjustments in many countries. Brazil's decision not to devalue its currency is linked with another development which took place towards the close of this stage, namely, the sharp rise in the price of coffee on the world market. This latter phenomenon is not due to any change in the configuration of world prices, but to a modification in the structure of the coffee market.

Though the steady recovery which began in the second half of 1949 was slow, its pace was strongly accelerated by political events in the Far East in 1950. That year undoubtedly marks the beginning of a third stage in post-war economic development. Only brief reference is made to this third phase in the present study, since it is still too early to make any detailed analysis. However, the problems which will face Brazilian economy in the next few years are already taking shape. They may be summed up in a question which arises from

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1/ Economic Survey of Latin America 1949, Chapter VIII.

/analysis of

analysis of the facts: to what extent have the changes of the past five years rendered the Brazilian economy, particularly the volume of investments, more independent of fluctuations in foreign markets? This question must needs be answered before a reply can be made to the next, namely: what problems for the economic development of Brazil will be created by the changes in the world economic situation which began in 1950?

Intensity of economic development

The first difficulty encountered in the analysis of Brazilian economy is that due to the inadequacy of the data regarding national income. It may be assumed, however, that the partial estimate of the gross national product (production of goods) used in the present study, constitutes a fair approximation and, for the specific objects envisaged, is an acceptable instrument of analysis.[1/]

The concept of economic development as understood in this study implies the idea of an increment of productivity, which presupposes either an increase in the amount of equipment per gainfully employed person, the technical improvement of such equipment, or the rationalization of the organization of production.

An increase in the national income or in the production of goods over a short or medium period, therefore, does not necessarily imply economic development, since it may be a purely cyclical phenomenon and arise merely as a result of better utilization of the already existing productive factors. Development is a structural phenomenon, entailing an increase in productive capacity per gainfully employed person. [2/]

1/ See Chapter I, Appendix A, for a discussion of the limitations of this estimate and the validity of the index of the production of goods in the analysis of economic development.

2/ Clearly, the cycle is the means by which capitalistic economy spontaneously adjusts its structure, but this does not mean that a change of structure may not be a historical phenomenon, projected beyond the cyclical period.

/Since changes

Since changes in productive capacity, whatever their origin, express themselves in changes in the quantum of production -- provided that capacity does not remain partially unused -- the index of the quantum of production must undoubtedly constitute the basic element employed in assessing productive capacity. 1/ However, a picture of the process of economic development cannot be obtained simply by estimating changes in productive capacity. The analysis must be taken a little further, in order to provide answers to the following two queries: a) To what extent were the goods produced available for consumption and for capital formation within the country; and b) What proportion of the increased supply of goods was absorbed by consumption and what proportion could be set aside in order to expand productive capacity? The first of these questions is answered by the estimate of the total volume of available goods, and the second by computing the rate of capital formation in relation to the availability of goods. Let us see how this analysis may be applied to Brazil during the period under review.

The data contained in Chapter I, and summarized in Chart 1, indicate that the production of goods considered in real terms increased at an average annual rate of about 5 per cent. This rate is considerably higher than that of the growth of the population, which was about 2 per cent. The total volumes of primary production (agriculture, cattle-breeding and extractive industries) and of secondary production (manufacturing and building) are shown separately in Chart 1. There is nothing to indicate that development in one sector took place at the expense of the other. This, however, is simply a comment, not intended to imply any judgment as to the ideal form of development for the country in its present stage.

Goods produced are consumed either at home or abroad, and in the latter event terms of trade are of material significance. If the new goods produced are exported in a period of deteriorating terms of trade, increased production will not coincide with greater domestic supplies of goods. In this case, a fundamental condition without which increased production of goods cannot lead to economic development will not have been fulfilled.

1/ The index of per capita income does not similarly correspond to that of productive capacity, since it may fluctuate strictly in relation to the terms of trade.

Between 1945 and 1949, the terms of trade were relatively stable, though there were sharp fluctuations from year to year. In 1950, however, a steep rise occurred, due principally to the increase in the price of coffee. Chart 2 shows the production of goods, the terms of trade, and the availability of goods. In 1945 and 1946 there was a considerable difference between the total of available goods and that of production, owing to the abnormal foreign trade situation, which led to the accumulation in Brazil of substantial monetary reserves.1/ The same chart shows that the rising trend of curve 1 (production of goods), is attenuated by the deterioration of the terms of trade in 1946 and 1948, the effect being transferred to curve 2 (availability of goods). In 1947, 1949 and 1950 the opposite occurred. The effect of the terms of trade was not positively felt until 1950. In fact, of the increase of 5,981 thousand cruzeiros (1947) in the total value of goods available in that year, 2,657 thousand cruzeiros -- that is, 44 per cent -- were attributable to the improvement of the terms of trade.

The total of available goods and, on a separate curve, the fraction absorbed by consumption and that remaining for the formation of capital, are shown in Chart 3. It will be noted from curve 4 that the proportion of goods set aside for capitalization increased considerably until 1947, and that there was then a sharp drop, followed by a recovery, though the 1949 level has not been overtaken. Between 1945 and 1946 the entire increase in available goods was absorbed in capital formation, in addition to which part of the goods previously intended for consumption were diverted for the same purpose. During

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1/ The Brazilian Government held a large proportion of these reserves to guarantee its currency and use part to redeem the public debt. In both cases, national assets were increased by compulsory savings. However, this expansion of assets is not included in the estimate of capital formation. In any case we have to ask whether an increase in national capital resulting from the accumulation of monetary reserves can be considered as a sign of economic development if we define this, as above, by reference to increased productive capacity. The answer is certainly in the negative.

this period of critical inflation, the population possibly suffered a reduction in consumption. Since 1949, capital formation has again been intensified: 42.5 per cent of the annual increase in available goods in 1949 and 32 per cent in 1950 has gone to the capital formation.

Taking the period under review as a whole, it will be found that the average annual rate of increase in the total of goods available for the formation of capital has been about 15.5 per cent. If, however, the year 1945, which constitutes an extremely low base, is excluded, the rate falls to 5.1 per cent. After allowing for the increase in the gainfully employed population, about 2 per cent per annum, there remains a margin which indicates the rate of expansion of investments employed in increasing productivity. The significance of these figures is naturally limited; they only indicate that the total amount of fixed capital which was added to that already existing in Brazil, increased between 1946 and 1950 at an average annual rate of 5.1 per cent, or, allowing for the increase in the population, at an annual average rate of 3 per cent. In order to obtain a more accurate picture of the rate of development, it would be necessary to compare intensive investments, that is, those investments which increase the capital invested per worker, with the total amount of capital already invested in reproductive occupations in Brazil. In this way an index of the increase in the productive capacity of the general labour force would be obtained.

An analysis of this type is extremely difficult because no data are available on the amount of capital already invested in Brazil. Using the 1940 census data as a point of reference, however, and assuming that investments between 1940 and 1949 were barely adequate to cover depreciation and employ the population increment at the existing level of productivity, it will be found that the investments made in 1950 should have made possible an increase of 7 per cent

in the capital investment per gainfully employed person, as compared with the 1940 level.[1/]

If the intensive investments made during the past ten years raised the capital investment per gainfully employed person by 7 per cent, and the population increased by 25 per cent over the same period, it may be concluded that the increase of population absorbed 78 per cent of net capitalization. This compares unfavourably with the figure of 60 per cent in the United States during the latter half of the past century, when the population of that country was growing as fast as or faster than that of Brazil at present. However, it must be borne in mind that at its present stage of development Brazil does not enjoy the advantage of an influx of foreign capital comparable to that which fell to the United States during the aforesaid period.

An estimate of this nature can clearly be no more than a very summary approximation. However, the trend and the magnitude of the data lead to two general conclusions: firstly, that Brazilian economy is developing not only extensively, that is to say, with the growth of the population, but also intensively; and secondly, that this latter development, that is the increase in productive capacity per gainfully employed person, is not progressing at an exceptionally high rate.

1/ According to the 1940 Census, agriculture (excluding the value of the land itself), industry and services absorbed 34.2 thousand million cruzeiros in 1939. In the same year, there were about 14 million gainfully employed persons (population census statistics). Hence the capital investment per gainfully employed person was about 2,440 cruzeiros which at 1947 prices, represents about 8,000 cruzeiros. In 1950 gross capital formation amounted to 25,176 million 1947 cruzeiros (see Chapter I, Appendix C). Thus assuming, that 50 per cent of this capital was absorbed by re-equipment, and allowing for the increase of about 350 thousand persons in the employable population in 1950, it will be found that the amount of capital investment in increased productivity rose to 9,788 million 1947 cruzeiros. Given that the total labour force by the end of 1950 should have stood at 17.8 million persons, the increase in the capital investment per gainfully employed person would appear to be 550 cruzeiros, that is, a rise of 6.9 per cent as compared with the 8,000 cruzeiros referred to above.

/Factors restricting

Factors restricting economic development.

It was pointed out in the preceding section that economic development presupposes increasing capital investment in the productive process. The intensification of capital formation is therefore the essential precondition of a higher rate of development.

We shall proceed to analyze the three principal obstacles to the expansion of capital formation in Brazil, viz: a) the low level of real per capita income; b) inadequate capacity to import; and c) inefficient utilization of available capital.

The first obstacle to the acceleration of developing capital formation in Brazil is the low level of real per capita income, since, as is generally recognized, the capacity to save is a function of the level of real income. However, the restrictive influence of this factor is to a certain extent offset by the size of the domestic market. If, on the one hand, the individual capacity to save is limited, on the other, Brazil's large population enables the country to benefit to some extent from the economic advantages of mass production. We are dealing here with a fundamental problem of the process of development, that is to say, the optimum utilization of technical resources. The capacity to install and use productive units of an optimum size at a given technical level with a country's own resources depends on the level of real per capita income and the size of the population. Clearly, a country with a population twice as large as that of another, but with a real per capita income only one-third of the other's, is relatively less able to take full advantage of the economic benefits of mass production. Other things being equal, however, the size of the population is undoubtedly a factor of considerable significance. It is true that a country may overcome the limitations of the domestic market by establishing export industries, but such a solution implies relatively large capital availabilities.

The size of the population is, therefore, a factor which to some extent checks the negative influence of low per capita income on economic development. However, a certain restrictive effect does remain since it may equally be argued that low per capita income makes it impossible to derive full advantage from a large population.

/The second

The second limitation arises from inadequate capacity to import the capital goods necessary for the transformation of savings into real investment. The indices of gross capital formation and of the capacity to import are plotted on Chart 4. The relatively intensive development of capital formation will be noted. In order to transform savings into capital goods, Brazil has been compelled not only to intensify domestic production of these goods in relative terms, 1/ but also to modify the structure of its imports. Thus between 1945 and 1950, imports of capital goods expanded at an average annual rate of 25.9 per cent, whilst imports of consumer goods, including fuel, increased at an average rate of 10.3 per cent.2/ Even so, the share of imported capital goods in the total supply of this class of goods (excluding building materials), fell from 68.8 per cent in 1947 to 50.9 per cent in 1950.

The capacity to import has been increasingly absorbed by other less elastic imports than capital goods, such as basic chemicals and fuel. A drastic readjustment in the structure of imports thus becomes essential, the development of domestic production of capital goods more urgent still.

In certain aspects, however, these measures coincide, since the shortage of consumer goods -- and especially of durable consumer goods -- resulting from the preference for imports of capital goods tends to direct the small capital available towards the production of such consumer goods, to the detriment of investment in the production of capital goods.

We arrive thus at the third factor which limits economic development in Brazil: the inefficient utilization of available capital. Much, of course, remains to be done in connexion with the organization and rationalization of production. However, the rationalization of manufacturing methods is in itself one of the higher manifestations of technique, and there can therefore be no rationalization without the prior improvement of technique.

1/ Domestic production of capital goods increased at an annual rate of 14 per cent between 1945 and 1950, whereas the rate of increase of the production of consumer goods was 3.9 per cent (see Chapter I, table 7).

2/ When fuels are excluded the average annual rate of expansion is 8.5 per cent.

/This problem

This problem has important economic consequences, some of which have been dealt with previously in the reports of the Economic Commission for Latin America.[1/]

A thorough analysis of the Brazilian cotton textile industry, carried out in 1950 by the Commission's experts, once again brought to the fore the problem of the very low efficiency of labour, resulting from the technical methods applied in the industry. At the same time, however, the analysis stressed other important aspects of the problem. Thus, there is an apparent wastage of labour not only in factories where the equipment is outworn and obsolete, but also in plants equipped with the most modern machinery. This phenomenon is of considerable importance, and is connected with the general problem of productivity, some aspects of which will be investigated below.[2/] For the time being, it must be emphasized that low efficiency of labour should not be confused with improper utilization of the fixed capital available. In fact, it is precisely where efficiency is lowest that the attempt is very often made to obtain a higher yield from fixed capital than would be usual under normal conditions. In other words, the low efficiency of labour in countries such as Brazil is one aspect of the problem of the shortage of capital. In such circumstances, the raising of efficiency by means of rationalization, involving only a saving of labour, may offer small, if not infinitesimal, economic advantage from the domestic point of view,[3/] unless the labour surplus can be put to use. From the point of view of the enterprise itself, there is little incentive to the introduction of more rational manufacturing methods, since the cost of the labour unit is relatively small in proportion to the total cost of the product. The report of the Commission shows that the repercussion of a saving in labour on costs of production is 7 to 8 times greater in United States textile industry than in that of Brazil. Taking into account the fact that a substantial part of the apparent labour

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1/ See Economic Survey of Latin America 1949, Chapter V.

2/ See Chapter IV, below.

3/ Rationalization might entail certain disadvantages when an undertaking has been established with foreign capital, since it would involve a reduction of expenditure on wages and an increase in profits. When profits are not reinvested but remitted abroad, rationalization will entail a loss to the country in which the undertaking is located.

/surplus in

surplus in the factories counterbalances the excess-yield of capital, it becomes evident that the reduction in labour costs accruing from rationalization would be much less than might at first be supposed.

The great significance of the rationalization of labour in highly industrialized countries is due to the high level of wages and the shortage of labour. When these two factors are not both present, the reduction of industrial employment by means of rationalization leads to the formation of a labour surplus which, unless it can be absorbed at the same level of productivity, exerts pressure on wages, and in a country exporting primary products, this may possibly contribute to a deterioration in the terms of trade. On the other hand, the lowering of real wages (actual or virtual), provided it does not affect the price of imported equipment, will modify the ratio of the cost of equipment to wages in favour of the former, thus discouraging investment in fixed capital for the raising of productivity.

These comments are not intended to prove the uselessness of rationalization, which necessarily accompanies the technical improvement and modernization of equipment. The sole purpose of these observations is to show that organization develops concurrently with a country's economy as a whole. Only under certain conditions of general development is it possible to make use of all the resources of the scientific organization of labour, which in turn makes possible high levels of productivity.

Nor should it be assumed from what has been said that little can be done in an economy such as that of Brazil with a view to the better utilization of the capital available. An enormous amount remains to be done as regards the co-ordination of investments. Recently an attempt was made to draw up a systematic general plan of Government investment, but the problem of integrating this with private investments is only now beginning to be studied.[1/] This task of integration will certainly be easier once a general plan of development has been formulated.

1/ One of the tasks of the recently established National Council of Economy under its Statutes is to draw up a general plan of investment for Brazil.

In the following section, some of the outstanding problems of the present phase of economic development in Brazil will be dealt with. The solution of these will be facilitated by considering them as a whole, on the basis of a general plan of development.

Some problems arising from the present phase of development

The most serious problem connected with the present stage of economic development of Brazil is probably that of intensifying investment in the basic sectors; that is, transport, power and basic industries. There are in fact two separate problems here, but their solutions are interdependent. On the one hand, the development of transport and of power production during the past two decades has been relatively retarded; unless the pressing problem of re-equipment is solved and the need for an improvement of the services rendered by these two sectors is met, the present rate of development cannot be maintained or intensified. On the other hand, past experience seems to have adequately proved that there is very little possibility of solving this problem without first developing the basic industries, that is, those which make possible the domestic production of part of the equipment which its solution makes necessary in increasing amounts. However, the installation and operation of these industries presupposes power and transport availabilities. To achieve an optimum solution from the economic point of view, therefore, the two problems must be considered as interconnected.

The fact that these two difficulties can only be dealt with in conjunction does not imply that they spring from the same causes. The need to intensify investment in transport and energy production derives from the slow development in these two sectors during the past twenty years, whereas the necessity to intensify development of the basic industries is a consequence, rather, of inadequate capacity to import. The latter difficulty is therefore more deep-rooted; a fact which must be kept in mind when a common solution is being sought. In fact, if we seek to remove the former difficulty without taking into account the latter, the inadequacy of the capacity to import will be aggravated. On the other hand, the gravity of the first difficulty will be diminished to the extent that progress is made in eliminating the second.

If Brazil is unable to manufacture part of the capital goods which it requires in increasing quantities for its development, the limitation of foreign means of payment will constitute a strong check on such development. The experience of the past few years is instructive in this connexion. The quantum of imports of capital goods decreased by 26.0 per cent between 1947 and 1950, though their value in relation to the value of all imports at current prices, increased from 37.9 per cent to 40 per cent. The fact that the supply of capital goods (excluding building) was able to overtake the 1947 level by 1950 was due to the substantial increase of domestic production, which rose by 58 per cent over that period. Thus, given that the demand for capital goods rises more rapidly than the capacity to import them, it is essential that the production of such goods should develop more intensively than demand for them. Hence the need to stimulate investment in this sector.

As an example, let us consider the question of transport, which is of enormous importance in the present stage of Brazil's economic development. The re-equipment of Brazil's railroad system at present requires some 120 to 150 thousand tons of rails, 5 or 6 thousand trucks and coaches, and several hundred locomotives per annum. The purchase of all this material abroad -- bearing in mind also that its volume will tend to increase -- would constitute too heavy a burden on the balance of payments, and would entail reducing imports of other goods which it may not be possible to produce at the present stage of the country's development. It is natural, therefore, that Brazil should seek to produce an increasing proportion of the equipment required. But this problem cannot be solved independently of that of the power to be used for the railways and of the productive capacity of the domestic iron and steel industry.

It is well known that in recent years the leading Brazilian railways have undertaken an extensive programme of replacement of steam engines by diesel engines.[1/] These changes evidently follow the lines dictated by the

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1/ Between 1945 and 1949, coal consumption of the Central Railway of Brazil was reduced from 516,569 to 417,899 tons, whereas liquid fuel consumption increased from 5,461 to 59,214 tons. The same consumption trends were recorded on other main railway lines, such as the Santos-Jundiai and the Sorocabana.

financial position of the railways, since it is more economic to use the liquid fuel. However, the Santa Catarina coal which is used for the production of metallurgical coke has to be submitted to a process of washing which involves the simultaneous production of steam coal at a ratio of 4 tons of steam coal to every 3 tons of metallurgical coke. Between 1940 and 1949, the proportion of domestic coal consumed by the Volta Redonda cokery has decreased. One of the reasons put forward to explain this decrease is that the national market for steam coal has become stagnant or is in a phase of contraction. The replacement of steam by diesel locomotives therefore not only implies greater foreign exchange expenditure for liquid fuel, but will also compel the iron and steel industry to increase expenditure on raw materials, which must be paid for in foreign currency.

There is still another aspect of the problem. It has been argued that the railways must lower their rates in order to compete with motor vehicles, which have increased tremendously in numbers during the past few years. The very fact that the costs of motor transport, including investment and running expenses, are largely paid in foreign exchange, means that this form of transport has been greatly benefited by the exchange policy. Furthermore, the substantial investment made by the Government in road building during the past few years has also contributed to the advantage of this form of transport.

There is thus a whole chain of interconnected phenomena: the preferential development of motor transport, the rise of liquid fuel consumption on the railways, the fall in coal production and the comparatively reduced consumption of domestic coking coal. A problem such as this must be considered from the point of view both of the most economic utilization of the available capital and of present and prospective foreign exchange resources. Obviously, motor trucks have indisputable economic advantages in a country such as Brazil with a low degree of traffic density over the greater part of its territory. However, the expansion of motor transport is being carried out concurrently with that of the modern railways serving areas of greater economic density; a fact largely due to the inadequacy of these railways, the capacity of which has not kept up with the development of production. The problem, therefore, is not necessarily one of competitive transport rates; but this need not prevent us from considering the question of the comparative advantage to domestic economy of directing investments into one or other of these forms of transport.

/Even so

Even so far as the cost in foreign exchange is concerned, it should be remembered that in motor transport depreciation is more rapid and fuel consumption per freight ton is greater. The preferential development of motor transport thus tends to increase operating costs in foreign exchange more rapidly. The same may be said of investment expenditure in foreign exchange since very few motor vehicles are even assembled in Brazil, whereas a good deal of the rolling stock and railway material is now produced by domestic industry.

Undoubtedly the problem would be radically changed if there were any possibility of a substantial development of domestic petroleum production or, alternatively, of increasing the consumption of hydroelectric power on the railways to the necessary extent. Given the existence of petroleum deposits in the country, the development of petroleum production is primarily a matter of technique and of capital. However, experience seems to have proved beyond doubt that in this sector the difficulties have not always been solved by application of strictly economic criteria. During the past few years some progress has been made in the electrification of the railways; electric power consumption in this branch of transport increased between 1945 and 1949 from 223 million to 313 million. The vast hydroelectric potential of the area served by the leading railways suggests great possibilities in this field. If a feasible solution is to be found in this direction, however, electric power installations must be expanded at a considerably higher rate than that recorded during the past twenty years. Moreover, this need to increase the production of hydroelectric power is one of the basic problems confronting Brazil in its present phase of development. As will be shown below, the consumption of hydroelectric power is developing much more slowly than Brazil's development requires. One of the detrimental results of this is that in the transport systems of the larger cities, trams are being replaced by buses, with a consequent rise in foreign exchange costs.

/From what

From what has been said on transport and power, it will be seen that, during the past few years, operating costs which must be paid for in foreign exchange have tended to increase rather than decrease in these two basic sectors. Now, given that the capacity to import does not increase in step with the value of investment, and that the operating expenses in foreign exchange entailed by investment increase at a more than proportionate rate, it is clear that without expanding the production of capital goods the rate of development must perforce be reduced.

The production of capital goods cannot possibly be increased without first expanding the capacity of the iron and steel industry. In 1950, though it was working at full capacity, the industry was unable to meet three-fourths of the market demand. The problems which depend for their solution on the expansion of iron and steel production are numberless. One of the most important of these is the mass production of transport material. Domestic production of rails already meets a substantial part of Brazil's requirements, and the same may be said of railway trucks. The production of diesel motors of more than 1000 HP is now being investigated with a view to establishing complete domestic production of this type of locomotive.1/ Since, however, steel production cannot be increased over a short period, the expansion of industry will necessarily entail increased demand for imports of this basic material. The same applies to the motor truck and automobile industry, in which considerable development is now taking place. This explains the efforts which Brazil has been making since 1949 to augment appreciably the productive capacity of its iron and steel industry. Nevertheless financial difficulties and, especially, Brazil's restricted capacity to import, have delayed such expansion until 1951.

1/ This is another aspect of the question of directing investments: what type of equipment should be given priority of investment? Brazil does not yet manufacture steam locomotives, though it offers a greater market for these (despite the difficulties created by lack of standardization). The manufacture of diesel locomotives corresponds to the prospects of increased demand for them in view of the current plans of the leading railway companies.

/The consumption

The consumption of other products, among which the most important are basic chemicals, has tended to expand at an increasing rate in the wake of economic development. Some of these products are used in industry and others in agriculture. If they cannot be supplied by domestic production they tend to absorb a growing proportion of foreign exchange, causing a rise in foreign exchange expenditure for the country's economy as a whole. It is easy, therefore, to see what special attention is being given at the present stage of Brazil's economic development to the problem of the basic chemical industries. Some progress has been made in the period under review -- reference should be made in this connexion to the carbonization process at the Volta Redonda cokery, and the establishment of several modern factories for the production of sulphuric acid and electrolytic caustic soda. However, the problem of the utilization of coal-bearing pyrites has not yet been solved, though the manufacture of sulphuric acid depends almost entirely on foreign supplies of sulphur; nor has any progress been made towards the large-scale production of soda ash and caustic soda. The annual consumption of alkalis computed in terms of soda ash, stands at about 150,000 tons, and reveals an upward trend. The feasibility of establishing a Solvay plant of medium size has been proved, and the Brazilian Government has undertaken to set up such a plant. Here, as in the case of petroleum, the problem of technique is at least as vital as that of capital resources. If technicians cannot be obtained from abroad, the most practical solution will be to train them in Brazil -- again a grave and perhaps insoluble problem for a country suffering from a shortage of capital.

Before leaving the subject of basic chemical industry, we must devote some attention to the problem of fertilizers. Consumption of these has expanded considerably during the period under review, and will have to increase at an even greater rate in the future if Brazil intends, as the needs of its economic development demand, to improve the efficiency of its agriculture. The increased consumption of fertilizers in the last two years is due to two main factors. The first is the fact that efforts are being made to reclaim increasing areas of the old lands exhausted by extensive cultivation. Some of the colonization experiments carried out in São Paulo, for instance, have recently shown that it may be more economic to recover the old coffee lands for agricultural production (to meet local demand and for dairy cattle breeding) than to move away from the urban centres in search of virgin soil. The second factor is the interest stimulated by the recent development of the large, semi-abandoned

In addition to these two factors which have led to a sharp increase in the consumption of fertilizers, others of a more general nature must also be taken into account, and will make themselves felt with increasing effect. It is recognized that the marked contraction in the price of Brazilian agricultural export products which has been in progress since the great depression, has led farmers, who are anxious to lower their costs of production to ignore totally the need for maintaining soil fertility -- a consideration which is largely disregarded even under normal conditions because of the vast tracts of virgin soil available. The result has been a sharp decline in the yield of the soil during the past decade; a grave danger for Brazil, since unless investment in agriculture is increased, the cost of agricultural production in terms of human labour will tend to rise.

The recovery of agricultural prices in the second half of the 40's led to substantial investment in agriculture, and this in turn has intensified the demand for fertilizers. Like the basic chemical products used in industry, fertilizers actually represent operating costs, and tend to be required in increasing quantities. Unless Brazil succeeds in building up large-scale production of such goods, expenditure of foreign exchange for agriculture cannot fail to increase.

The rise in the price of coffee and the capacity to import

The serious consequences of Brazil's limited capacity to import, in the present phase of its economic development, gives particular significance to the rise in the price of coffee in the international market since the end of 1949.

During the past twenty years the importance of coffee's contribution to the national income has been substantially reduced. In Chapter III of this study it is estimated that between 1925 and 1929 coffee contributed more than 20 per cent to the gross national product, but that between 1945 and 1949 its share had fallen to little more than 5 per cent. In 1950, when the price increase took place, it contributed slightly more than 8 per cent

/It should

It should not be assumed, however, that the importance of coffee has declined proportionately. The position of coffee in relation to Brazil's capacity to import has been largely maintained. In 1925-29 it contributed 72 per cent of the current value of exports, in 1945-49 41.2 per cent and in 1950 65.8 per cent. Thus Brazil's capacity to import depended on its coffee exports almost as much in 1950 as in 1925-29.

As a result, Brazil's balance of payments is now still more sensitive to fluctuations in the quantum and value of its coffee exports, since while it has succeeded in gradually freeing its national income from the influence of coffee production, it has not been able to do as much for its capacity to import. If the quantum or value of coffee exports were now to be reduced, the decrease would not affect the national income to the same extent as it would have done formerly, so that the resulting decline in the demand for imports would be proportionately lower. But such a fall in coffee exports would affect the capacity to import just as strongly now as in the past, and its pressure on the balance of payments would therefore in fact be greater. In other words the effect of a change in the price of coffee on national income would now be four times less than in the period 1925-29; thus any such modification would have much less effect on the demand for imports. However, changes in the price of coffee continue to affect the capacity to import to the same extent now as in the past. Hence, their positive or negative influence on the balance of trade is greater.

On the whole, the rise in the price of coffee since the end of 1949 represents a cyclical recovery retarded by a variety of factors. In Chart 5 the index of coffee export prices is compared with that of Brazilian import prices, with a view to illustrating the fluctuations of coffee's purchasing power in the world market. It will be seen from this chart that in the cyclical upswing of the 30's coffee does not appear to have made any appreciable recovery; and in fact, the coffee depression which began in 1930 lasted for about 19 years.

/The long

The long period of depressed coffee prices led to a fundamental change in the age-structure of the plantations, resulting in the progressive predomination of older trees. In Chapter III it is attempted to show that the consequences of the ageing of the coffee plantations will be felt throughout the whole of the present decade, and that substantial investments will be required if the present level of production is to be maintained. But even the maintenance of present levels of production will mean a reduction of Brazil's capacity to export coffee, since, as may be seen from Chart 6, domestic consumption during the past few years has been supplied by stocks accumulated during the preceding period.

There are no grounds to assume that Brazil will be able to raise the level of coffee production before 1955. During the next few years, therefore, coffee exports will probably remain at about the 1950 level, which was well below the annual average for the preceding five-year period.

The influence of coffee on the capacity to import during the next few years will depend essentially on the ratio of the price of coffee to import prices. If the price of coffee remains at the 1950 level, the recent rise in Brazil's capacity to import will be gradually cancelled, since import prices tend to increa If, moreover, the relative price of coffee is not maintained at a high level, it is hardly likely that coffee cultivation will attract the extensive investments necessary to maintain or surpass the present level of production. If these investments are not made, the tendency of the level of production to fall noted in the past twenty years will continue, owing to the very low proportion of new trees. In this case, disequilibrium between supply and demand will be aggravated, with serious effects on the level of coffee consumption throughout the world.

General Terms of the Problem

Brazil's capacity to import remained virtually stagnant between 1945 and 1949, and though it rose considerably in 1950 as a result of the improvement in the terms of trade, the contractual obligations assumed in previous years to cover deficits in the balance of payments[1/] made it impossible to recover in 1950

1/ The rise in the price of coffee meant an influx of more than 300 million dollars to Brazil in 1950, but outstanding commercial debts which had to be paid before the end of that year amounted to some 200 million dollars.

the 1947 level of total imports, and especially of capital goods.

An increase in the capacity to import during the period under review resulting from an increase in the quantum of exports (had this been possible) would have involved reducing the supply of goods manufactured in Brazil for domestic use. This problem must be given careful consideration in connexion with the formulation of investment policy, since the objective, in the last resort, is the optimum utilization of the scarce capital available. If, as has been stated, one of the most serious obstacles to economic development is the shortage of external means of payment, it must also be remembered that in the post-war period Brazil's exports have been paid for to a large extent in currencies having limited circulation. It has thus been impossible to obtain the most suitable imports for Brazil in return for its exports.

An alternative path to increased capacity to import lies through improved terms of trade.[1/] The rise in the price of coffee, together with other factors, led to a substantial improvement in Brazil's capacity to import during 1950. Provided that there is no fall in the quantum of exports, the present level of export prices should stimulate economic development, at least until it is overtaken by import prices, and assuming that there are no difficulties in obtaining capital goods in the international market.

During the period under review, operating costs in Brazil in terms of foreign exchange increased both absolutely and relatively. The country now requires relatively greater imports of fuel and basic products consumed by its industries and agriculture.

During the first stage of its development, Brazil was able to solve this problem by progressively modifying the structure of its imports, reducing the proportion of foodstuffs, light manufactures and other goods increasingly

1/ Capacity to import may also be increased by the investment of foreign capital and will then tend to decline in inverse proportion to the cost of servicing of such capital.

/produced

produced in Brazil. The possibilities of this method, however, have to all intents and purposes been exhausted.[1/] In this connexion one further comment should be made; namely, that the demand for the consumer goods imported by Brazil during the first stage referred to above increased in step with the growth of the population, but more slowly than real income,[2/] whereas the demand for the goods imported at present is increasing with the population, but more rapidly than the expansion of real income. Since these goods are intended for productive processes (industrial metals, basic chemical products, fuel etc.), demand for them tends to rise together with the volume of investments, which in its turn increases at a greater rate than real income during the process of economic development. Thus, Brazilian fuel imports expanded between 1945 and 1950 at an average annual rate of 26.7 per cent and imports of basic chemical products at an average annual rate of 24.8 per cent. The products included in these two categories, which in 1945 constituted 13.3 per cent of the total quantum of imports, had risen by 1950 to 23.1 per cent. If steel imports developed at a much lower rate, this was due to the substantial expansion of domestic production, as will be shown in Chapter II. Thus, even if exports should rise at the same rate as real income, ceteris paribus, demand for imports will always tend to exceed the capacity to import. However, past experience has amply proved that the capacity to import does not rise in step with real income, much less with the volume of investments: a fact which may be noted, in connexion with the recent period, from Chart 4.

1/ Brazilian imports classified as "essential" by the Bank of Brazil, constituted 90 per cent of the total value of imports in 1949 and 92 per cent in the first half of 1950. Durable consumer goods, such as passenger automobiles, motor-cycles, refrigerators, radio receivers etc. are not considered "essential ", though there is little or no domestic production of such articles.

2/ In countries where real per capita income is very low, the demand for certain consumer goods increases at a greater rate than real income; but it must be remembered that this phenomenon is due to the existence of social classes whose basic consumption is subnormal; and the coefficient of imports of such classes is very low.

/It may be

It may be concluded from the above that in order to continue its economic development, Brazil needs at its present stage to lower or at least check the rise in operating costs in terms of foreign exchange. Hence the urgent need to direct investments into the basic sectors: the production of hydroelectric power, fuel, industrial metals, chemical products etc. Only when this has been accomplished will the necessary conditions exist for the establishment of large engineering industries, enabling Brazil to produce the heavy equipment and modern vehicles of every type which it will require in great quantities at a higher stage of its development. If, however, an increasing proportion of the capacity to import is used to cover operating costs, it will become increasingly difficult to import the specialized equipment and the technicians essential for the installation of such industries, and for the maintenance of others at the level of technical development obtaining in the great industrial centres.

CHAPTER I. PRODUCTION OF GOODS AND CAPITAL FORMATION

Production of goods

During 1950, the production of goods in Brazil increased by 3.7 per cent as compared with the preceding year. This rate of expansion is lower than the post-war average, which was about 4.9 per cent per year. Production of goods was 26.5 per cent higher in 1950 than during the last year of the war, but the per capita increase during the same period was only 14.3 per cent; that is, an annual rate of increase of 2.8 per cent. This may be taken as an approximate index of the rate of expansion of real income during recent years.[1/]

Table 1. Brazil: Fluctuations in the production of goods during the period 1945-1950

Years	Value in millions of 1947 cruzeiros	Index	Annual fluctuation (as a percentage)	Index of per capita production	Annual fluctuation (as a percentage)
1945	72,699	100		100	
1946	78,226	107.6	7.6	105.5	5.5
1947	77,517	106.6	- 0.9	102.4	2.9
1948	85,160	117.1	9.8	110.2	7.6
1949	88,669	122.0	4.2	112.5	2.1
1950	91,993	126.5	3.7	114.3	1.6

Note: For the calculation of the production of goods, see Appendix A.

Taken separately, both primary and secondary production increased more or less to the same extent between 1945 and 1950; which would suggest that during the post-war period, Brazil maintained the structure of production which the special conditions created by the war had enabled it to achieve. There was thus no repetition of the process which followed the first World War, after which the pre-1914 economic structure was largely re-established.

1/ The increase in real income may possibly have been greater, given the tendency for the production of services to expand at a greater rate than that of goods. In Appendix A various aspects of this problem characteristic of under-developed countries are discussed. It must be borne in mind, moreover that part of the goods produced are exported; which accounts for the repercussions of fluctuations in terms of trade on the level of real income.

/In so far

In so far as the production of goods is concerned, the period under review may be divided into two stages. During the first (1945-47), significant readjustments took place as a result of the return to normal foreign trade conditions, and of the accelerated expansion of primary production. During the second (1948-50), a greater development of secondary production may be noted, though primary production continued to develop uninterruptedly.

The indices of manufacturing production contained in Table 34, Chapter III, demonstrate that the decline of industrial production during the first stage referred to above was largely due to the situation in the cotton textile industry, which contributes about one-fourth of all industrial production and suffered a sharp fall in exports beginning in 1946. Similarly, there was a sudden contraction in the production of vegetable oils, which had expanded, partly to meet demand in the export market, during the war. Some foodstuffs industries were similarly affected, as a result of the intensification of exports of raw products, or of the fall in imports of raw materials. The flour milling industry is a case in point.

While it suffered the effects of a contraction in the market for several products which during the war enjoyed a privileged position -- for example, strategic products -- primary production benefited by the strong foreign demand for agricultural and cattle products which made itself felt in the years immediately following the war.

Table 2. Brazil: Fluctuations in primary and secondary production during the period 1945-1950

Years	Index of primary production	Annual rise (percentage)	Index of secondary production	Annual rise (percentage)
1945	100.0		100.0	
1946	109.0	9.0	106.3	6.3
1947	110.7	1.6	102.8	- 3.3
1948	116.0	4.8	118.2	15.0
1949	122.4	5.5	121.6	2.9
1950	128.5	5.0	124.7	2.5
(Average)		5.2		4.7

Note: For the calculation of the indices see Appendix A.

There has been little change in the relative importance of the groups constituting primary production. Mining production, which represents less than 1 per cent of the total production of goods, suffered a slight decline in some

/branches

branches, corresponding to the contraction of the market for strategic products. However, the increase in iron ore production during the following years enabled the general rate of development to be maintained. Production in the vegetable extractive industry[1/] fell from 1.9 to 1.6 per cent. Of the various branches of primary production, this sector depends to the greatest extent on the foreign market. During the period under review, the relative importance of agricultural and cattle products underwent little change, as will be seen from the data contained in Table 3.

Table 3. Brazil: Relative importance of the various branches of the goods production during the period 1945-1950

(percentage of total production)

Years	Primary production					Secondary production		
	Total	Agriculture	Cattle breeding	Vegetable extractive	Mining	Total	Manufacturing	Building
1945	48.5	36.4	9.5	1.9	0.6	51.5	45.6	5.9
1946	49.2	37.4	9.4	1.8	0.6	50.8	43.5	7.3
1947	50.4	38.0	10.1	1.7	0.6	49.6	43.3	6.3
1948	48.1	35.9	9.8	1.7	0.6	51.9	46.7	5.2
1949	48.7	36.7	9.8	1.6	0.6	51.3	46.4	4.9
1950	49.3	37.3	9.7	1.6	0.6	50.7	45.9	4.8

Note: For source and method of calculation see Appendix A.

Availability of goods

In the preceding section it was pointed out that the total production of goods increased at an average annual rate of about 5 per cent. However, only a part of this production goes direct to the domestic market. The remainder is exported, and reaches the domestic market only indirectly, in the form of imports. Since exports have to cover not only imports but also the debit balance of services, and since imports are in some cases paid for by loans and by imported or repatriated capital, the volume of goods available for consumption and for capital formation does not necessarily equal the domestic production of goods.

In the post-war years the gap between the production of goods and the supply of goods for domestic consumption widened, the principal reason being the substantial debit and credit balances of trade, which varied between a credit balance of 5,201 million cruzeiros in 1946 and a debit of 1,610 million in 1947.

1/ This comprises vegetable products not cultivated systematically, that is, yerba mate, carnauba wax, rubber, certain oil-seeds and hard fibres, etc.

Apart from the direct effects of these factors, the availability of goods may be affected by fluctuations in the terms of trade; i.e., a greater or smaller volume of goods may be imported in proportion to the volume of exports. Thus, Brazil's terms of trade deteriorated to the extent of about 10 per cent between 1945 and 1946, and improved to the same extent between 1948 and 1949. The influence of the terms of trade on the availability of goods naturally varies with the proportion of exports to total production. Now, in 1946 about 30 per ce of all goods produced were exported, whereas in 1949 only about 20 per cent were exported. This fluctuation of 10 per cent in the terms of trade may have represented a net decrease of 3 per cent in available goods in the first case and a net increase of 2 per cent in the second.

Table 4 shows that in the post-war period the supply of goods for domestic consumption expanded at a greater rate in Brazil than domestic production of goods.

Table 4. Brazil: Production, exports, imports, apparent availability of goods and terms of trade

Years	Production	Exports	Imports	Availability	Indices: Production	Indices: Terms of trade	Indices: Availability of goods
	(in millions of 1947 cruzeiros)						
1945	72,699	18,610	12,625	66,695	100.0	100.0	100.0
1946	78,226	21,153	14,676	71,749	107.6	89.7	107.6
1947	77,517	19,265	22,789	81,041	106.6	104.2	121.5
1948	85,160	18,244	18,801	85,717	117.1	96.5	128.5
1949	88,669	18,051	19,371	89,989	122.0	105.0	134.9
1950	91,993	16,738	20,715	95,970	126.5	177.4	143.9

Note: For method of calculating available goods see Appendix B.

The data contained in Table 4 have been partially corrected to allow for exports consisting of stocks accumulated during the war years. The real supply of goods may possibly not have increased as much as the index would lead one to suppose since the correction only covers cotton and coffee stocks. However, the substantial expenditure of monetary reserves after 1947 and the settlement of outstanding commercial accounts during 1948 and the first half of 1949 must inevitably have led to an increase in the supply of goods in Brazil.

During the period under review the average annual increase in the production of goods was 4.9 per cent, and in the availability of goods for domestic consumption 7.6 per cent.

/Table 5.

Table 5. Brazil: Annual increase in production and in the apparent availability of goods

(percentage of the preceding year)

Years	Production	Availability
1946	7.6	7.6
1947	- 0.9	13.0
1948	9.8	5.8
1949	4.2	5.0
1950	3.7	6.6
(Average)	4.9	7.6

Source: See Table 4.

These data show that during the post-war period consumption and capital formation in Brazil were greater than would have been possible by the mere utilization of domestic production. Until 1949, since there was no appreciable change in the terms of trade, this greater availability of goods could only have been due to the expenditure of reserves (in money or goods) and to financial obligations contracted abroad. In 1950, the rise in the supply of goods was primarily due to the improvement in the terms of trade.

/Capital

Capital Formation

a) The change in the direction of investment

In order to develop its economy, Brazil needs substantial investment in practically every branch of economic activity. The opportunity for such investment is restricted by the limited extent of previous investments, reflected in a low rate of productivity and low per capita income. Economic development is obstructed at the very outset by this double barrier: the low investment of equipment per worker limits per capita income and this in turn limits the level of new investment.

The question is how Brazil was able to escape this vicious circle during the twenty years following the 1929 crisis. As was shown in the 1949 Survey,[1/] there are many indications that during the period beginning in 1930 Brazilian economy developed by its own resources.

The scanty data available do not permit investigation of the manner in which Brazilian development was financed during this period, much less an estimate of the real volume of net investment in the country. Of course, production and consumption are indices of economic development, but for short and medium periods they need to be corrected to allow for decapitalization. It must be asked, for instance, to what extent economic development during the 30's and the war years was counterbalanced by the deterioration of the transport system and public services, the obsolescence of textile equipment, the loss of some 1,000 million coffee trees and other similar developments.

Statistics on the Brazilian railways will give some idea of the extent of the deterioration which has taken place during the past twenty years in the national transport system. Between 1934 and 1945 there was an increase of 6.6 per cent in railway mileage in Brazil, whilst the number of locomotives rose by 8.6 per cent and of trucks by 23.7 per cent. During the same period there was an increase of 119.2 per cent in passenger traffic reckoned in passenger-kilometres, and of 100.6 per cent in freight traffic reckoned in ton-kilometres. The state of the railway material in use at the end of the second World War proves that investment since 1930 has lagged behind normal replacement requirements.

1/ Economic Survey for Latin America 1949, Chapter VIII.

/The same

The same applies to the most important branch of Brazilian industry -- the cotton textile industry -- as to the railways. Less textile equipment was imported by Brazil between 1930 and 1945 than during 1947/49. There are many signs to show that during the former period net investment in the cotton textile industry ended with a negative balance.

Any study of net investment in Brazil during the past twenty years should take into account the factor of disinvestment, or the losses suffered by large-scale agricultural export industry. It is known, for instance, that the bulk of investment in Brazil before 1930 went to the coffee plantations. At the end of the 20's there were some 3,000 million coffee trees in Brazil. Assuming a cost of 1 cruzeiro per tree, this represents a total investment of 3000 million cruzeiros, which represents an increase of 50 per cent over the industry's capitalization according to the 1920 census. If we assume the average productive life of a coffee tree to be forty years and that of industrial equipment to be 25 years, it will be clear that the investment necessary for the maintenance of the level of production should have been more or less equivalent in both cases, fluctuating between 75 and 80 million cruzeiros. But since 1930, there has been no investment for re-equipment. The extent of decapitalization in this sector of agriculture has been revealed by the loss of one-third of the total number of coffee trees. It is not possible to determine to what extent these losses have been real, or whether there has simply been a process of disinvestment caused by the placing of capital in other sectors of economic activity. Agriculture itself -- as in the case of cotton -- would have received part of the capital withdrawn. Nevertheless it would be of interest to ascertain how far this replacement of long-term cultivation (in which large sums of capital are locked up) by annual crops has represented a process of disinvestment.

The foregoing remarks are intended merely as a general commentary, since research thus far carried out in Brazil is inadequate to justify anything more than conjecture in these matters. It may well be assumed, however, that since the 1929 crisis the Brazilian economy has undergone structural changes involving transfers of capital among the various sectors of production, together with a general redirection of investment. The economic progress of the 30's and 40's may largely be ascribed to these developments, and possibly to the increase in savings which followed in their wake.

/b) National

b) National income and capital formation

The matters touched on in this section are cited merely for purposes of illustration, and are intended solely to stress the importance of the problem under review, since the national income of Brazil has not yet been studied sufficiently to justify a more definite presentation of the problem of capital formation.

In Appendix C, an estimate has been made of the availability of capital goods in Brazil during the period 1945-50. It goes without saying that an analysis of this nature should be based on statistics far more complete than those actually available. However, it is unlikely that the errors which may have crept into the calculation are serious enough to invalidate all the conclusions drawn from it. 1/

The index of the availability of capital goods has shown two distinct trends in the post-war period. Until 1947 it rises sharply, as a result of the substantial increase in imports of capital goods, which were in fact tripled between 1945 and 1947. During the following period, the index declines sharply in 1948, and though it recovers in the following years, it is still lower in 1950 than in 1947.

1/ The United Nations Economic Commission for Latin America is carrying out more extensive research in this field with a view to estimating the formation of capital in Brazil on the basis of financial statistics. It will then be possible to calculate the investments actually made, since what is attempted in the present report is to determine the total volume of capital goods available to supplement fixed capital or stocks of such capital during a given period.

/During the

During the earlier stage the supply of consumer goods increases at a considerably lower rate than that of capital goods. In 1946, when Brazil had a favourable balance of trade, the supply of consumer goods diminished as compared with the preceding year.

Table 6. Brazil: Indices of the availability of consumer and capital goods during the period 1945-1950

Years	Consumer goods		Capital goods		Total	
1945	100.0		100.0		100.0	
1946	97.6		156.8		107.6	
1947	109.9	100.0	186.3	100.0	121.5	100.0
1948	123.7	112.5	156.6	84.1	128.5	105.8
1949	128.2	116.6	169.2	90.9	134.9	111.0
1950	135.7	123.4	185.1	99.4	143.9	118.4

Note: See note to Table 7.

Imports of capital goods, which in 1947 constituted 39.1 per cent of the total supply of such goods (as against 22 per cent in 1945) fell to 31.8 per cent of the total in 1948, 28.1 per cent in 1949 and 27.7 per cent in 1950. In the period 1945-1950 imports of capital goods rose at an annual average rate of 25.9 per cent, despite the contraction which took place in 1947 and 1948. Imports of consumer goods for the period as a whole showed an annual rate of increase of only 10.3 per cent, though in 1948/50, when total imports decreased in relation to 1947, the decline in imports of consumer goods was less than that of capital goods. 1/

The production of capital goods shows the same general trend as that of imports of such goods. Between 1945 and 1950, the production of capital goods expanded at a much greater rate than that of consumer goods: the annual average increases being 14.0 per cent and 3.9 per cent respectively. In 1947 and 1948, however, domestic production of consumer goods developed more rapidly than that of capital goods (12.4 per cent and 3 per cent, respectively). It must be borne in mind, however, that the low rate of expansion in the domestic production of capital goods in 1947 and 1948 was due to the sharp decline in building.

1/ These data do not necessarily imply that the policy of import control first applied in 1948 has failed to achieve positive results. A reduction in the capacity to import is first felt in the more elastic items which include capital goods. Consumer goods include a number of items, such as fuel and wheat, imports of which cannot be reduced over a short period without serious consequences for Brazil's economy and its population.

/Table 7.

Table 7. Brazil: Annual fluctuations in the total availabilities, production and imports of consumer and capital goods during the period 1945-1950

Years	Availabilities			Production			Imports		
	Consumer	Capital	Total	Consumer	Capital	Total	Consumer	Capital	Total
1946	- 2.5	56.8	7.6	2.9	38.6	7.6	- 6.4	99.8	16.7
1947	12.7	18.8	13.0	- 0.6	2.5	- 0.9	56.2	53.8	55.3
1948	12.5	- 15.9	5.8	12.4	3.0	9.8	10.7	- 29.4	-17.5
1949	3.6	8.1	5.0	2.1	15.8	4.2	5.7	- 2.8	3.0
1950	5.8	9.5	6.6	2.5	10.2	3.7	6.5	7.9	7.0
Average	6.4	15.5	7.6	3.9	14.0	4.9	10.3	25.9	12.8

Note: For the method of calculation of the total production of goods see Appendix A. The production of capital goods is the difference between the total supply of this class of goods (method of calculation shown in Appendix C) and imports of capital goods, the C.I.F. price of these being raised by 50 per cent. The production of consumer goods was obtained by calculating the difference between total production and production of capital goods. Details of imports of capital and consumer goods are shown in Table 37, Chapter V. Imports of consumer goods include fuel and basic chemicals. The method of calculation of the total supply of goods and its apportionment among consumer and capital goods is explained in Appendix B.

The lack of information on replacements makes it impossible to estimate the amount of net investment. However, there is good reason to believe that much of the equipment purchased between 1945 and 1947 went to satisfy the pent-up demand for replacements postponed in the foregoing years. In a country where development is as unequal as in Brazil, any estimate of the ratio between net and gross investments is extremely difficult. On the one hand, depreciation of equipment is known to be very considerable owing to the unskilled labour employed, and to poor maintenance, the bad state of the highways etc. On the other hand it must be remembered that the shortage of fixed capital and the low wage levels provide incentives to the protracted use of equipment and the postponement of replacements. Owing to this contradiction it is likely that the level of net investment is extremely low in Brazil if the term is interpreted in its strict sense (i.e., gross investment minus depreciation and loss). If, however, it is understood to mean total gross investment minus actual replacements, then the

level of net investment is relatively high. It should be borne in mind, moreover, that the structure of Brazil's industry and economy as a whole -- characterized by a limited amount of fixed capital per worker -- involves a low rate of replacement. As the relative importance of industry grows in relation to economic activity as a whole, and as heavy industry expands in relation to industry in general, the rate of replacement tends to increase.

In order to determine the real rate of capital formation, we need a far more precise series of data on the national income than is at present available. The recent estimate made for the year 1947 by the Getulio Vargas Foundation refers to the net national product, without any estimate of replacements. The September 1950 issue of the Boletim do Conselho Tecnico de Economia e Financas issued by the Brazilian Ministry of Finance publishes an estimate of gross product over a number of years, based on the business tax. If these data are compared with those for the supply of capital goods, shown in Appendix C, it will be seen that over the period 1946-1949 the rate of gross capital formation stood between 15 and 20 per cent.

Table 8. Brazil: Rate of capital formation over the period 1945-1949

Years	Gross national product	Gross investment	Rate of gross formation of capital
	(in millions of 1947 cruzeiros)		
1945	125,700	13,602	10.8
1946	130,100	21,330	16.4
1947	124,700	25,339	20.3
1948	134,400	21,300	15.8
1949	141,400	23,034	16.3

Note: Investment figures do not allow for fluctuations in net credits abroad in favour of Brazilian persons or institutions. Data for the national product have been deflated on the basis of the index of the cost of living at Rio de Janeiro. They constitute a rough approximation, and are computed on the basis of sales and consignment-tax collections and estimated figures for production and services for the producer's own benefit. The average annual increase of the gross national product according to these data would be 3.1 per cent over the period 1945-1949; which is hardly likely in view of the fact that the production of goods during this period expanded at an average annual rate of 5.2 per cent.

Even if the data contained in Table 8 are treated with reserve, there can be no doubt that the availability of capital goods increased substantially between 1945 and 1949. 1/ Even in periods of intense economic activity it is hardly likely, however, the rate of gross capital formation can be much higher than 15 per cent of the national income. Taking into account the growth of Brazil's population, and especially the changes in the employment pattern of the population necessitated by the requirements of economic development, a rate of capital formation of about 15 per cent is rather low. Research carried out during the past few years has shown that at the more intensive phase of their development many countries achieved substantially higher rates of capital formation. Thus in the United States the average decennial rate of gross investment over the period 1880-1930 was about 20 per cent. 2/

In Appendix C an estimate has been made of the proportion between Government activity and private enterprise in capital formation. Table 9 shows the comparative data, calculated on the basis of that estimate.

Table 9. Brazil: Relative importance of Government activity and private enterprise in gross capital formation

	1945	1946	1947	1948	1949	1950
Government	12.7	6.5	11.4	12.8	20.4	13.7
Private enterprise	87.3	93.5	88.6	87.2	79.6	86.3
Private building	56.4	48.2	34.5	37.4	33.7	31.5
Other investments	30.9	45.3	54.1	49.8	45.9	54.8
Total	100	100	100	100	100	100

Source: See Appendix C.

1/ Strictly speaking, it cannot be stated that the rate of investment increased, since this would imply an increase of investment in relation to the national income. Imports or repatriations of capital, and also the liquidation of bullion or foreign exchange reserves or the mere collection of outstanding commercial debts, might lead to an increase in the availability of capital goods in relation to the national economy without necessarily increasing the rate of capital formation.

2/ However, the relative importance of capital imports in the two cases should be borne in mind.

/Despite its

Despite its sharp post-war contraction, Government investment devel... ver the period as a whole to a much greater extent than private investment, ...e average annual rate of increase of the former over the period 1945-1950 ...eing 26 per cent and of the latter 16.1 per cent. If private building is ...ubtracted, however, the rate of increase of private investment is much highe... that of Government investment, namely, 33.9 per cent. The investment of ca... ...n building declined steadily over the whole period, dropping from 56.4 per cent ...n 1945 to 31.5 per cent in 1950.

The data available do not permit more detailed analysis on the allocation ...f investment among the various sectors of the economy. It would be of considerabl... interest, for instance to determine the total investment in industry, and we ...herefore offer some relevant statistics, without placing much reliance on their ...ccuracy. In 1950 imports of capital goods for industry stood at some ...,205 million 1947 cruzeiros (c.i.f. prices). Allowing for necessary adjustments ...n the prices of such goods, and assuming that domestic production of capital ...oods for industry (including building) was equal in value to imported equipment, ...he probable amount of gross investment of fixed capital in industry during 1950 ...s found to be a total of 9,614 million 1947 cruzeiros. This would represent ...bout 38 per cent of the gross total investment in fixed capital in Brazil during ...hat year. That is not a very high proportion if we consider the dynamic role of ...ndustry in a country in process of development, with a rapidly growing population. ...uffice it to recall that in Sweden, for example, where in 1949 industry no longer ...layed so essential a part, it nevertheless absorbed 38 per cent of gross ...nvestment. And in France, where efforts are being made to modify the structure ...f the gainfully employed population, 46 per cent of gross investment was placed ...n industry during the same year. 1/

These estimates are very vague; but even allowing for a wide margin ...f error, they can hardly invalidate the conclusions which may be drawn from them. ...he first of these is that capital formation in Brazil is inadequate to meet the ...emands of economic development. Secondly, the proportion of new capital applied ...o industry is lower than would appear desirable, if it is remembered that this is ...he only sector capable of absorbing the existing or potential surplus of ...opulation. Evidence to support this statement may be found in Chapter IV,

1/ However, this high rate of investment was made possible by assistance obtained under the European Recovery Programme. See the Economic Survey for Europe 1949, United Nations Economic Commission for Europe.

wherein it is shown that during the past five-year period industry has absorbed vitually no new labour.

Some notion of the minimum net investment needed in Brazil will be obtained when it is remembered that the labour-force is now growing at a rate of about 350,000 persons per annum.

In 1950, had the normal rate of expansion of employment in industry during the period 1920-1948 [1] been maintained, industry would have absorbed more than 100,000 new workers, which would imply a net investment of at least 6,000 million cruzeiros. [2] This total would represent more than 60 per cent of the possible gross investment in industry during 1950. It is clear that so great an expansion of industrial employment would have been possible only as during the war, at the cost of replacement requirements and productivity. This explains the fact that since 1945, when other factors led to an improvement in productivity and made it virtually impossible to postpone the replacement of outworn equipment, industry has been unable to continue absorbing labour.

These remarks are only intended to draw attention to the importance of capital formation in a country like Brazil, and to the desirability of research on methods whereby investment might be increased and the optimum utilization of available capital ensured.

1/ See 1949 Survey.

2/ On the basis of the Industrial Census of 1940, and taking into account the depreciation of the cruzeiro, it may be assumed that there was a net investment of 60,000 cruzeiros per additional labourer employed in industry during 1949.

c) Government investment and the SALTE Plan

In the preceding section reference was made to the substantial increase in Government investment in 1949. So far no details have been published for the fiscal year 1950, but it is very probable that the 1949 level of Government investment was maintained. This increase in Government investment is primarily attributable to the application of the SALTE Plan.

Total investment budgeted under this Plan should reach a total of 21,300,000 million cruzeiros by 1954. After subtracting advance expenditure in 1949, the annual investment between 1950 and 1954 still amounts to some 4,000 million cruzeiros. It is impossible to determine to what extent this constitutes a real increase in investment, or a mere systematization of ordinary Government expenditure. However, it is unlikely that the operation of the Plan will have adverse effects on private investment, either owing to the nature of the investment carried out under the Plan or the form in which it is financed. One of the articles of the law approving the Plan states that "in order to promote the national industry the Executive Power shall, the technical conditions being equal, grant preference to domestic equipment, and should facilitate and develop, whenever this is technically and economically desirable, the creation of new industries for the manufacture of such equipment." It is thus anticipated that investments under the Plan will help to consolidate and expand the railway materials industry.

Part of the expenditure projected under the SALTE Plan -- about 10 per cent -- will not constitute real investment, but will consist of indirectly reproductive services. At best, therefore, the annual yield from the gross total investment should be about 3.5 thousand million cruzeiros.

It should furthermore be noted that net investment under the SALTE Plan will amount to less than the total investment for postponed re-equipment. For example, more than half of the total expenditure will be absorbed by the transport system and will go to replace railway rolling-stock and harbour installations.

If investment for the improvement of highways, harbours and airways is added to that absorbed by the railway system, we obtain a total of 11,346 million cruzeiros, which is equivalent to more than half of the total expenditure under the Plan.

/Energy

Energy production involves a relatively lower net investment. Of the total of 3,190 million cruzeiros, 1,650 million are to be employed to increase the electric power supply, and nearly all the rest for building petroleum refineries, purchasing petrol tankers and extending prospecting operations with a view to the production of petroleum in Brazil. Much of the investment budgeted for this sector was effected in advance in 1949 and 1950.

Expenditure for the development of agricultural production amounts to 2,733 million cruzeiros. One of the principal achievements in this sector will be the building of a chain of refrigerator warehouses and silos for the benefit of the domestic market. In addition, the Plan provides for subsidies to increase the production of certain crops, such as wheat.

The total expenditure for the whole period covered by the Plan is allocated as follows:

	(in millions of cruzeiros)	
Transport:		
Railways	7,501	
Highways	1,263	
Airways	937	
Harbours	661	
Other expenditure	934	
		11,346
Power:		
Electricity	1,650	
Petroleum	1,495	
Coal	45	
		3,190
Agriculture and stock breeding:		
Animal production	680	
Wheat	426	
Mechanization of agriculture	250	
Other expenditure	1,377	
		2,733
Public Health		2,640
Other expenditure		591
Revolving Fund		800
Total:		21,300

/It is

It is intended to finance this expenditure largely out of budgetary resources, which should contribute some 14,300 million cruzeiros. In 1949 the budget appropriation for the SALTE Plan totalled 1,300 million cruzeiros, in 1950 1,900 million and in 1951 2,200 million cruzeiros. In 1954 the funds appropriated under the budget for the plan should amount to 2,600 million cruzeiros.

The expenditure of 21,300 million cruzeiros is to be financed as follows:

	(in millions of cruzeiros)
Budget funds	14,300
Bank of Brazil loan (in foreign exchange)	2,000
Federal SALTE Plan bonds	5,000
Total	21,300

Of these three items only the third may be considered as constituting a potential inflationary factor. Fifty per cent of this loan may be floated abroad. The total issue will be made in annual portions of 1,000 million cruzeiros, yielding interest at the rate of 7 per cent per annum, to be redeemed in ten years, starting in 1955. The Bank of Brazil loan will be advanced in annual portions of 300 to 500 milion cruzeiros, and will be financed out of foreign exchange already in hand or to be acquired at a later date.

The Government's capacity to finance the Plan without resorting to inflation will depend largely on the success of its fiscal policy. The past two budget years (1948 and 1949) have closed with substantial deficits. However, it is recognized that given the present structure of Brazil's fiscal system Government financing might be even further expanded without necessarily leading to reduced investment in the private sector.

CHAPTER II. RECENT CHANGES AND DEVELOPMENT PLANS IN BASIC SECTORS

Introduction

Until the 1929 crisis investment in the sectors connected directly or indirectly with exports constituted the principal dynamic factor of Brazil's economy. Since then investment for the domestic market has expanded increasingly, and the country's development more and more depends on domestic capacity to save. This change will have to be taken into account in studying some of the most important problems of Brazil's present day economic position, such as the deficiency of investment in basic sectors which are only indirectly reproductive.

Net investment, which implies an increase in productive capacity or productivity is dependent on the degree of utilization of existing fixed capital and on prospects of profitability. In an economy in which the principal stimulus to growth comes from outside, the influence of those determining factors shows a number of characteristic features. In the first place, the degree of utilization of existing fixed capital must be considered from a broader standpoint embracing not only Brazil itself but also all other countries which compete in the market.[1/] Secondly, the prospects of profitability in sectors turning out primary products are dependent on the level of production in the manufacturing industries of the industrialized countries which consume these products.[2/] In other words, prospects of profitability in the manufacturing industries themselves induce industrial countries to place investments in the under-developed countries which produce industrial raw materials. On the other hand, since increased economic activity in the industrialized countries (within the international division of labour which prevailed up to the 20's), presupposed intensified production of primary goods,

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1/ Even in investments in the domestic market, the position of a product in the international market is in most cases very important. However, considerations of this nature are generally relegated to a secondary plane where capacity to import is chronically subnormal.

2/ Naturally the demand for primary food products does not vary with the level of investment in the industries of countries consuming these products, but their prices are greatly affected by the level of income in such countries; which to some extent means the same thing.

/part of

part of their savings would naturally go to finance investment in countries responsible for the primary stage of the productive process.[1/]

But investment in indirectly reproductive sectors such as harbour installations, railways, electric power stations, etc., are an integral part of productive investment in exports. The influx of capital into such basic sectors has sometimes served to integrate into the international economy units or production left stagnant at a pre-capitalist stage of development. And once the Brazilian export economy ceased to expand, the basic sectors subsidiary to it ceased to attract foreign capital.

During the two decades following the crisis, the domestic market assumed increasing relative importance in Brazil's economy. However, during this phase the shortage of domestic savings made it impossible for investment in basic sectors to be continued. Similarly, a process of decapitalization took place in railway transport and harbour installations since gross investment was not sufficient to cover depreciation. The electric power system, which is less dependent on export activity, not only did not suffer any loss but was able to continue self-financing of its development though at a much lower rate than in previous decades.

One of the fundamental requirements of the basic sectors of economy is that their capacity to produce goods and services should be greater, at any given moment, than the corresponding consumption of such goods and services. The saturation of any of the basic sectors greatly hinders investment in the remaining branches of the economy, since the basic sectors work for the economy as a whole and must, therefore, be in a position to meet the demands of any branch in which a phase of development has been initiated.

Any inadequacy of the basic sectors therefore has a decisively retarding effect on the economy as a whole. When transport and power are lacking, or certain basic products become scarce, investments become much less attractive. The alternative solutions always entail a substantial rise in costs. In Brazil, for instance, the shortage and irregularity of railway transport has stimulated, during the past few years, a large-scale development of land and air transport,

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1/ It is calculated, for instance, that about half the net British investment before the first World War was placed abroad.

/which use

which use up equipment and fuel, both imported, at a much higher rate. In addition, the inadequate output of the hydro-electric stations in Rio and Sao Paulo has led many enterprises to instal power-plants to meet their own requirements; and in nearly every case, these use imported fuel.

In certain industries, as economic development proceeds, specialization creates features characteristic of the basic sectors. Such industries supply products consumed on a large scale by large manufacturing groups or other branches of the economy. In the highly industrialized countries, the productive capacity of the so-called basic industries nearly always exceeds consumption requirements, and only at the peak of a cyclical upswing is this productive capacity occasionally absorbed in full. These industries produce goods for other industries, require vast amounts of raw material, and in almost all cases exhibit the same characteristics as the heavy industries.

The very nature of the basic industries compels them to maintain a surplus capacity, in order to follow the fluctuations of demand. Hence investment in these industries must be made with a view to future demand, as far as this may be predicted over a medium period. The possibility of increases in the supply of basic products in the immediate future affects investment in other sectors of industry; and it is therefore frequently impossible to determine the soundness of a basic industry, on the basis of the level of consumption at a given moment. As a rule, when no industries of this type exist, consumption of their products is low. When such industries are set up, consumption rises sharply. This has occurred in Brazil during the past five years in the iron and steel industry. The consumption of steel rose 4 or 5 times more rapidly than manufacturing production as a whole or than the total production of goods. There need not necessarily be a fall in the prices of domestic products for consumption to rise. The decisive factor is the presumptive regularity of supplies, which no longer depend on foreign exchange resources, the rate of exchange or the international situation.

We will now consider the prospects for development in some of the basic sectors, such as transport, power, the iron and steel industry, the cement industry and some branches of the heavy chemical industries.

Transport

Transport

Since the crisis Brazil has been deprived of the influx of foreign capital with which it had previously built its railway system, and the shortage of foreign means of payment has made it impossible to meet this deficiency out of domestic savings. If it is borne in mind that foreign exchange resources were well below the level required for development -- the cause of the chronic disequilibrium in the balance of payments -- it will be understood that in order to meet the replacement requirements of the transport system it would have been necessary to limit development in other sectors. As will be seen below, it was impossible to solve this dilemma until Brazil was in a position to undertake domestic specialized production of railway material.

The Brazilian Government recently took over a substantial part of those of the country's railways which were still privately owned. By the end of 1949, only 13 per cent of Brazil's railways were in private hands. Some of these serve the economically more highly developed areas of the State of Sao Paulo. When the influx of foreign capital came to an end, the Government assumed most of the burden of financing the development of railway transport. This, of course, is a very far-reaching problem, which cannot be considered in this report in all its multiple aspects. Suffice it to note that the inflationary process made it much more difficult for the railway companies to finance their own development.

Between 1945 and 1949, as may be seen from Table 10, the Brazilian railways appear to have increased their productivity.

Table 10. Brazil: Indices of railway activity

Years	Passenger-Kilometres	Ton-kilometres	Monthly average of employees	Power consumption [a]
1945	100	100	100	100
1946	106.5	100	102.7	98.4
1947	110.2	102.5	101.1	100.1
1948	109.7	112.7	100.0	98.0
1949	111.2	111.2	99.5	91.8

a/ See Table 15 for power consumption estimates.

Source: Departamento Nacional de Estradas de Ferro (National Railway Department).

The total load carried -- goods plus passengers -- increased at an annual rate of 2.8 per cent, though the number of employees remained virtually unchanged and fuel and power consumption decreased at an annual average rate of 2.1 per cent. This increase in productivity is probably due to the same causes which led to the intensified industrial productivity, that is, the return to a normal rate of re-equipment and the increased capital investment per labourer resulting from the modernization of equipment or the change in the cost ratio of labour - equipment.

In the period under review Brazilian railway tariffs declined sharply in relation to both export prices and the cost of living index. Thus between 1945 and 1949, whereas the cost of living showed an increase of 52.8 per cent and the index of export prices rose by 67.7 per cent, the index of railway tariffs increased by only 17.3 per cent. This low tariff policy is partly due to the growing competition of road transport, since during the war years, when such competition had practically disappeared, railway tariffs increased at the same rate as domestic prices -- or even more rapidly. It may also be the Government's intention to check the rise in the cost of living by reducing the cost of transport of essential goods. At all events, it should be

/remembered

remembered that during a period of inflation the railways have difficulty in avoiding a reduction in their real income, and even in preventing a process of decapitalization. While the railways may be able by maintaining low tariffs to reduce the incidence of these tariffs on some of the basic elements in the cost of living, this will make it necessary to provide subsidies to ensure their development -- and perhaps even their maintenance. This is shown in Table 11, which contains data on the financial position of some of the most important Government railways.

Table 11. Brazil: Income of and investment in five leading Government railways[a/].

Years	Income a	Expenditure b	Balance c	Investment d	d-c e	100d/a	100d/b	100e/a
	(in millions of cruzeiros)							
1945	1,205	1,202	2.8	616	619	51.1	51.2	51.4
1946	1,289	1,554	-246.9	595	348	46.2	38.3	27.0
1947	1,257	1,618	-361.6	608	246	48.4	37.6	19.6
1948	1,218	1,725	-507.5	964	457	79.1	55.9	37.5
1949	1,351	2,003	-651.8	1,030	378	76.2	51.4	28.0

Source: Departamento Nacional de Estrada de Ferro (National Railway Department).

a/ Estrada de Ferro Central do Brasil, Rede Viaçao Parana-Santa Catarina, E.F.Noroeste do Brasil, V.F. Federal Leste Brasileiro and Rede Viaçao Cearense. The investment figures include the funds appropriated by the Departamento Nacional de Estradas de Ferro (National Railway Department).

These data demonstrate clearly that since 1945 the earnings of the Government railways in money terms have remained at a standstill -- which involves a sharp decline in real terms. Investment financed out of the railways' own resources fell from 51.4 per cent of earnings in 1945 to 28 per cent in 1949. If the Government had not granted them subsidies, the railway companies would have been unable to carry out any plan of expansion and would probably have suffered decapitalization. In order to maintain

/in 1949

in 1949 the 1945 rate of investment (51 per cent of total expenditure), the companies were compelled to show deficits equivalent to as much as 48 per cent of their income, as against a small positive balance in 1945.

The policy of covering railway investment expenditure by Government subsidies may be designed to counteract the effects of inflation on the distribution of income. The financing of railway development by the railways themselves, particularly in the case of lines serving regions of low traffic density, becomes much more difficult in periods of inflation, and may make the burden of inflation on low-income groups even heavier.

The problem of the maintenance and development of Brazil's railway system presents two distinct aspects, namely, that of financing and that of covering foreign exchange expenditure. The expansion of the iron and steel industry during the past ten years has made possible the establishment of a domestic railway materials industry which is acquiring increasing importance. This development has contributed to a solution of the exchange problem, and renders the investment problem less critical, since in the last resort Brazil's difficulty in financing the development of its railways is a manifestation of the fundamental problem of low income and weak capital formation. Indirect investment in the railways, by the establishment of a railway materials industry, has a much greater effect on national income than direct investment by importing equipment, since it leads to the employment of more labour with the use of the same amount of capital. In other words, the same amount of capital and foreign exchange can be made to yield a substantially larger volume of railway material, provided that the initial investment difficulty can be overcome.[1/] The consequent rise in employment leads to a corresponding increase in national income and in capacity to save.

The statistics available on domestic production of railway material in Brazil are scanty, but it is known that there has been an appreciable increase

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1/ We will not here go into the problem, analysed in the 1949 Survey, of an alternative solution by employing labour in export activities, with a possible gain in comparative costs.

during the past five years. The country's basic rail and truck requirements are being largely supplied by domestic production. Imports of rails during the five-year period preceding the crisis (1925-29) amounted to more than 100,000 tons annually, although the railway system expanded very little over the same period. During the fifteen years which followed the crisis, despite the substantial expansion of railway traffic, annual imports of rails fell to little more than half of the average for the preceding five-year period. This postponement of replacements is responsible for the fact that in 1945 about 40 per cent of Brazil's railway track needed to be replaced, and immediate rail requirements exceeded one million tons.[1/] Between 1945 and 1947 imports rose to an average annual figure of 90,000 tons, but this level has fallen sharply since 1948. Rail production was begun at Volta Redonda in 1947 and between that year and 1950, 210,000 tons were produced, representing an annual average production of 52,000 tons. The total supply of rails between 1945 and 1950 was about half a million tons, of which about two-thirds were imported. Re-equipment requirements, therefore, are still largely unsatisfied, since wear and tear increases with rising traffic, and in addition part of these rails were used in laying new track. In any case, rail production in Brazil, in 1950, had exceeded the 80,000 ton level, which brings it close to the normal re-equipment requirements of the railway system as it now exists. However, the supply of rails will have to be stepped up, in order to cover the deficit of the period 1930-45, and enable the railway system to keep up with Brazil's general development.

The rolling stock situation was no better at the close of hostilities. In 1945 there were 54,294 railway cars, and it was estimated that there was an immediate need for a further 20,408 new units. Between 1945 and 1947 about 7,000 cars of all types were imported. After 1948 there was a sharp decline in foreign purchases, but domestic production must undoubtedly have filled the gap in imports. Brazil now has four large undertakings specializing

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1/ Figures on railway material requirements are taken from the Transport Section of the SALTE Plan.

in the production of railway material and there are others turning out parts. According to estimates made by the principal manufacturer[1/] total annual productive capacity (for cars of all types) amounts to about 10,000 units. This figure is much higher than the existing real demand, and will be difficult to maintain in view of the available supplies of the basic products -- primarily iron and steel. In 1949, the railway car manufacturers informed the Bank of Brazil that they were in a position to meet the country's requirement and they have subsequently been able to export part of their output.

In 1945, there were 3,698 locomotives of which many were antiquated and many under repair. Between 1945 and 1949, 574 new units and 15,891 tons of spare parts were imported. Locomotive assembly and spare parts manufacture have likewise expanded. Two large scale projects in this branch have recently been announced. The first plans the construction by advanced methods of a steam engine, and the second the building of diesel engines of over 1,000 HP, to be used in diesel electric locomotives which are to be built partly in Brazil.

To sum up, it may be said that the problem of the re-equipment and even the extension of the Brazilian railway system, as a problem of foreign exchange, is becoming progressively less acute.

Determined efforts are at present being made to improve Brazil's highway system. From the standpoint of general development, however, investment in this sector has certain negative consequences. Since both motor vehicles and nearly all liquid fuel consumed must be imported, preferential treatment of road transport as against the railways will entail an increase in the foreign exchange cost of the national transport system. A typical example of the competition between motor transport and the railways will be found in the 1949 report of the National Iron and Steel Works (Companhia Siderurgica Nacional). Between 1948 and 1949 the number of motor trucks used in transporting the Volta Redonda production increased from 4,303 to 17,727, whereas the number of railway cars employed declined from 4,903 to 4,806. It is not yet clear whether this is due to better service or to lower costs. In

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1/ From data in the possession of the National Federation of Industries, Rio de Janeiro.

/the latter

the latter event, the influence of the exchange rate, which has been stable since 1939, must be taken into account. The price of liquid fuel has remained at a relatively low level on the foreign market, and in Brazil, thanks to the stability of the rate of exchange, has tended to fall in relation to the domestically produced fuel -- that is, wood and coal -- used by the railways.

Another interesting aspect of the recent changes which have taken place in the Brazilian transport system is the extraordinary development of civil aviation. In 1950 44,000 tons of freight and 1,700,000 passengers were carried by plane -- a volume of air traffic surpassed only in the United States. 9.2 times more freight and 5.9 times more passengers were carried in 1950 than in 1945. In view of the physical characteristics of Brazil, the aeroplane solves many transport problems. However, air transport constitutes an even heavier burden on the balance of payments than road transport. The high fuel consumption and the rapid depreciation of equipment make flying an extremely costly means of transport for a country like Brazil, which has only limited supplies of foreign exchange and is compelled to buy great quantities of equipment abroad.

The extensive investments made in transport, which have been reinforced by the SALTE Plan, and have included the execution of road building programmes and the extension of the railway system, have improved communications between the various regions of the country. Given the existing differences between standards of living in these regions, it is likely that population displacements from region to region will tend to increase. In 1950 railway communications were established between the south-central and the north-eastern zones of Brazil, and in the preceding year the Rio-Bahia highway was opened. This 1,700 kilometre road has greatly improved communication between the entire north-eastern highways system and the central, southern and western parts of the country. One may therefore predict intensified migration of the population of northern Brazil towards the south, and particularly to São Paulo, the north of Paraná, and the south of Goias. This movement may be partially checked if the Government reclamation plan for the São Francisco valley is successful, and if the industrial development of the north-east is stimulated by the construction of the Paulo Alfonso hydro-electric power station. In any case, this region

/has a

has a greater density of population, particularly in relation to arable land and to the present level of technique, and a much higher birth-rate than southern Brazil; and in addition, capital per men both in agriculture and industry is generally speaking lower in the north than in the south. The surplus population of the north-east therefore tends to migrate, in proportion as communications improve, towards regions with a lower natural growth of population and a higher rate of capital formation. This migration of labour from north to south, as was pointed out in the 1949 Survey, while it checks any further decline in the standard of living in the former, holds back real wages in the latter region. This is a problem of capital shortage, to which further reference will be made in another part of this report. At all events, improved communications between the north and the south will help to prevent greater disparities arising between the standards of living in these two regions.

Fuel and power

The comments made in the preceding section on the development of transport are evidence of the seriousness of the problem of fuel and power in recent years. The general terms of this problem were considered in the 1949 Survey and may be summarized as follows:

1. Three-fourths of Brazil's total power supply is derived from wood, most of the more easily worked reserves having been exhausted;
2. The rate of growth of hydro-electric power capacity in the past twenty years was less than the country's economic development required;
3. Domestic coal production has been stagnant since 1943 and coal imports have greatly diminished in comparison with pre-war levels;
4. The changes in the structure of the transport system, the shortage of hydro-electric power supplies, and the decline in the price of petroleum as compared with that of coal led to a great increase in the consumption of imported liquid fuel.

It has been realized in Brazil that the solution to the country's power problem lies in the progressive utilization of its vast sources of hydro-electric power. For the purpose of achieving a solution along these lines, the hydro-electric capacity will have to grow much more intensively than in the

/past

past twenty years. If the potential merely expands pari passu with the power requirements of the communities supplied, not only will it be unable to replace other sources of energy but the development of the region will be hampered. The capacity of the basic sectors should always be higher than the demand of consumers. If, from the outset, the electric power stations work at full capacity, or even with an overload, as is usual in Brazil now, the economic sectors served by these stations cannot develop; alternatively, they will have to increase costs in order to continue expanding.

As the Brazilian Government realizes in its SALTE Plan, a second solution to the power problem lies in the development of national petroleum production. The consumption of this fuel expanded during the past few years at a much greater rate than the general power consumption, as reflected in the more dynamic elements, petroleum, hydro-electric power and coal.

Table 12. Brazil: Partial apparent consumption of energy

(in millions of KWH)

Years	Hydro-electric (a)	Petroleum		Coal		Total	Index of total
		Imports	Domestic Production	Imports	Domestic Production (b)		
1937	1892	2732	-	2547	885	8056	
1945	3424	2339	25	1173	2405	9366	100.0
1946	3707	4029	22	1744	2201	11703	125.0
1947	4076	6126	32	2572	2319	15127	161.5
1948	4579	7776	47	1781	2349	16532	176.5
1949	5075	8685	35	1289	2428	17512	187.0
1950	6257	10164	94	1831	2320	20666	220.6

Sources: For imports, the Economic and Financial Statistical Service of the Ministry of Finance. For coal production, the Production Statistics Service of the Ministry of Agriculture. For petroleum production, National Petroleum Board. For hydro-electric power production, the National Water and Electric Power Board.

a/ Production of the Brazilian Traction, Light and Power Co. and of Empresas Electricas Brasileiras. This constitutes about 80 per cent of the total production.

b/ Including the coal used for the manufacture of coke.

Note: Fuels have been considered as of 20 per cent efficiency, the heating value per kilogramme being taken as 10,600 calories in the case of petroleum, 7,200 calories in the case of imported coal, and 5,000 calories in the case of domestic coal.

/The rate

The rate of expansion of petroleum consumption between 1945 and 1950 was merely three times that of the total consumption of power. In 1945, it is true, petroleum consumption was sub-normal owing to import difficulties. However, if the year 1937 is used as a basis for comparison, the increase in petroleum consumption even then is nearly twice the total consumption of power derived from the three sources in question. The importance of petroleum has therefore tended to increase absolutely as well as relatively. If the present rate of increase of petroleum consumption were treated as normal, this fact alone would be a sufficient reason for giving prompt consideration to the need for changing the structure of the country's imports. This factor would contribute to a greater rigidity of imports, and would make the Brazilian economy even more vulnerable to fluctuations in the capacity to import.

If Brazil does not succeed in developing domestic production of petroleum substantially during the present decade, the power problem will require other and more far-reaching measures for its solution. These include the preferential development and electrification of railway transport and also the electrification of urban transport. As pointed out before, this would mean a far greater expansion of the installations for harnessing hydro-electric power than took place in the past twenty years, and even during the past five-year period.

The annual rate of increase of the consumption of power derived from the sources included in Table 12 was 17.5 per cent in the period 1945-1950. But this high rate partly reflects the low level of consumption during the preceding five-year period; in fact it is declining, for in 1949 it was only 5.9 per cent. On the other hand, the substantial increase of fuel imports in 1950 were partly the result of the international situation. An average annual rate of increase of 5.5 per cent can be regarded as normal. If this growth were to be parallelled by a like development in domestic fuel production during the next five-year period, then, with the proposed 11 per cent average annual increase for hydro-electric power,[1] the share of imported fuels in total supplies would decrease from 58 per cent to 49.8 per cent, as may be seen from Table 13.

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[1] The SALTE Plan contemplates an annual average increase of 11 per cent for total installed hydro-electric power during the period 1947-1952. In view of the relative insignificance of thermic power, this rate may be regarded as adequate for hydro-electric power installations. However, it is possible that the supply of hydro power might expand at a greater rate, if it is remembered that between 1945 and 1949 in the Rio-Sao Paulo area it developed at an average rate of 10.4 per cent and that a great deal of work is now proceeding in connexion with hydro-

Table 13. Brazil: Relative importance of some sources of power in selected years

Years	Hydro-electric	Domestic coal and petroleum	Imported coal and petroleum	Total
1937	23.5	10.1	66.4	100
1945	36.6	25.9	37.5	100
1949	29.0	14.1	56.9	100
1950	30.3	11.7	58.0	100
1955	39.0	11.7	49.8	100

Sources: For imports, Economic and Financial Statistical Service of the Ministry of Finance; for coal production, the Production Statistics Service of the Ministry of Agriculture; for petroleum production, National Petroleum Board; for hydro-electric power, National Water and Electric Power Board.

The estimates contained in Table 13 imply that coal production would increase from 2 million tons in 1950 to 2.6 million tons in 1955, though this can only be achieved if the coal industry emerges from its present phase of stagnation. Apart from the investments made by the National Iron and Steel Company, the coal industry has attracted little capital during the past few years. However, the achievements of this company point clearly to results which may be accomplished given adequate capital investments. The mechanized methods recently introduced have raised production per man-day five to six times above the prevailing levels in existing mines.

It is estimated that Brazil's coal industry is actually working at 80 per cent of capacity, which means that a rate of production of 2.6 million tons could be obtained by merely a more intensive use of present capacity. The coal washing plants are also working below capacity. Transport is the most serious obstacle to expanding production, particularly so far as harbour installations and shipping are concerned.

Brazil's coal production developed under protective measures that required consumers to use 20 per cent of domestic coal. The rate of expansion of domestic coal production increased during the war, being further stimulated by the efforts of the National Iron and Steel Company to obtain coking coal

/ for the

for the Volta Redonda plant. Domestic coal now meets strong competition from petroleum. The relatively low price of imported fuel, due partly to the exchange policy, constitutes an incentive for the replacement of coal by petroleum sub-products, even on the railways. Consequently, the coal industry is attracting less and less private capital[1/] though the problem of coal supplies is exceedingly important in Brazil, in view of its present dependence on fuel imports. In 1950, a Government-appointed Commission proposed a plan for the investment of 700 million cruzeiros (35 million dollars) during the forthcoming five-year period. The plan includes financing the mechanization of the mines, the building of a fleet of coal carrying ships and the building of a new port at Imbituba, in the State of Santa Catharina, as well as the standardization of the type of coal produced in this State. It is estimated in this plan that a one million ton increase in production would be easily absorbed by the domestic market.

Even apart from the question of coal, the estimate contained in Table 13 is only of very relative validity, since the mere increase of hydro-electric power supplies could not bring about a reduction of fuel consumption. A part of the hydro-electric power will certainly replace the less efficient sources of power, such as wood, particularly if the plan for the electrification of the railways is proceeded with.

Thus, between 1945 and 1949, the share of wood among the sources of energy consumed by the railways decreased from 73.8 per cent to 67.7 per cent, in terms of energy, while the share of hydro-electric power increased from 2.9 to 4.5 per cent. Hydro-electric power is, of course, the alternative to a growth in the share of imported fuel. Between 1945 and 1949 the consumption of liquid fuel by the railways actually increased ten times, its share rising from 0.4 per cent to 4.2 per cent. The total share of imported fuels increased from 11.4 to 16 per cent between 1945 and 1947, but later decreased with the drop in coal imports. The consumption of woood on the railways declined sharply during the whole period, as may be seen from Table 14.

1/ The profits of the coal companies fell from 7.7 per cent to 3.6 per cent of capital plus reserves between 1948 and 1949.

/Table 14

Table 14. Brazil: Consumption of power on the railways

(in millions of KWH)

Years	Wood	Domestic coal	Imported coal	Petroleum	Hydro-electric power	Total
1945	5,646	913	842	29	223	7,652
1946	5,580	746	862	123	225	7,536
1947	5,446	741	986	244	249	7,666
1948	5,296	949	724	251	284	7,504
1949	4,755	1,005	660	295	313	7,028

Source: The National Department of Railways.

Note: Fuels have been considered as of 20 per cent efficiency, the heating value per kilogramme being taken as 10,600 calories in the case of petroleum, 7,200 calories in the case of imported coal and 5,000 calories in the case of domestic coal. Wood has been considered at 420 KWH per cubic metre.

If the wood burned on the railways[1/] is added to the data contained in Table 12, more approximate figures of the total consumption of power in Brazil will be obtained, which, at the same time offer a more accurate indication of the rate of increase in the period under observation. According to these figures, the increase between 1945 and 1949 was 48.3 per cent, as against 87 per cent shown on Table 14. It is therefore evident that, firstly, the increase in the demand for power is being met by petroleum and hydro-electric power and that, secondly, these are more and more superseding less efficient sources of power.

If the estimates contained in Table 13 are proved accurate, fuel imports in 1946 would only be 10.7 per cent higher than those in 1950. Moreover in 1950, Brazil acquired a large fleet of tankers, some of which are already plying under this country's flag; and in addition, several refineries are being established, the capacity of which should be sufficient to meet a great deal of the domestic demand. Foreign exchange expenditure on petroleum should therefore increase at a lower rate than total imports of this fuel. The foreign exchange savings in this sector would be of great value in augmenting purchases of material and obtaining the technical assistance required to develop petroleum production.

1/ The wood consumed on the railways in 1946 constituted 15.9 per cent of the total consumption of this source of power.

/There seem

There seem to be good prospects for developing the production of petroleum in Brazil, even though this expansion cannot be expected to occur in the immediate future. Hitherto, only small investments have been made in this sector and the regions which it was intended to tap are far too extensive. The area of the Reconcavo, in the State of Bahia, is the only one in production at present, and its total known reserves are rather limited. In 1950, a modern refinery with a capacity of 2500 barrels a day began operations there. It is hoped to double its capacity shortly. Last year, the National Petroleum Board -- the Federal agency responsible for petroleum developments -- began drilling experimental wells in three new areas where geological and geophysical surveys have been made during the past few years. These are the regions of Cametá in the State of Pará, that of Carolina in the State of Maranhão, and Japoatá in the State of Sergipe, all in the north of Brazil.

Furthermore, Brazil has large reserves of sulphide-bituminous shale which could constitute a further source of liquid fuel in the future. At present, the shale is being worked on a small scale in the State of São Paulo, where a private industrial undertaking is using its own patented processes, its equipment being manufactured in the country. In 1950, this company announced its intention of increasing production to 100 tons daily. A much more ambitious plan was recently drawn up by the Instituto de Investigacoes Tecnologicas (Technical Research Institute) of the State of Paraná, which has been studying the use of shale for some years. According to this Institute's findings the petroleum resources in the Arati region have been estimated at not less than 1,600 million tons, the average yield of shale oil being about 8 per cent. The plan contemplates the establishment of five shale distilleries in different parts, each plant to have a capacity of 100 tons of petroleum daily, 120,000 litres of sulphur-bearing amonia waters, and 50,000 cubic metres of fuel gas. The sulphide gas can yield 21 tons of sulphur and the ammonia waters 9 tons of sulphate of ammonia. A central distillery, with a capacity of 2,500 barrels daily, would serve the five units. The establishment of this industry would thus provide Brazil with a substantial source of sulphur and ammonium sulphate, and as a consequence some pressing problems in the basic chemical industry would be solved. It was announced in 1950 that the Brazilian Government intended to invest 350 million cruzeiros in the exploitation of sulphide-bituminous shale.

/Iron and steel

Iron and steel industry

In recent years the iron and steel industry experienced its most intensive development. Steel production increased from 206,000 to 774,000 tons between 1945 and 1950. The principal factor in this expansion was the Volta Redonda plant. However, the development of iron and steel industries, based on charcoal, continued actively for between 1945 and 1950 production was stepped up 71.8 per cent, which is a higher rate of expansion than that for the period 1940-1945.

The data contained in Table 15 shows that by 1948 Volta Redonda steel production had surpassed the steel production of all the other plants taken together which use pig iron from blast furnaces fed by charcoal and scrap. However, Volta Redonda's production of pig iron and sheets in 1950 was below the aggregate of other plants. The decline in pig iron production at Volta Redonda, in 1949, was caused by two stoppages in the blast furnace, involving a total hold-up of production for three months. The first interruption was necessitated by normal cleaning operations and the second was due to a mishap.

Table 15. Brazil: Iron and steel production

Years	Pig iron			Steel			Rolled products		
	Coke Volta Redonda	Charcoal	Total	Volta Redonda	Other plants	Total	Volta Redonda	Other plants	Total
	(in thousands of tons)								
1937		98	98		76	76		71	71
1945		260	260		206	206		166	166
1946	96	275	371	85	258	343	13	217	230
1947	176	305	481	145	242	387	90	207	297
1948	224	327	552	244	239	483	198	205	403
1949	193	315	508	308	297	605	227	273	500
1950	339	377	716	420	354	774	287	303	590

Source: The Production Statistics Service of the Ministry of Agriculture.

In contrast with its wartime trends the expansion of the iron and steel industry during the past few years did not result from the stimulus of any great increase in the price of the product. The resumption of imports, which in 1946 and 1947 had surpassed half a million tons annually, and the increase of domestic production, led to a relative stability in the factory prices for Brazilian steel and to a noticeable drop in the prices for domestic rolled products on the market.

Table 16. Brazil: Prices of domestic and imported steel during the period 1945-1949

	1945	1946	1947	1948	1949
Index of factory price of domestic rolled products	100	91.2	98.0	122.6	128.7
Index of the price of imported steel rods (CIF)	100	92.8	105.4	148.7	140.6
Index of the coastwise trade price of domestic steel (FOB)	100	76.1	70.0	60.3	68.0
Percentage difference between the price of coastwise trade and the import price	+95.6	+60.3	+29.9	-14.0	-6.0

Source: Economic and Financial Statistical Service of the Ministry of Finance.

The relative decrease in the price of steel, in terms of the wholesale price index and of the cost of living index, is an incentive to the consumption of the product. Between 1945 and 1950, apparent consumption rose from 562,000 tons to 1,096,000 tons. The expansion of domestic steel production, and the relative decline in the price of the product, are factors of importance in the readjustment of the mechanical industry to post-war conditions.

Table 17. Brazil: The share of domestic production in the total supply of steel

(in thousands of tons)

Years	Production A	Imports B	Total supply C	100 A / C
1945	206	356	562	36.7
1946	343	514	857	40.0
1947	387	573	960	40.3
1948	483	300	783	61.2
1949	605	297	902	67.1
1950	774	322[a/]	1,096	70.6

Source: Production Statistics Service of the Ministry of Agriculture and the Economic and Financial Statistical Service of the Ministry of Finance.

a/ Partly estimated.

Note: Imported rolled products have been converted in terms of steel plus 20 per cent.

The development of iron and steel production in Brazil made it possible to step up imports of other capital goods more intensively than those of iron and steel. In 1947, iron and steel imports (computed at their current values in

/terms of

terms of dollars) showed an increase of 131.5 per cent, as compared with 1945, whilst imports of other capital goods increased by 234.8 per cent. In these two years, domestic production of steel (calculated at import prices) increased 170.5 per cent, so that the supply rose by 145.7 per cent.

Between 1947 and 1949, iron and steel imports fell from 97.7 million to 70 million dollars, whilst imports of other capital goods increased from 339.2 million to 345 million dollars. However, the value of domestic production of steel during this two-year period rose from 66 million to 148 million dollars so that the supply of iron and steel increased at a greater rate than imports of other capital goods. In short, between 1945 and 1949, imports of other capital goods increased 3.4 times, whilst the supply of iron and steel increased 3.3 times, both being computed at their import prices.

Table 18. Brazil: Supply of steel and imports of other capital goods

Years	Steel production a/	Imports of iron and steel	Supply of iron and steel	Imports of other capital goods
		(in millions of dollars)		
1945	24.4	42.2	66.6	101.3
1946	44.0	66.2	110.2	174.2
1947	66.0	97.7	163.7	339.2
1948	96.1	58.4	154.5	348.7
1949	148.0	70.0	218.0	345.0

a/ At import prices

Source: Economic and Financial Statistical Service of the Ministry of Finance, and the Production Statistics Service of the Ministry of Agriculture.

At present the iron and steel industry is working at full capacity in Brazil. However, the country is still importing 300,000 tons of steel annually. Current consumption -- about one million tons -- is rising sharply. If the rate of expansion of the last five-year period is maintained, annual consumption may be expected to reach a level of one and a half million tons by 1955.

/Among the

Among the present expansion plans of the iron and steel industry, that of Volta Redonda is the most important. The National Iron and Steel Company, which owns this plant, drew up two expansion programmes in 1949. The first of these was based on a 100 per cent utilization of the existing blast furnace with a daily capacity of 1,000 tons and on the extension of the steel furnaces up to a capacity of 180 tons, the number of these furnaces being increased from 4 to 5. By using 65,000 tons of scrap, this plan would enable steel production to be raised to more than 450,000 tons. The second plan involved the building of a second 1,000 ton blast furnace, which had previously been proposed in the original expansion plan for the factory. Without using scrap, and by employing the two blast furnaces of 80 per cent of capacity, the production of steel could be increased to more than 600,000 tons. The first of these plans called for expenditure abroad of 18 million dollars, whereas the second called for 27 million dollars. The National Iron and Steel Company strongly favoured the second plan, in view of the steep rise in domestic demand, and in July 1950 it succeeded in making arrangements with the Export-Import Bank for financing the foreign exchange expenditure involved in the larger project.

The most important scheme for an iron and steel industry, now in operation and based on charcoal, is that of the ACESITA Company (Itabira Special Steel Co.) which proposes to meet the country's basic special steel requirements. This company, formed by private capital of domestic origin, received strong financial support from the Government and is at present controlled by the Bank of Brazil. The ACESITA Project, which was virtually completed by the end of 1950, includes an integrated iron and steel factory, with a productive capacity of 55,000 tons of finished products annually, and a hydro-electric plant generating 28,000 KW (of installed power). The iron and steel plant is situated in the State of Minas Gerais, on the railway line to the port of Victoria, 100 kilometres from the iron ore deposits of Itabira. The charcoal used in the blast furnace, which has a capacity of 200 tons daily, is to be manufactured by the company itself in the vicinity of the plant. So far, 30,000 hectares of forest land have been purchased and half a million eucalyptus trees have been planted. The charcoal will only be used as a reducing agent, since all the power consumed will be supplied by the hydro-electric station located 17 kilometres away from the iron and steel factory.

/As at

As at present equipped, the hydro-electric plant contains two 14,000 Kilowatt units, but it is intended to raise this to a total of 60,000 kilowatts. The steel mill at present has a 300 ton mixer, a 10 ton Bessemer converter, 2 three-phase electric furnaces of 20 and 5 tons respectively, and a 500 kilogramme induction furnace. In 1949 the blast furnace began production on a small scale, but after the steel mill, the rolling plant and the power station were completed at the end of 1950, the following production schedule went into effect for the present year: black sheets - 10,000 tons; stainless steel plates - 2,000 tons; high silicon plates - 20,000 tons; steel springs (round and flat) - 2,000 tons; stainless steel bars - 500 tons; Bessemer steel bars - 28,000 tons. The ACESITA Company intends to use a large part of its production of special steels and has therefore established a large engineering plant next to its iron and steel mill. It is expected that production in this plant, for the current year, will amount to 2,000 tons of agricultural implements and 2,000 tons of spare parts for automobiles and of tools of various types.

With the plans now under way in Brazil an annual increase of the iron and steel industry's capacity by some 400,000 tons is expected in the next few years. Three-fourths of this increase will be accounted for by Volta Redonda's output, and the rest is to be supplied by the factories using charcoal. Furthermore, the present extension plans of Volta Redonda allow for a possible future increase of productive capacity, involving a small expenditure in foreign exchange. The two blast furnaces working at 100 per cent of capacity and employing scrap will make an annual production of more than 800,000 tons of steel possible. It should be pointed out that the plant is in a position to build the metal structure of the new steel blast furnaces required for the plant's expansion with material of its own manufacture.

Taking into account the fact that the present capacity of the Brazilian iron and steel industry is about 800,000 tons annually, the aforementioned expansion suggests that this capacity can be raised, first, to 1,200,000 tons, and to at least 1,400,000 tons later.

Yet, owing to the marked increase of consumption, which may rise to one and a half million tons within five years, as has been mentioned, it is hardly likely that in the near future, Brazil will be able to export appreciable quantities of iron and steel to other Latin American countries. There is much evidence to indicate that Brazil's engineering industry will develop intensively during the

present decade, especially the manufacture of agricultural equipment and machinery and transport equipment. These industries will require ever increasing amounts of steel and will stimulate the development and specialization of the iron and steel industry. As it expands, and is stabilized, the industry will be able to reduce its own costs progressively, and so further encourage the development of the engineering industry.

Cement industry

The post-war period was extremely favourable to the expansion of the cement industry. Demand had been pent up during the preceding years; there was a better supply of fuel oil; equipment could be acquired abroad and finally, the price of imported cement was high, all of which contributed to the increase of investments in this industry.

During the war years, production practically stagnated, increasing only 11 per cent from 1939 to 1945. This was followed by a phase of intensive development, as may be seen from the data contained in Table 19.

Table 19. Brazil: Annual increase of production and apparent consumption of cement

	1946	1947	1948	1949	1950[a/]	Average
Production	7	11	22	15	6.2	12.2
Apparent consumption	14	7	17	17	1.9	11.4

a/ Production estimated on the basis of the first 9 months and imports on the basis of 11 months.

Source: Economic and Financial Statistical Service of the Ministry of Finance and the Production Statistics Service of the Ministry of Agriculture.

The intense expansion recorded in the last five-year period raised production from 774,000 tons in 1945 to 1,361,000 tons in 1950, its rate of development barely keeping pace with the rate of increase of apparent consumption. Over the whole period, therefore, little progress was made towards reaching self-sufficiency. Domestic production supplied 75 per cent of consumption in 1945 and 78.2 per cent in 1950. In 1950, imports totalled 380,000 tons, as against 428,000 tons in the preceding year, but there was a great shortage of cement in the country.

/However,

However, in view of the large amounts now being invested in this industry, it is reasonable to expect that by 1952 domestic production will be able to meet all the country's needs.

The increase of cement imports took place despite the sharp rise in the price of the imported product. Between 1937 and 1947, the price of imported cement rose 336 per cent, a rise three times greater than that of the factory price of the domestic product. In 1937, the factory price of domestic cement was 40 per cent higher than that of the imported product (CIF) whereas in 1949 it was 47 per cent lower. This situation was undoubtedly due to the demands made on the (traditionally exporting) European countries in connexion with their reconstruction effort. However, since 1949, and especially since the devaluation of European currencies, there has been a sharp fall in the price of the imported product.

In addition to the favourable factors mentioned above, another factor which stimulated development in the cement industry was the introduction of a road-building plan which, since 1945, when the Road Fund was set up, has developed very actively. For the first time in history paved roads are being built on a large scale in Brazil. Moreover, the SALTE Plan also contributes 1,263 million cruzeiros to be spent on road building until 1954.

In 1947, the productive capacity of the industry was 957,000 tons. Since then, various enterprises have sprung up in different parts of the country, raising capacity to 1,607,000 tons in 1950. The present expansion and the new factories now being built will make it possible to raise productive capacity to 1,757,000 tons in 1951 and 2,287,000 tons in 1952.

A large part of the new capacity installed recently is represented by factories situated at a considerable distance from the Rio-Sao Paulo area. Until a short while ago, the cement industry was concentrated in this region, since the small capacity of consumption in the rest of the country, and the low price of imported cement, offered no incentive to the domestic production of this commodity.

/Table 20.

Table 20. Brazil: The productive capacity of the cement industry

Area of production	1947	1950	1951	1952
Sao Paulo	360	564	564	776
Rio de Janeiro	330	532	682	774
Minas Gerais	160	302	302	362
Noreste	65	137	137	197
Rio Grande Do Sul	30	60	165	165
Espirito Santo	12	12	12	12
	957	1,607	1,862	2,286

Source: Production Statistics Service of the Ministry of Agriculture, and the National Federation of Industries.

The production of cement in Minas Gerais began in 1939; in 1946, a second plant was built in the region. In the northeast, a small plant situated in the State of Paraiba had begun operations before the war. During the war, a plant of 65,000 ton capacity was built in the State of Pernambuco, and later, the machinery in the Paraiba plant was re-equipped and its capacity likewise raised to 65,000 tons. A further expansion of this plant to a capacity of 130,000 tons is contemplated. In Rio Grande do Sul, cement production was first undertaken in 1947 and has made great strides since. Two factories were built in this area, the second of which began production in 1951. A new plant, in the State of Rio de Janeiro, with a capacity of 150,000 tons, should also begin operating in 1951; it will employ the slag from the blast furnace at Volta Redonda.

A remarkable trend characterizes the development of Brazil's cement industry during the past few years: its decentralization. The two production areas, which existed before the war, are still adding to their capacity, but this has not checked the industry's spread to other parts of the country.

One of these areas is the State of Bahia, where the erection of a plant of 100,000 tons capacity was recently begun. The foreign exchange expenditure for the purchase of the equipment and the installation will be covered by a 2,070,000 dollar loan, which has already been granted by the Export Import Bank. Among other undertakings of this nature are the factories set up in the States of Parana, Santa Catharina, Alagoas, Ceara and Goiaz. It is therefore likely that during the next few years the whole country will be supplied with cement produced locally or regionally. In view of the country's inadequate transport facilities, and the enormous distances to be covered, this appears to be the most economical solution, even if it implies reducing the average capacity of the factories and diminishing labour productivity.

Basic chemical industries

The irregular supply of basic chemicals during the war years, hindered the industrial development of Brazil. The country depended almost entirely on imports for its supplies of alkalis and sulphur. This created considerable anxiety in the Government and among the leaders of industry.

Since no sulphur deposits have yet been found in Brazil, the use of natural and carboniferous pyrites has been considered. The former occur in the States of Rio de Janeiro and Minas Gerais, but deposits are fairly small and are already being worked. The carboniferous pyrites offer greater possibilities, since natural reserves are large and production of coal is tending to increase.

During the past few years, the Mineral Production Laboratory, an agency of the Ministry of Agriculture, has given much attention to research into the possibilities of industrial utilization of carboniferous pyrites and early in 1950 it was announced that work on a semi-industrial scale had been satisfactorily concluded. According to the results obtained from this research, at the present level of coal production it will be possible to obtain a supply of some 50,000 tons of sulphur domestically, an amount sufficient to meet the country's minimum needs, imports in 1949 surpassing the 45,000 ton mark.

The problem of sulphur supplies may also be solved by the development of the shale-distilling industry. When the plan referred to in the section dealing with Fuel and power has been fully completed, its first phase will supply an additional 30,000 tons of sulphur annually.

The general development of industrial production also led in recent years to the production of sulphuric acid from imported sulphur. In 1948, production began at a new plant employing the contact process.

In connexion with the production of alkalis, great interest has been shown in recent years in developing the manufacture of caustic soda by the electrolytic process. This is partly due to the increased possibilities for the use of chlorine, as a result of the development of other sectors of the chemical industry and particularly of the production of insecticides. In 1948 the Industrias Quimicas Electrocloro S.A. built a factory at Rio Grande, in the State of Sao Paulo with an annual production capacity of 1,100 tons of caustic soda. In August 1949, the capacity of this plant was increased to 1,600 tons and in 1950 extensions were being made in order to raise the plant's production to 3,700 tons. Similarly, in 1950, a new electrolytic plant belonging to the Matarazzo undertakings was built with a production capacity of nearly 3,700 tons of caustic soda annually. As part of its general manufacturing operations, this

/plant

plant is also producing insecticides and other chemical products. It may therefore be deduced that the capacity for producing electrolytic soda was tripled between 1945 and 1949.

Yet Brazil is still essentially dependent on foreign supplies of alkalis. Caustic soda imports rose from 24,000 tons in 1945 to 40,000 tons in 1947 and 56,000 tons in 1949. Imports of carbonate of soda (a product not yet manufactured in Brazil) increased over the same period as follows: 24,000 tons in 1945, 31,000 in 1947 and 37,000 tons in 1949.

The steep rise in the demand for these basic products points to the need for a broad and fundamental solution of the problem; probably the only remedy is to erect a Solvay plant. During the past few years two extensive research programmes have been undertaken in this connexion.

An international group, constituted by Imperial Chemical Industries of London and the Solvay Company of Brussels studied the possibility of utilizing the rock salt deposits in the States of Alagoas and Sergipe. After four years of work, the results of this research were published in 1950. It was proved that there were adequate reserves of rock salt with which to supply a factory, with an output of 200 tons daily, for a period of fifty years. The limestone available is of poor quality but is present in sufficient quantities. There are no difficulties in the way of water supply, even though the temperature of the water is relatively high, which adds to the cost of production. Based on these data, a plan was drawn up for the building of a factory to produce 85,000 tons of sodium carbonate, 500,000 of which would be transformed into 35,000 tons of caustic soda and 4,000 tons of refined sodium bicarbonate. The investment required was estimated at 500 million cruzeiros (25 million dollars). The group estimated that at alkali prices as prevailing in August 1949, the probable annual return would be 4.8 per cent. The plans were suspended early in 1950, after representatives of Imperial Chemical Industries and the Solvay Company had visited Brazil. It was then stated that in view of the high costs due to adverse conditions of production, and of the decline in the international price of alkalis, after the devaluation of the pound sterling, the price of the products would have to increase by 85 per cent before the undertaking could be a paying proposition. Still, it was confirmed that the scheme was feasible.

The second investigation into the possibilities of building a Solvay plant in Brazil was carried out by a semi-public agency, the Companhia Nacional de Alcalis. In 1949, this company concluded preliminary investigations concerning the site of the factory and the supply of raw materials. The factory, which during its first phase will have a productive capacity of 100,000 tons of

sodium carbonate, will be situated in the Cabo Frio area in the State of Rio de Janeiro. This region has large limestone deposits (shells) and a reserve of some 10 million tons of washed shells has already been found and is ready for calcination. Sea salt, produced in the vicinity of the plant, will be used. The fuel oil will be carried to the factory by a 2,100 metre pipeline, connecting it to the port nearby. Cooling will be greatly facilitated by the low average temperature of the seawater in this area. Fresh water will be raised from the subsoil or drawn from a neighbouring river, though this latter method will involve a greater initial expenditure. The advantage of the Cabo Frio plant over the other factory previously mentioned lies in lower transport costs for the finished product to the main centres of consumption. The manufacturing cost does not vary greatly from one region to another. In Cabo Frio, there would be less expenditure in obtaining the limestone, but the cost of producing the salt would be higher. The Cabo Frio plan calls for an investment of 350 million cruzeiros, of which 200 million cruzeiros (10 million dollars) will be payable in foreign exchange.

If the total investments for each of the plants and their respective productive capacities are compared, it will be seen that the project of the international group involves a far higher investment. The investment per ton of sodium carbonate produced would be 5,882 cruzeiros, whereas in the Cabo Frio factory it would be 3,500 cruzeiros. This explains why the plan of the Companhia Nacional de Alcalis is considered as profitable, even after allowing for the lower price of alkalis since the devaluation of the pound sterling.

CHAPTER III. PRIMARY PRODUCTION AND THE FOREIGN MARKET

Production and export of primary products

The foreign market is the most important single factor influencing primary production, though more than two thirds of it is absorbed by the domestic market. The domestic demand for primary products being relatively stable, what really determines the general income in primary production is the fluctuation of demand and prices in the foreign market. In the case of essentially export commodities the foreign market affects the prices paid by the domestic consumer and influences the amount remaining for domestic consumption. However, a substantial rise in domestic demand has, in some cases, led to a contraction of the exportable surplus.

The dependence of primary production on the foreign market varies greatly from one group of products to another, and even more within each group. Commodities of vegetable origin depend most heavily on the foreign market, more than half of the output being exported. The position is the reverse in the case of livestock of which only about 5 per cent is exported.

The degree of dependence varies even more widely within each group. Some commodities, like rubber, are now practically independent of the foreign market. Others, like the Brazil nuts of Para, carnauba wax and yerba mate depend heavily on foreign demand. Even in the livestock industry there are sharp contrasts: though meat exports do not constitute more than 4 per cent of production, yet the export of hides and skins accounts for more than 40 per cent. Production of some minerals depends entirely on foreign demand, whereas the domestic market for others like manganese, is developing. Still others, such as coal are produced entirely for domestic consumption.

Owing to these differences the effects of the fluctuations of foreign demand are more far-reaching than would appear from a consideration of primary production as a whole. The degree of vulnerability to the fluctuations of foreign demand varies not only from one sector to another, in primary activities, but also from one producing area to another. The carnauba, cacao and mate producing areas are single crop regions and are highly dependent on the foreign market. Therefore, their receipts are more likely to suffer sudden contractions than those of the country's economy as a whole.

The development of the domestic markets represents a highly important stabilizing factor for these regions. A good example of this trend of events is found in the rubber industry over the past few years. Though formerly this product was largely intended for the export market, it is now entirely absorbed by the domestic market. 1/

The degree of dependence of primary production on the foreign market does not seem to have changed greatly in the post-war period. Calculated on the basis of producer prices, exports between 1945 and 1949 averaged 25.8 per cent of production. The sudden change between 1945 and 1946 (see Table 21), is largely fictitious and can be attributed to the disposal abroad of large stocks accumulated during the war. Cotton exports, for instance, increased from 164,000 to 353,000 tons between 1945 and 1946, whereas production remained at 378,000 tons. Cacao exports increased from 83,000 to 130,000 tons, whereas production remained stationary at about 120,000 tons. The large agricultural surpluses were heavily liquidated after 1946. By 1948 no cotton surplus remained, and in 1949 the same occurred with coffee. In 1949, despite the large exports of coffee out of accumulated stocks, the percentage of agricultural exports receded to the 1945 level.

1/ The decline in the price of rubber on the international market after the war cut off exports of Brazilian rubber. However, the intense expansion of domestic manufacture of rubber goods was sufficient to absorb the surplus which was formerly exported. The domestic price of rubber remained higher than that obtaining on the international market, but a crisis was averted in the rubber producing area which might have led to the abandonment of the rubber plantations. Later, in 1950, the price of rubber in the international market recovered.

Table 21: Brazil: Percentage of primary production exported

(Producer prices)

Years	Total	Agriculture	Livestock	Mining	Commodities of vegetable origin
1945	23.0	29.1	2.3	8.9	57.5
1946	29.3	36.6	6.0	6.4	58.5
1947	26.6	33.3	6.2	6.5	56.3
1948	26.6	34.1	5.4	9.1	49.9
1949	23.3	29.4	4.6	8.3	54.9
1950		22.8			

Note: Exports have been calculated at constant 1947 prices and the production data used are those given in Appendix A.

During the years immediately after the war, foreign demand for Brazilian primary products changed in some respects. Generally speaking, there was an increase in demand for agricultural and cattle products, whereas a fall occurred in the demand for mining production and vegetable commodities.[1/]

The decline in foreign demand affected mining production and vegetable commodities. In mining the great decrease of exports was offset by the expansion in the domestic market. The contraction in exports of vegetable commodities was smaller, but owing to the greater relative importance of foreign demand production was more seriously affected. After 1948, there was a substantial recovery in mineral exports, principally due to the increase of iron ore exports which expanded from 64,000 to 900,000 tons between 1946 and 1950.

Table 22: Brazil: Indices of production and of exports of vegetable commodities and minerals

(1945 = 100)

Years	Commodities of vegetable origin		Minerals	
	Production	Exports a/	Production	Exports a/
1946	97.6	99.3	99.9	71.4
1947	94.7	92.7	103.3	76.2
1948	101.4	87.9	116.4	119.0
1949	98.8	94.2	125.9	116.6

Note: See notes in Table 21.

a/ At 1947 producer prices.

1/ Timber is not included in these data owing to the lack of adequate statistics regarding its production. However, it should be pointed out that timber exports increased greatly during the early post-war years but fell off in 1949.

/In contrast

In contrast with events in mineral production and with the case of vegetable commodities, foreign demand for agricultural products increased greatly as from 1946. Exports during that year increased about 40 per cent, as compared with the preceding year and remained at a high level until 1948. These exports, though greatly drawn from accumulated stocks, constituted a strong incentive to production which, since 1946, has been increasing constantly from year to year. Table 23 presents the development of the production and export of agricultural and livestock products (at producer prices) during the period 1945-1949. In addition, an index of the residue remaining for domestic consumption was calculated. During the period 1946-1948 this index shows a slight distortion caused by the liquidation of accumulated stocks.

Table 23: Brazil: Indices of production and export of agricultural and livestock products and residue remaining for domestic consumption a/

(1945 = 100)

Years	Production	Exports	Remainder
1946	108.3	141.2	99.1
1947	110.5	130.7	104.8
1948	115.8	137.7	109.6
1949	122.0	125.7	120.9

Note: The residue is production less exports for one year, stocks formed or liquidated being disregarded. For sources, see Appendix A.

a/ At 1947 producer prices.

If the fluctuations of foreign demand exercise any basic influence on the level of primary production, fluctuations of domestic prices in turn affect the formation of the exportable surplus. The influence of domestic prices is felt both directly and indirectly. Directly, it creates an incentive to the sale, within the country, of the surplus formerly placed on the foreign market. Naturally this only occurs in the cased products for which domestic demand is far greater than foreign demand. This is the case of rice, sugar, maize, wheat, beans etc. Indirectly, it is reflected in the rising cost of exportable goods, resulting from the general rising of the price level.

A comparison between export and domestic prices seems to indicate that the latter, until 1948 at any rate, had not exercised any limiting influence on exports. The index of export prices of agricultural and cattle products has risen more steeply since 1945 than the index of domestic food prices.

/Table 24:

Table 24: Brazil: Indices of export prices and domestic consumer prices of agricultural and livestock products
(1945 = 100)

Years	Exports				Domestic market	
	Agricultural Products		Cattle Products		Foodstuffs	
	Index	Annual increase (as %)	Index	Annual increase (as %)	Index	Annual increase (as %)
1946	132.4	32.4	128.7	28.7	116.6	16.5
1947	176.1	33.0	172.4	34.0	142.0	21.9
1948	188.3	6.9	174.8	1.4	146.8	3.4
1949	196.0	4.1	182.8	4.6	153.0	4.2
1950	303.4	54.8	160.3	- 12.3	174.6	14.1

Note: The indices of exports prices were calculated by dividing the value at current prices by the quantum. The domestic price index is that for foodstuffs on the retail market, as published by Conjuntura Economica.

In some cases, the distortion of domestic prices caused by controls has contributed to a decrease of production and, indirectly, to the decrease of the exportable surplus, since a shortage of this particular product may have led to export restrictions by means of domestic controls.

In the case of the main export products, foreign prices largely determine domestic prices, both producer and consumer prices. Accordingly, they exercise inflationary or else a depressive influence. In any case, fluctuations of domestic prices of these goods are generally not so sharp as those revealed by export prices. In the case of products essentially linked to the domestic market, the domestic prices are independent and it is these which offer the possibility of placing the surplus on the foreign market.

Table 25 shows six products, the first three being typical export commodities and the remainder rather more dependent on the domestic market. In the case of coffee 1/ and of cotton, export prices increased to a greater extent than domestic prices. Cacao prices followed the same trend, except that in 1949 they declined sharply, whilst the others continued to rise. In the case of tobacco, Brazil is a regular exporter, but owing to the relative size of the domestic market, export and domestic prices tend to be equivalent. Brazil is a marginal exporter of both sugar and rice and the prices paid by the importer only exceptionally exercise any influence on the price paid by the domestic consumer. It may be seen that in 1946-1947, when world demand for these products was very high, export prices rose far more than prices on the domestic market, but in 1948-1949 there was a complete change in the position.

1/ In 1949, domestic prices paid by coffee consumers rose well above the export price index. However, this was due to the rise of coffee prices abroad.

Table 25: Brazil: Indices for foreign and domestic prices of selected agricultural products

(1945 = 100)

	1946	1947	1948	1949	1950
Coffee					
Producer	130.7	131.1	139.7	178.4	182.0
Exporter	138.2	174.0	171.5	199.4	352.8
Domestic consumer a/	116.3	141.2	147.2	202.3	
Cotton					
Producer	155.6	174.2	202.3	223.7	223.8
Exporter	130.5	168.9	205.0	225.0	222.0
Domestic consumer b/	116.9	151.2	168.9	211.8	
Cacao					
Producer	186.4	360.2	351.2	249.5	250.3
Exporter	181.7	385.2	541.4	265.3	395.0
Domestic consumer b/	129.0	290.6	455.3		
Rice					
Producer	101.6	113.1	142.2	172.9	163.6
Exporter	108.3	133.5	148.8	135.8	103.7
Domestic consumer a/	110.5	117.1	144.3	198.5	
Sugar					
Producer c/	104.4	113.4	117.9	132.8	132.8
Exporter	164.4	179.9	96.1	101.3	131.0
Domestic consumer a/	127.5	130.4	123.7	147.5	
Tobacco					
Producer	113.9	121.9	115.2	121.2	125.0
Exporter	113.8	118.5	131.6	122.8	137.4
Domestic consumer b/	107.4	124.5	117.0	121.2	

a/ Retail price as an average for the state capitals, published by the IBGE (Brazilian Institute of Geography and Statistics).

b/ Average price in the coastwise trade, based on data supplied by the Economic and Financial Statistical Service of the Ministry of Finance. (SEEF).

c/ Price paid to the sugar cane growers, basic data supplied by the Production Statistics Service of the Ministry of Agriculture. (SEP).

/Until 1948,

Until 1948, with the exception of sugar, the export price indices of all these products were consistently above the domestic price indices. There is nothing to indicate, therefore, that the exportable surplus was diminished by the pressure of domestic prices. In 1948, however, the rise of domestic prices was much greater than that which occurred on the foreign market. In the case of coffee, it is likely that strong foreign demand influenced the domestic market; and in the case of cotton it is likely that the liquidation of stocks and the earlier rise in producer prices (caused by the smaller harvests) had a similar influence.

Table 26: Brazil: Increase of prices of selected agricultural products in 1949 as compared with the preceding year (percentages)

Products	Export prices	Domestic consumer prices
Coffee	27.9	55.1
Cotton	20.0	42.9
Cacao	- 176.1	
Rice	- 13.0	54.2
Sugar	- 5.2	13.8
Tobacco	8.8	3.6

Sources: See Table 25

It is possible that after 1949, domestic prices may have tended to curb the exportable surplus, at least in so far as those products are concerned which depend mainly on the domestic market. A rise in the price of these products is necessarily followed by a rise in the cost of living, which, in turn, affects the cost of export products and the shift of factors of production toward the favoured sectors. A reduction in the capacity to export, for reasons of this nature, was partly averted in Brazil in 1950 by means of the introduction of a system of subsidies to the exporters most severely affected. This system was made possible by the barter system and combined operations. The sharp rise in the price of coffee during the last few months of 1949, and the general rise in the price of primary goods in 1950, curbed the expansion of these disguised subsidies, which tended to dislocate domestic and foreign prices even more. It is hardly likely that without this change in the evolution of export prices, Brazil would have been able to maintain the parity of the cruzeiro, in view of the rising trend of its domestic prices.

Prospects for the coffee economy

Coffee as a source of income and of foreign exchange: Coffee remains one of the predominating products in the Brazilian economy. Though its importance has diminished considerably during the past 25 years, so far as its share in the formation of the national product is concerned, its position in 1950 as a basic factor of the capacity to import is very similar to that in 1925-1929.

During the period 1945-1949 coffee contributed little more than 5 per cent to the formation of the gross national product, whereas in 1925-29 it accounted for more than 20 per cent thereof. However, during these 25 years its share in the current value of Brazil's exports declined much less. In 1950, it accounted for 66 per cent of total exports, though it can hardly have contributed more than 8 to 9 per cent to the formation of the gross national product.

Table 27 Brazil: Contributions of coffee to the formation of the gross national product and to the current value of exports

(as a percentage)

Years	Gross national product	Exports
1925-29	22.8	72.0
1945	4.2	34.9
1946	5.2	35.3
1947	5.9	36.6
1948	5.6	41.6
1949	5.9	57.6
1945-49	5.4	41.2
1950	8.5	65.8

Note: The data for the gross national product are taken from those contained in Table 9, Chapter I, so far as the period 1945-49 is concerned. The total for 1950 is an estimate. An estimate for the period 1925-29 was made based on available goods (see Economic Survey for Latin America, 1949, Chapter VIII). The value of the production of coffee has been considered entirely at export prices. The value of the total gross national product for 1925-29 was calculated in 1949 cruzeiros and the value of coffee production during the 1925-29 5-year period was estimated at 1949 export prices, but the necessary correction was made in the terms of trade.

/Accordingly

Accordingly coffee has lost much of its dynamic function as a source of income and as an element productive of new capital. However, its position as the primary means whereby domestic savings are transformed into real capital goods has remained unchanged that is, as a source of foreign exchange. At present, a fall in the value of coffee exports has a less depressive influence on the level of economic activity than in the pre-crisis period; however, such a fall would probably exercise a more depressing influence on the balance of payments for, firstly, imports are much less elastic owing precisely because they have been limited by direct control and are almost exclusively made up of essential goods. Secondly a reduction of coffee exports now affects the level of domestic activity much less severely and hence the demand for imports would be less sensitive to such a fall.

Production and export of coffee in the period 1945-1950

During the period of 1945-50 Brazil's coffee production totaled 97.5 million bags of coffee (of 60 kg); at the same time, it exported 96.2 million and consumed 18.8 million bags. The deficit amounting to 17.5 million bags was made up from stocks carried over from years previously. In other words, production was almost entirely diverted to exports, whereas domestic demand was met out of existing stocks. These, however, were virtually liquidated in 1949 and Brazil was therefore unable, in 1950, to maintain coffee exports at the 1945-49 level. This position is likely to continue during the next few years.

Table 28 Brazil: Production, exports and domestic consumption of coffee
(in thousands of 60 kilogramme bags)

Years	Production	Exports	Domestic consumption	Exports plus domestic consumption
1945	13,915	14,172	3,032	17,204
1946	15,289	15,505	3,090	18,595
1947	15,791	14,830	3,150	17,980
1948	17,291	17,492	3,210	20,702
1949	17,192	19,369	3,270	22,939
1950	17,805	14,800	3,300	18,100

Note: Production data supplied by the Production Statistics Service of the Ministry of Agriculture, export data supplied by the Economic and Financial Statistical Service of the Ministry of Finance; for domestic consumption data see Conjuntura Economica, July 1950. The 1950 consumption data are estimated.

/The strong

The strong recovery of coffee prices on the world market since the end of 1949 thus reflects the fundamental change in the structure of the coffee supplies which are particularly inelastic over the short term.

The planting of coffee is a long-term investment, requiring from 4 to 5 years before yielding any returns. Once the tree begins to bear fruit, it becomes a form of capital investment which should be productive for some 40 years. A large supply of labour is required in the production of coffee, but as wages are nearly always paid in coffee, harvesting of the crop will always be of advantage to the coffee producer. In other words, the loss incurred by not harvesting is always greater than that occurring by selling the product at the lowest price, provided labour is available. This is the reason for the marked inelasticity of coffee supply in terms of prices.

A persistent fall of prices such as that which occurred in the thirties and forties may cause the planter to lower his costs of production. This explains the discontinuance of plantations and the progressive loss of the soil's fertility. Moreover, the planter is unable to proceed with the steady replacement of older trees. Even if he is in a position to set up a partial depreciation fund, the low return on this capital will induce him to invest this fund in other crops or fields of activity. There will therefore be a tendency to withdraw investments and the size of the plantations will tend to diminish. This occurred between 1930 and 1945 in Brazil when 1,000 million coffee trees disappeared, that is about one-third of the plantations.[1/]

If the price of coffee is measured by its purchasing power on the world market, it will be seen that it has suffered two unbroken depressions in the past 20 years. In fact, if coffee prices are compared with those of Brazilian imports, the resulting index fluctuates sharply and shows a markedly undulating curve. In 1913, 1924 to 1929 and 1950, the index exceeds the 200 mark, though during the cyclical upswing of the thirties it barely reaches 100. In other words, coffee did not recover between 1930 and 1948, as may be seen in Table 29.

1/ Together with the prevailing low price level, the fact that production constantly exceeded the market's capacity to absorb supplies was a further inducement to disinvesting. During this period, in order to adjust world coffee supplies to demand, Brazil was compelled to destroy more than 80 million bags of coffee which, at average 1950 export prices, represented

Table 29 Brazil: Terms of trade of coffee during the period 1930-1950

1937=100

Years	Coffee export price index	Brazilian imports price index	terms of trade of coffee
1913	26	13	200
1914	22	14	157
1915	20	23	87
1916	25	30	83
1917	24	37	65
1918	26	42	62
1919	53	41	129
1920	42	48	88
1921	46	58	79
1922	67	50	134
1923	83	60	138
1924	116	52	223
1925	121	50	242
1926	96	46	209
1927	96	56	171
1928	115	54	213
1929	108	51	212
1930	67	56	120
1931	74	68	109
1932	86	61	141
1933	75	63	119
1934	84	66	127
1935	79	91	87
1936	88	97	91
1937	100	100	100
1938	75	105	71
1939	76	108	70
1940	74	122	61
1941	103	137	75
1942	152	156	97
1943	156	159	98
1944	161	166	97
1945	169	182	93
1946	233	215	108
1947	294	260	113
1948	290	271	107
1949	337	270	125
1950	597	224	267

Sources: The coffee export price indices are taken from the value in cruzeiros of the price per bag of coffee exported; for import price indices see Economic Survey of Latin America, 1949, Chapter VIII

/This long

This long depression of the coffee economy is bound to be reflected in the coffee production during the whole of the present decade, since it led to a radical change in the age structure of the plantations. Only a thorough knowledge of this structure would make it possible to define accurately the present problem of coffee and to discuss the prospects for the near future. In any case, in order to clarify the importance of this factor, we shall use data which are more or less hypothetical.

At the beginning of the depression of the thirties, Brazil had about 3,000 million coffee trees. It may be assumed that one-third of these were less than five years old, another one-third less than fifteen years old and the remainder more than fifteen years old. Since practically no coffee was planted during the following fifteen years, by 1945 the latter of these three groups of plantations must have been either entirely or almost entirely unproductive. In fact, in 1945, there were only 2,078 million productive coffee trees. Half of this number are today old trees and the greater proportion of them will be unproductive before 1955. These, of course, were already about fifteen years old in 1930. On the assumption that since 1946 planting has been proceeding at a rate of about 100 million coffee trees a year, it will be found that by 1955 there will be about 1,000 million thirty year old trees, 500 million aged from five to ten years and 500 million less than five years old. By 1960, there will be perhaps 500 million old trees still producing, 1,000 million new trees and 500 million less than five years old. Considering that an old coffee tree which has been well cared for can produce 500 grammes and that a new tree can produce 1,000 grammes, provided it is equally well looked after, production might be estimated as follows:

1949		1955		1960	
No. of coffee trees (in millions)	Production in 000's of million tons	No. of coffee trees (in millions)	Production in 000's of million tons	No. of coffee trees (in millions)	Production in 000's of million tons
Old trees		1,000	500	500	250
New trees		500	500	1,000	1,000
Trees less than 5 years old		500	-	500	-
Total	1,068	2,000	1,000	2,000	1,250

This estimate, though based on hypothetical data should not be far off the real position in Brazil. Though it is true that the life of the older trees may be extended by careful attention, it is is no less certain that the rate of plantation

assumed has not been maintained since 1946. If by 1955 there still remain 1,500 million productive old trees and if in 1960 there are 1,000 million productive old trees, coffee production in 1955 would amount to 1,250,000 tons and in 1960 to 1-1/2 million tons. If this second, more optimistic, forecast is fulfilled, then the coffee surplus available for export in 1955 would amount to almost 17,000 million bags, that is, less than 1948 exports and much less than 1949 exports.

The failure to re-stock the coffee plantations between 1930 and 1945 has therefore resulted in a great ageing of the plantations. Even if the necessary factors are available and prices are sufficiently high to attract capital, it will be at least ten years before the present deficit can be covered, and it will require an increasing rate of investment.

Expansion possibilities for coffee production

In the preceding section it was assumed, for the purposes of the discussion, that from 1946, 100 million coffee trees were planted annually in Brazil. This is of course an excessively optimistic assumption since the data published in 1949 reveal that there were little more than 150 million coffee trees of less than five years of age.

However, it is certain that since 1949 planting has increased greatly. Though accurate data are not available, it may be assumed that by the end of 1950 the number of coffee trees less than five years old would have been about 250 million, and that planting is now proceeding at the rate of 100 million trees annually.

The question to ask is: What is Brazil's ability to continue expanding its coffee plantations? But first a word of explanation is necessary.

The preservation of the present number of productive coffee trees implies a certain amount of expansion, since the new trees cannot be planted in soil which has been exhausted by previous plantings. In Brazil, because of the traditional methods of coffee plantation, the land on which trees have once been grown becomes practically useless for replanting. Hence plantations are constantly shifting.

In order to maintain the country's present productive potential, it is therefore necessary to utilize new lands constantly. Hence the decisive factor is whether new land is available.

/The land

The land best suited for the planting of coffee is the so-called "terra roxa" (red soil) derived from the wearing away of diabasic rocks; it is found principally in São Paulo, in the north of the State of Paraná and in southern Matto Gross and Boyaz [1]. In 1920 in the State of São Paulo, 52 per cent of the coffee plantations were situated on this type of land, whereas in 1945 only 22 per cent were thus situated. Once the better soil had been used, plantations spread to the less fertile areas and it may therefore be said that present plantations in the State of São Paulo will progressively spread to poorer soils. It has been estimated that in Sao Paulo there are now no more than 200 million coffee trees actually standing in "terra roxa".

The reserves of land for coffee in Brazil are principally situated in the northern parts of the State of Paraná and in the sourhern part of Matto Gross and Goyaz. The reserves in the two areas last mentioned have not yet been fully investigated but they do not seem to be very extensive. Furthermore, they appear to be scattered areas, a fact which adds to the transport difficulties which for the present make the utilization of this land a remote possibility. Attention is now concentrated on the northern part of Parana where abundant land suitable for coffee growing exists, though not all of the soil is "terra roxa". The more optimistic estimates suggest that as many as 1,000 million coffee trees could be planted in this region [2]. Official data reveal that in 1949 there were 150 million productive coffee trees in this area, 50 million being less than five years old. There is, therefore, the possibility of a substantial expansion of plantations during the current decade, even according to more modest estimates. The estimate of production between 1955-1960 contained in the preceding section was based on this possibility.

However, the existence of available land, though essential, is not enough for growing coffee. This type of cultivation requires a large amount of labour. The great coffee expansion which occurred during th last decades of the past century in the State of São Paulo, coincided with a strong current of European immigration. The present situation is of course

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1/ Precise data are not available concerning the location of all the "terra roxa". In 1950, it was reported that this kind of soil had been discovered in the State of Para in the northern part of the country.

2/ Boletim da Superintendencia dos Servicos do Cafe, São Paulo, July 1950

dissimilar, since it is not a question of expanding cultivation but of replacing existing plantations by new ones. But owing to the great industrial development of the State of Sao Paulo, displaced labour is being absorbed by other occupations in the same region. There are, nevertheless, other areas in the country where the rate of development is less intensive and the rate of natural increase of the population higher, and these regions would therefore be in a position to supply a large part of the necessary labour. This population shift as between regions thousands of miles apart is taking place not according to any plan but by individual initiative with the mere encouragement of organized or unorganized publicity.

That is why temporary shortages of labour recur frequently in certain areas, a circumstance which helps to increase the general impression that the problem is insoluble. The situation also calls for the introduction of more rational work methods tending to reduce the employment of labour in the production of coffee. In certain special cases, in the State of Sao Paulo it has been possible to reduce the use of labour by 30 or 40 per cent.

Land being available and the problem of labour not being insoluble, it is evident that Brazil will be able to maintain or even raise its present level of coffee production, on condition that sufficient capital can be attracted. The question of capital is certainly the most complex issue before the coffee industry.

It has been officially estimated that in 1950 the expenditure invested in forming a new coffee plantation amounted to 8.5 cruzeiros per tree, the value of the land and of the interest on the capital being disregarded. The expenditure can be broken down as follows:

	Cruzeiros per tree
Clearing, preparation and plantation of the land	3
Maintenance and cultivation over 4 years	5.5
Total	8.5

The planting of 100 million trees per year thus represents an investment of 850 million cruzeiros, apart from the value of the land and the interest payable on the capital. Accordingly, it may be said without exaggeration that Brazil at present requires an annual investment of about 50 million dollars in order to maintain the level of its coffee production.

/The position

The position of coffee cultivation in the Brazilian economy is now very different from that which it held during the twenties. Opportunities for investment have become diversified. Other crops present equally attractive investment prospects. Cotton, for instance, has a more stable market, being less dependent on exports, has enjoyed a rise in price comparable to the rise in coffee and does not involve tying up such great funds. In addition, the rapidly expanding manufacturing industry is attracting the capital derived from agriculture.

Consequently, unless the prospects for the maintenance of present relative prices improve over a certain period, it is hardly likely that the cultivation of coffee will attract all the capital required for expanding and maintaining the present level of production. It ought to be remembered that coffee cultivation has been on the decline in Brazil for practically 20 years, and that the large gap left by earlier disinvestment must be filled. It is pertinent to enquire what the future effects would be of an artificial lowering of the price of coffee by institutional means, and how far this would hamper the recovery of the product in Brazil. In such an event, there is the risk of the progressive ageing of the plantations, or at least of production not expanding as much as would be desirable. If prices were freed in the future, the rise would tend to be even sharper than the rise during 1949-1950, since the effects of the structural factors which led to this increase would be even stronger. It would then be difficult to maintain the position of coffee as a popular beverage throughout the world.

CHAPTER IV CHANGES IN STRUCTURE OF INDUSTRY

Employment and Productivity

It has been pointed out earlier that during the period 1945-1950 secondary production increased at an annual rate of almost 5 per cent. This increase, though sufficient to prevent industry from losing the position it ha gained in the Brazilian economy during the war years, nevertheless did not enable it to continue to absorb labour from primary activities.

Owing to the inadequacy of Brazilian industrial statistics it is impossible to do more than give approximate estimates in this field, and hence any conclusions drawn should be received with great reserve. The existing data relating to employment in industry, obtained from social security sources, suggest that during the period under study industry as a whole did not absorb any labour. The increase of production must therefore be ascribed to better productivity.[1/] This is borne out by Table 30.

Table 30 Brazil: Indices of industrial production, employment in industry and productivity

(1945 = 100)

Years	Industrial production	Employment in industry	Productivity
1946	106.3	99.9	106.4
1947	102.8	98.6	104.3
1948	118.2	97.1	121.7
1949	121.6	99.3	122.5
1950 a/	125.0	95.6	130.8

a/ Partly estimated.

Source: Conjuntura Economica. For comments on the index of industrial production, see first part of Appendix C. This does not include building.

1/ Production per worker. There are no data with which to measure production per man-hour.

/During

During the war years, the difficulty of obtaining new equipment led to the intensive utilization of existing equipment. The increase of production was therefore largely due to the greater number of hours worked and to the increase in the application of labour per unit of fixed capital. It has been estimated that between 1940 and 1945, employment in industry increased 50 per cent more than industrial production. The readjustment made during the following five-year period is therefore a correction of the fall in productivity.

Under special conditions, such as those prevailing in Brazil during the war, it may have been profitable to transfer labour into industry even at the expense of its average productivity, since primary production remained stagnant during this period and therefore the surplus of labour which could not be absorbed by industry, or services, would otherwise have remained unemployed.

There is evidently a limit beyond which the value added to the product is lower than the wage of marginal labour, but this limit tends to shift when inflationary pressure causes the price per unit produced to rise more rapidly than the wage level. The same may be said with regard to the intensive use of equipment. If the expenses by way of depreciation were to absorb the whole of the increment in the value of the product not absorbed by wages, multiple shifts apparently would not prima facie offer any economic advantages.

However, the rate of depreciation of a substantial part of invested capital is hardly affected by the number of hours of labour per day. Furthermore, it should be remembered that in certain cases, from the economic point of view, it is essential to step up production over the short period. This short period increase of production in certain industries became vital during the war, in order to maintain the level of activity of other industries or other economic activities. Besides, industries such as the textile industry, for instance, took advantage of the position created on the foreign market by the withdrawal of the usual supplies. In these cases, there was, in fact, an economic advantage to be gained from intensifying the utilization of equipment, even though wear and tear increased more than proportionately. Perhaps the solution of the problem of the shortage of capital in underdeveloped countries may be found in the full-time utilization of the equipment installed. In the textile industry, for example, where there is very little depreciation of machinery, one is led to

/enquire

enquire whether there is any justification for the increase in the number of factories when those already built and producing the same type of goods remain idle for eight or sixteen hours daily.

Though the reduction in productivity did not involve economic losses during the war, it did create the need for substantial replacements during the early postwar period. These replacements account for the substantial increase of productivity during the past few years.

It should be kept in mind that in Brazil the rate of replacement has always been very low owing to the rapid growth of the population and the small amount of capital invested per gainfully employed person in the country. There are, furthermore, other factors which have in the past contributed to these results. For instance, it is generally recognized that one of the basic factors of economic development is the change in the cost ratio between the unit of equipment and the unit of labour. This change leads to an increase in the amount of capital invested per worker and therefore makes an increase in productivity possible. This in turn lowers the cost, in terms of labour, and leads to a rise in the standard of consumption, or to a further increase in the formation of capital.

In the case of Brazil equipment was, and for that matter still is, largely purchased abroad. Therefore the rate of exchange and the terms of trade obviously represent factors additional to the price of labour and the price of equipment. A devaluation of Brazilian currency, for instance, increases the cost of replacing equipment in terms of labour. A deterioration in the terms of trade, on the other hand, raises the cost of equipment in relation to income from primary activities. In view of the secular trend in these two factors it may be assumed that they have always contributed to the prevalence of a low rate of replacement and been responsible for the slow or non-existent advance in productivity, both being features of the earlier phases of Brazilian industrial development.

The high rate of increase of productivity revealed by Brazilian industry since 1945 is, therefore, a new phenomenon and represents a departure from the country's historical trends. In addition to the heavy wear and tear of former

years there are other factors which must be taken into account in any attempt to explain this phenomenon.

The special position of the textile industry in the post-war period serves well to illustrate this. After acquiring substantial foreign markets, the industry met with sharp competition from former suppliers who tried to retrieve their lost position on the international market. On the other hand, after a reduction in its exports, the industry found itself with a 10 to 15 per cent surplus production on the domestic market. It was thus compelled to face a situation of intensive competition both at home and abroad. In these circumstances the main preoccupation of the textile industry was how to step up productivity. Imports of textile equipment in 1948-1949 amounted to an average of more than 550 million cruzeiros annually, which suggests that the rate of gross investment in fixed capital reached 12 to 15 per cent of gross production, a rate probably in excess of that prevailing in manufacturing as a whole. In 1946 the reserves of the textile industry totalled 2,757 million cruzeiros, its capital being 4,626 million cruzeiros. Total imports of textile machinery and equipment (including equipment for fibres other than cotton) rose to 1,515 million cruzeiros during the period 1946-1949. As domestic production of textile machinery is substantial and since equipment accounts for little over one-half of the fixed capital investments in the industry, it is very likely that for its re-equipment the textile industry used all the reserves accumulated in the preceding phase. The total value of equipment as existing in 1946 conveys some idea of the sum involved by re-equipment: it was estimated, in the 1946 census, that the value of the equipment then installed was 1,773 million cruzeiros as against the industry's total assets of 3,481 million cruzeiros. These figures are evidently very low, whether compared with the capital invested in the industry or with the data published after the 1940 census. However, even though they are accepted with reservations and the exceptional rise in the price of textile equipment is taken into account these data give some idea of the relative magnitude of imports of equipment.

Since 1946 equipment for the textile industry has figured prominently in the total of Brazil's imports of industrial equipment.

/Table 31

Table 31 **Brazil**: Imports of industrial equipment during the period 1945-1949

(in millions of cruzeiros at 1948 prices)

	1944	1945	1946	1947	1948	1949	1950
Textile industry	29,923	82,186	184,037	465,565	541,731	580,526	453.968
Metallurgical and iron and steel industries	223,828	264,287	73,895	97,162	58,035	60,411	20,080
Metal processing industries	5,961	15,324	56,107	76,972	38,854	30,543	138,303
Machine tools	34,237	29,990	92,148	103,302	61,863	103,265	123,763
Total	895,866	922,129	2043,211	3577,312	2990,279	3224,420	3205,000

Source: Economic and Financial Statistical Service of the Ministry of Finance

The renewal of equipment in the textile industry (in a phase during which it was impracticable to increase production for the above-mentioned reasons) would, of course, necessarily mean the reduction of employment, as will be seen from the data contained in Table 32.

Table 32 Brazil: Indices of production, employment and productivity in the textile industry during the period 1945-1949

(1945 = 100)

Years	Production	Employment	Productivity
1946	106.4	102.9	103.4
1947	99.1	104.8	94.6
1948	104.4	96.5	108.2
1949	105.9	90.7	116.8

Sources: For production: CETEX, Ministry of Labour; for employment: data published in Industriarios (official organ of the Pensions and Retirement Institute for Industrial Workers) August 1950, page 42.

Accordingly the heavy imports of textile equipment after 1947 had their counterpart in the reduction of employment during the years thereafter.[1/] Between 1947 and 1949, when a great effort was made to renew equipment, textile production expanded almost 6 per cent, whereas employment in the industry decreased by about 14 per cent, thus indicating an increase in productivity of about 23 per cent. The increase in productivity for industry as a whole was 17 per cent during this period.

1/ The 1947 drop in production, which in Brazil is known as the "textile crisis", is a phenomenon of a different nature, having been caused by the export ban of 1946 which had led to a heavy accumulation of stocks. The fact that employment did not decline in 1947 seems to indicate that the industry expected

The index of industrial employment as given in Table 30, is therefore strongly affected by the decline in employment in the textile industry, owing to the relative importance of this group.

The high rate of absorption of capital which is making it possible for productivity in the textile industry to increase is most important, because since 1930 the industry had been practically stagnant and the capital formed in it was diverted towards other industries. Under present conditions the textile industry is no longer a source of capital to be invested in other sectors; in fact, it absorbs a large proportion of the foreign exchange available for the import of equipment. The capital now being absorbed by the textile industry is not increasing employment but rather reducing it in this sector of industry. In any case, these investments will make it possible to achieve a better balance between the level of productivity in the textile industry and that in other branches of industry which developed after it.

Another factor of importance in increasing productivity during the past few years has been the exchange stability. Since wages rose more steeply during this period than the price of imported equipment, the ratio of cost of equipment to labour has stimulated the investment in fixed capital per worker. Between 1945 and 1950, wages in industry rose 45.7 percent in relation to the price of imported industrial equipment.

Table 33. Brazil: Trend of wages paid in industry and of the index of prices of imported industrial equipment

(1945 = 100)

		1946	1947	1948	1949	1950
A.	Wages in industry	122.5	134.8	135.5	163.5	180.5
B.	Index of prices of imported industrial equipment	99.2	110.6	125.6	130.9	123.9
C.	Relation A/B	123.5	121.9	107.9	124.5	145.7

Note: The wage index was obtained from Conjuntura Economica. The price index was obtained by dividing the value at current prices by the quantum of imports.

/The changes

The changes in the ratio of the cost of equipment to labour are, as said before, a basic factor of economic development. In the industrialized countries, this change results from the long-term increase of productive efficiency. The intensive and rapid change which has taken place in Brazil during the past few years is a phenomenon of a different nature and is due to the exchange stability during a period of domestic depreciation of currency. In fact, what we are dealing with is a form of subsidy given to industry by means of exchange stability.

Now, what has been the effect of so rapid a change in the ratio of the cost of equipment to the cost of labour in the specific example of Brazilian economic development? One first result is, of course, that investment in real property is discouraged, owing to the relatively prominent part of wages in the building industry. To mention only one item: the cost of building in Rio de Janeiro rose by 55.4 per cent between 1945 and 1949, which is a great deal more than the 30.9 per cent increase in the price of imported industrial equipment over the same period. In fact, since 1947, there has been a definite decline in building in Brazil. As compared with 1946 there was a decrease of 17 per cent in 1947, 27 per cent in 1948 and 29 per cent in 1949.[1/] Other factors should clearly also be taken into account in explaining the sharp reduction. Among these are the restrictions which have been placed on credit facilities. However, this does not invalidate the argument previously set forth.

A further result would be that investments in heavy industry where a high rate of capital density per man prevails would be stimulated; at the same time industrial concentration would be encouraged. Finally, light industry will endeavour to attain a higher rate of productivity in preference to extensive growth.

In Brazil, all these changes have become more or less evident, though the statistics available are insufficient to estimate their scope and though no causal relationship can be established between the changes and the aforementioned factors. It is also necessary to keep in mind the possible unfavourable

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1/ See index in Part I, Appendix C.

consequences of so rapid a change in the relation of wages to the price of equipment. In the first place, this situation tends to exert pressure on the balance of payments and may require the introduction of periodic readjustments in the rate of exchange or the maintenance of a strict import control. Secondly, it discourages the production of equipment in the country. However, in Brazil, the most important aspect of the problem is that connected with the limitation of one of industry's most important functions: the ability to absorb the labour surplus. In a country where the population is increasing rapidly, it is the function of industry to absorb this increment; this will be the only way of avoiding the concentration of the demographic pressure in primary activities, which would lead to the deterioration of the terms of trade. The optimum expansion of industry should therefore combine an increase of productivity with greater utilization of labour.

As was shown in the preceding section, the formation of capital in Brazil falls short of the requirements of development. If the relationship of the cost of equipment to that of labour changes very rapidly, as it has done in recent years, it is possible that the desire to raise productivity will be so great that the total net investment applied to industry as a whole will fail to create new openings for employment. Industry would thus be failing to exercise one of its basic functions in development, which is to absorb the existing or potential labour surplus in the primary sectors where the external stimulus to expansion has weakened or disappeared.

Production indices in some branches of industry

The data for industrial production published in Brazil are very incomplete, so that a detailed analysis by groups of industries cannot be made. However, some data exist relating to the quantum of production of certain branches, the relative importance of which is sufficient to serve as a basis for a few general conclusions. These data have therefore been collated in Table 34.

/Table 34.

Table 34. Brazil: Indices of the quantum of production of certain industries during the period 1945-1950

(1945 = 100)

Industries		1946	1947	1948	1949	1950[a/]
Steel plates	(166,000 tons)	138.7	178.8	243.2	301.5	355.0
Pig iron	(260,000 tons)	142.7	185.0	204.6	195.4	275.5
Cement	(774,000 tons)	106.6	117.9	143.6	165.3	175.8
Rayon (yarn)	(8,645 tons)	120.4	149.2	149.2	163.1	190.9
Rubber (manufactured goods)	(15,700 tons)	117.3	122.6	134.0	156.3	185.6
Paper	(142,000 tons)	110.5	120.6	132.1	152.8	
Hides and skins	(101,000 tons)	115.8	123.8	137.6	140.6	
Pinewood (processed)	(319,000 cubic metres)	108.9	118.7	111.0	124.3	
Sugar (from the mills)	(920,000 tons)	117.0	123.9	153.3	150.1	152.4
Alcohol	(108 million litres)	106.7	116.7	155.6	138.9	125.0
Vegetable oils	(152,000 tons)	83.7	83.0	114.7	116.0	
Meat	(720,000 tons)	113.0	119.9	133.9	139.9	
Animal fats	(243,000 tons)	106.2	102.9	104.9	105.3	
Dairy products	(183,000 tons)	90.7	104.9	106.6	122.4	
Cotton textiles	(173 million metres)	106.4	99.1	104.4	105.9	106.1
Manufacturing production		106.2	102.7	118.1	121.5	125.0

Sources: The indices for manufactured goods are taken from the Conjuntura Economica; the rest of the indices were computed on the basis of official Brazilian statistics with the exception of rayon yarn, which was supplied by Rayon Organum, New York. The index for rubber goods relates to the industrial consumption of rubber by industry.

a/ Partly estimated.

As previously pointed out, there is a tendency to intensify investments in fixed capital. For manufacturing as a whole, this tendency is reflected in a more intensive increase of heavy industries, whereas in the light industries it takes the form of an increase of productivity.

/The expansion

The expansion of heavy industry is undoubtedly the most important event that has occurred in the Brazilian economy in recent years. Production of rolled steel has increased 255 per cent over the period 1945 - 1950, whilst that of cement has increased 76 per cent. The relative importance of these two industries should continue to increase, since plans at present being carried out in these two sectors will enable steel and cement production to be doubled in the course of the next few years. The number of factories producing cement increased over this period from 6 to 11 in the same time, which made a more economic distribution of the product over the country as a whole possible.

In other important industries, such as rubber and paper, development has mainly taken place in the heavier sectors. Thus the manufacture of rubber goods as a whole increased 56.3 per cent between 1945 and 1949, whereas production in the heavy rubber industry -- inner tubes and tyres for automotive vehicles -- increased 100 per cent. Development of the paper industry, during this period, is marked by the establishment of the first large newsprint and wood-pulp plant. In the rayon industry, the number of factories decreased, but productivity increased. The productive capacity of this industry has perhaps doubled between 1945 and 1950, and has already surpassed the 20,000 ton per year mark.

Another significant factor in Brazil's recent industrial development is the introduction of a heavy engineering industry, particularly the manufacture of railway material, to which reference has already been made.

An important development in the non-ferrous metal industry is the construction, in Sao Paulo, of a new aluminium factory with a capacity of 8,000 tons annually, which may begin production next year. Production of aluminium in Brazil began in 1945, in the State of Minas Gerais, where a factory was built with a capacity of 2,000 tons annually. But owing to the fall in aluminium prices during the postwar period, competition with the imported article became impossible and consequently production was stopped. In 1950, the rise in the price of aluminium led to the resumption of production in the Minas Gerais factory.

These statistics clearly show that the structure of Brazilian industry is changing significantly. Investment in basic industries, a part of which are turning out capital goods and other consumer goods -- production of which brings about a saving in foreign exchange -- at present absorbs the bulk of the capital

/placed in

placed in industry. In this initial stage of Brazilian industrial development, investments nearly always lead to an increase of employment. On the other hand, investments in light industries already existing in the country generally involve the replacement of equipment and the increase of productivity.

Under normal conditions of replacement, the growth of industrial production is invariably accompanied by higher productivity. Only the abnormal conditions which prevailed during the war can account for the expansion of production accompanied by a decline in productivity. However, this does not apply to all industries, nor to all phases of their development. The cement industry, for instance, during its present phase of intensive growth, shows a decline in productivity. Between 1945 and 1948, production in this industry increased 43.6 per cent, whereas productivity fell about 5 per cent; this can be accounted for by the establishment of plants with smaller capacity. Since freight is a determining factor in the price of cement, and since distances in Brazil are enormous and transport is unreliable, it is not always economical to set up plants which are technically at optimum size. The solution adopted in previous years was to supply certain regions of the country with imported cement, but the high post-war price of this product justified the building of low capacity factories in consumer areas of lesser importance.

CHAPTER V. CAPACITY TO IMPORT AND THE STRUCTURE OF IMPORTS

The capacity to import and the quantum of imports

During the post-war years, Brazilian imports fluctuated sharply; until 1947 they expanded greatly, but declined in 1948 and then rose again in 1949 and 1950, though they did not recover their 1947 level. In 1947, the quantum of imports was 88 per cent above the 1945 level and 9 per cent above the 1950 level.

Until 1949, the capacity to import fluctuated less sharply and the average annual rate of expansion was much lower than that of the quantum of imports. However, a radical change occurred in this trend in 1950, as Table 35 shows.

Table 35 Brazil: Relative annual changes in the quantum of imports and in the capacity to import in the period 1945 to 1950

(in per cent)

Years	Quantum of imports	Capacity to import
1946	16.1	13.2
1947	55.4	1.8
1948	-17.5	- 8.8
1949	3.0	- 1.2
Average 1946-49	14.2	1.3
1950	7.0	43.8
Average 1946-50	12.8	9.8

Source: For the basic data, see Chapter I, Appendix B.

The capacity to import is an index derived from the quantum of exports and the terms of trade[1/]. The positive influence of one of these two factors is very often nullified by the negative position of the other. Thus, in 1946 the quantum of exports increased 26.2 per cent as compared with the preceding year, but there was a deterioration of 10 per cent in the terms of trade and therefore import capacity rose only 13.2 per cent. In 1950, on the contrary, the quantum of exports decreased 15 per cent as compared with the preceding year, but the terms of trade improved 68.9 per cent and therefore there was a rise of 43.8 per cent in the capacity to import.

1/ See Economic Survey of Latin America, 1949, Chapter III.

/Between 1945

Between 1945 and 1950 these two factors nearly always had divergent influences, but over the period as a whole the terms of trade alone exercised a positive influence, as may be seen from Table 36.

Table 36. Brazil: Relative annual changes in the quantum of exports and in the terms of trade during the period 1945-1950
(in per cent)

Years	Quantum of exports	Terms of trade
1946	26.2	-10.0
1947	-12.5	16.3
1948	- 1.5	- 7.4
1949	- 9.2	8.8
Average 1946-49	0.8	- 0.3
1950	-15.0	68.9
Average 1946-50	- 2.4	15.3

Source: For basic data, see Chapter I. Appendix B.

The great improvement in the index for the terms of trade in 1950 can be ascribed to a 40.8 per cent increase in export prices and to a 16.7 per cent decline in import prices. The rise of export prices reflects the jump in the price of coffee, since the export price index for this product shows a rise of 114 per cent between 1949 and 1950. The contraction of import prices is a complex phenomenon, partly due to the devaluation at the end of the preceding year of the currencies of a number of countries with which Brazil carries on a substantial trade, and partly to a 31.5 per cent decline in the price of wheat. For the purpose of assessing the importance of the fluctuations in the price of wheat, it is sufficient to recall that it accounts for almost 10 per cent of the total value of Brazilian imports.

Durable consumer goods make up the group of imports which expanded most in the early post-war period; this can be explained by the fact that they had practically disappeared from international trade in the preceding period. In order of importance, they were followed by capital goods, fuel and chemical products. It should be noted that food imports decreased during this period.

/After 1947,

After 1947, as has been pointed out, imports decreased, capital goods being the most severely affected, though (as will be shown below) this did not mean that their share in the current value of imports failed to increase steadily during these years. The relative increase in the price of capital goods explains this apparent contradiction. Imports of capital goods diminished 29.4 per cent between 1947 and 1948, and 26 per cent between 1947 and 1950. However, the reduction in imports of industrial equipment was 16.4 per cent and 10 per cent respectively over these two periods.

Imports of non-durable consumer goods fell 13.3 per cent between 1947 and 1948 and 46 per cent between 1947 and 1950. Imports of wood-pulp, paper and its by-products revealed a contraction of 49.6 per cent between 1947 and 1948, but by 1950 had practically recovered their 1947 level. Foodstuffs, which had declined in 1946 and 1947 from earlier years, expanded again between 1948 and 1950. The only two groups which show any significant increase in 1950, as compared with 1947, are fuel and chemical and pharmaceutical products. The following data show the trend of Brazilian imports in the post-war years.

Table 37 Brazil: Quantum of imports
(in millions of cruzeiros at 1948 prices)

Years	Total b/	Food-stuffs	Textiles	Paper & Wood-pulp	Durable consumer goods	Chemical & pharma-ceutical products	Fuel & Lubri-cants	Capital goods	
								Total	Indus-trial equip-ment
1944	13200	5345	376	551	113	911	849	2904	896
1945	13388	5368	328	652	200	754	1043	3551	922
1946	16347	3057	522	772	944	968	1534	7095	2043
1947	25182	4286	922	1089	2367	1386	2354	10916	3577
1948	20985	3926	1168	549	2053	1268	2565	7704	2990
1949	21636	4530	1010	687	1778	1824	2673	7488	3224
1950 a/	23125	5036	635	934	1275	2135	3204	8074	3205

a/ Estimated on the basis of January to November.

b/ Includes other imports.

Note: 1948 prices were used in the weighting.

Source: The basic data are supplied by the Economic and Financial Statistical Service of the Ministry of Finance.

/The structure

The structure of imports

The structure of imports during the war was influenced by the restrictions on international supplies of goods and on transport. After 1946, as supplies of manufactured consumer goods increased and shipping gradually returned to normal, certain domestic factors, such as the lifting of import restrictions, helped to stimulate imports of manufactured consumer goods. Finally, after 1948, the re-introduction of exchange restrictions and other forms of direct control once again stimulated the import of the so-called essential goods for development, at the expense of imports of manufacturued consumer goods.

In so far as prices are concerned, especially in the earlier period, a considerable rise in the price of foodstuffs will be noted as compared with prices of manufactured goods as a whole, among which textiles show the greatest rise. Between 1944 and 1947, the general index of import prices rose 77.7 per cent, whereas the index for imported foodstuffs rose 199.1 per cent and that for textiles 77.9 per cent, as will be seen from the following table.

Table 38 Brazil: Indices of import prices during the period 1944-1947

Years	Total	Food-stuffs	Textiles	Paper & Woodpulp	Durable consumer goods	Fuel & lubri-cants	Chemical & pharmaceutical products	Capital goods
1944	100	100	100	100	100	100	100	100
1945	117.7	127.7	114.1	100.6	99.6	94.6	97.6	105.8
1946	154.4	258.3	143.0	104.4	105.0	93.5	112.5	107.0
1947	177.7	299.1	177.9	117.7	124.2	109.7	130.8	119.8

Source: See Table 37.

Still, the effect of prices during this period was largely offset by other factors, especially pent-up demand. In the case of foodstuffs supplies were normal during the war and only demand for secondary products such as codfish, olive oil, quality beverages, etc. was repressed. The sharp rise of prices thus contributed to reduce the volume of imports.[1/] In the case of textiles there was a great unsatisfied demand for high quality goods, particularly linen and woollen goods, which are traditionally bought in European countries. However, the strongest pressure of pent-up demand was felt in the durable consumer goods sector, domestic production of which is still insufficient to meet more than a small fraction of the population's requirements. Similarly the pressure exerted in the sector of fuels and capital goods was very great.

1/ The decrease in imports of this category was not only caused by the effect of the price trends, but also by the difficulty in obtaining wheat from abroad

/The principal

The principal change in the composition of imports during the early post-war years consisted of a reduction in the relative importance of foodstuffs and an increase in the proportion of durable consumer goods and of capital goods. Foodstuffs, which in 1944 constituted 22.9 per cent of the current value of imports and which in 1945 reached 26.1 per cent thereof, by 1947 had fallen to 18.3 per cent, despite the great price increase already mentioned. Durable consumer goods increased from 1.3 per cent to 37.9 per cent. The relative importance of fuels hardly changed, on account of the relative reduction in the price of these products.

After 1947, the trends in import prices varied. The general index, which in preceding years had shown an annual rate of increase of 20 per cent, in 1948 rose only 13 per cent and in 1950 dropped. Prices of foodstuffs and of consumer goods, which had expanded extraordinarily in the preceding period, showed the greatest contraction. Capital goods, on the contrary, increased markedly, as may be seen in the following table.

Table 39. Brazil: Indices of import prices during the period 1947-1950

Years	Total	Foodstuffs	Textiles	Paper & woodpulp	Durable consumer goods	Fuel & lubricants	Chemical & pharmaceutical products	Capital goods
1947	100	100	100	100	100	100	100	100
1948	112.2	104.2	100.4	129.3	100.4	112.4	98.4	126.9
1949	106.2	83.6	98.6	105.3	101.4	99.8	84.7	133.5
1950	88.0	54.4	90.1	87.8	90.9	96.0	74.4	113.1

Source: See Table 37

In this period, too, changes in prices were influenced by other factors, including an import control policy introduced in May 1948 as a consequence of exchange difficulties and of the Government's plan to protect certain sectors of domestic production that had been developing in the preceding years. The relative prominence of imports of capital continued to become more marked: for instance,

/from 37.9

from 37.9 per cent in 1947 they increased to 40 per cent in 1950. The same occurred in the case of fuel and chemical products. Among consumer goods, imports of foodstuffs and textiles remained more or less stationary, and those of durable goods showed a drop from 11.5 per cent to 6.6 per cent. Automobile imports, for instance, declined from 6.9 per cent to 3.6 per cent, whilst domestic electrical appliances contracted from 3.5 to 2.3 per cent.

In short, it may be said that, during the years immediately after the war, the determining factor of the changes which occurred in the structure of imports was pent-up demand, and in the subsequent period -- from 1948 onwards -- it was the selective control applied by the Government. The following table summarizes the changes in the relative importance of the various goods throughout this period.

Table 40. Brazil: The structure of imports at current prices during the period 1944-1950

Years	Total a/	Foodstuffs	Textiles	Paper & woodpulp	Durable consumer goods	Fuel & lubricants	Chemical & pharmaceutical products	Capital goods
		(percentage of the total value of imports)						
1944	100	22.9	2.7	4.6	1.3	8.9	11.1	30.7
1945	100	26.1	2.5	5.1	2.1	9.5	8.2	33.3
1946	100	20.2	3.5	4.2	6.9	9.4	7.7	36.9
1947	100	18.3	4.0	3.7	11.5	9.4	6.9	37.9
1948	100	18.7	5.6	2.6	9.8	12.2	6.0	36.7
1949	100	17.6	4.8	2.7	6.3	11.5	8.0	40.2
1950	100	15.0	3.3	3.4	6.6	15.7	9.2	39.7

a/ Includes other imports.

Source: See Table 37.

The data contained in Table 40 convey an idea of the manner in which Brazil made use of its foreign exchange, but it does not accurately reveal the changes which have taken place in the real structure of imports, because of the effects of the changes in the relative prices of various items; and, as shown earlier, these changes have been far-reaching. Between 1944 and 1947, for instance, food prices increased ten times more than those of capital goods and twenty times more than fuel prices. However, between 1947 and 1950, food prices decreased 45.6 per cent, whilst those of fuel remained practically constant and those of capital goods increased 13.1 per cent.

/The relative

The relative changes in the prices of imported goods have multiple repercussions on domestic production, stimulating certain sectors and also influencing the policy of domestic development. The rise in the price of imported wheat, for instance, encouraged the domestic production of this cereal, with strong Government support. Nor does a subsequent fall in the price of an imported product invariably lead to the restoration of the status quo. The greater or lesser elasticity of productive activitiy constitutes the determining factor in this case. When capital investments are substantial and it is difficult to readjust their distribution, the decline in the price of an imported product can hardly affect the volume of trade. In any case, the changes produced in the structure of domestic production by the fluctuations of the relative prices of imports, which usually occur in abnormal periods of international trade, can only partly and only very slowly be reversed.

If imports are computed at constant prices, the changes in their structure become even more significant than those previously mentioned. Foodstuffs decreased from 40.5 per cent to 17 per cent between 1944 and 1947, and capital goods increased from 22 to 43.4 per cent. The share of durable consumer goods increased from 0.9 per cent to 9.4 per cent over the same period. These radical changes reveal the great shortage of durable manufactured goods in Brazil in the early post-war years, and are evidence of the depressive effects of the extraordinary rise in food prices on food imports. Between 1947 and 1950, there was a reversal in the trend, which shows that the vast accumulated demand for durable goods had been largely met. The share of foodstuffs in total imports increased from 17 per cent to 21.8 per cent, and that of capital goods decreased from 43.4 per cent to 34.9 per cent. Yet the proportion of imports of equipment for industry remained practically constant. The proportion of chemical products and fuel showed large relative increases, which suggests that the period unitl 1947 was marked by replacement and expansion of equipment, the effects of which on production became noticeable from 1948 onwards. The following table summarizes these changes.

/Table 41.

Table 41. Brazil: The structure of imports at constant prices during the period 1944-1950

(as a percentage of the total value at 1948 prices)

Years	Total a/	Food-stuffs	Textiles	Paper & woodpulp	Durable consumer goods	Fuel & lubricants	Chemical & pharmaceutical products	Capital goods Total	Capital goods Industrial equipment
1944	100	40.5	2.8	4.2	0.9	6.4	6.9	22.0	6.8
1945	100	40.1	2.4	4.9	1.5	7.8	5.6	26.5	6.9
1946	100	18.7	3.2	4.7	5.8	9.4	5.9	43.4	12.5
1947	100	17.0	3.7	4.3	9.4	9.3	5.5	43.4	14.2
1948	100	18.7	5.6	2.6	9.8	12.2	6.0	36.7	14.2
1949	100	20.9	4.7	3.2	8.2	12.4	8.4	34.6	14.9
1950	100	21.8	2.8	4.0	5.5	13.9	9.2	34.9	13.9

a/ Includes other imports

Source: See Table 37.

A comparison of the data contained in Tables 40 and 41, shows the great influence of the changes in the relative prices of various items. For instance, the share of capital goods at constant prices decreased between 1947 and 1950, but at current prices their share in total imports increased. In order to maintain imports of capital goods (computed at constant prices), at the same relative level as in 1947 (about 43 per cent), it would have been necessary to increase the quota of exchange for this item not from 37.9 per cent to 40 per cent, but to 47.4 per cent.

CHAPTER VI. THE STRUCTURE OF PRODUCTION, THE PRESSURE OF INFLATION AND THE FORMATION OF CAPITAL

In the first section, the production of goods was divided into two groups more or less equivalent according to the value of the product marketed: [1] primary activities and secondary activities (manufacturing and building). As shown by the data set forth earlier, a part of primary production -- varying between 25 and 30 per cent, when calculated at producer prices -- is exported. On the other hand, almost all of secondary production remains within the country and it may be roughly estimated that the degree of its dependence on the foreign market is ten times smaller than that of primary production. [2]

The fluctuations of the foreign market for primary goods therefore only affect manufacturing indirectly through fluctuations in total income.

The indirect dependence of secondary activities on the foreign market for primary products is contingent on: a) the relative importance of that market for primary activities, and b) the relative importance of primary occupations in the formation of total income. If it is assumed that 30 per cent of primary production is absorbed by the foreign market and that the share of primary activities in the formation of the gross national product is 40 per cent, [3] it will be seen that the dependence of secondary activities on the fluctuations of foreign demand for primary products is two and a half times smaller than that of the primary sector itself. Thus a reduction of 50 per cent in exports of primary products would mean a contraction of 15 per cent in income from primary activities and of 6 per cent in total income. This is, of course, a rough approximation since a contraction of demand in one sector does not necessarily imply a corresponding proportionate contraction in total income. Our sole purpose is to indicate that the relative development of secondary activities may render an increasingly large proportion of the national income independent of the fluctuations of the foreign market for primary products.

1/ A part of farm production, which remains in the rural areas for local consumption, was not included in this estimate. Furthermore, the statistics do not include the whole of this sector's production. It may be assumed that the data available for farm production actually include about 80 per cent of real total production.

2/ A calculation made in 1947 showed that the net value of exported manufactured goods did not exceed 3 per cent of the net value of total manufacturing production.

3/ There is no estimate of the national income according to sectors of production. However, in the light of past research the distribution is probably as follows:
(footnote continued on next page)

On the other hand, if the two sectors of production are considered from the point of view of the domestic market, secondary activities reveal a considerably greater degree of dependence. It may be assumed to be practically 100 per cent whereas that of the primary sector does not exceed 70 per cent. In practice, this means that primary activities are more adaptable to fluctuations in domestic demand. For instance, in the event of an expansion in means of payment of domestic origin, primary activities may react quickly by reducing the exportable surplus. Such a reaction is obviously limited by the nature of the production and there will not always be a surplus in those sectors most under pressure from domestic demand. However, since part of its production is not consumed by the domestic market, primary activity ipso facto offers a margin of adaptability either over the short term, by a reduction in surpluses, or over the medium term, by the redistribution of the factors of production.

The secondary activities, and especially manufacturing, show greater rigidity vis-a-vis fluctuations in domestic demand. Domestic expansion of money supplies cannot be offset by the absorption of exportable surpluses, since production is normally wholly absorbed by the country itself. Moreover, the increase of productive capacity depends on imports of equipment, on the increase of power resources, etc. An increase of production over the short term is nearly always obtained by increasing the amount of labour per unit of fixed capital and implies a substantial increase of cost.

In practice, it happens that an expansion of income in the manufacturing sector results in a reduction of the exportable surplus in the primary sector, and that an expansion of income in the primary sector leads to an increase of manufacturing prices. Naturally this is a simplified schematic explanation, since in both cases there is an increase of prices in the manufacturing sector and domestic absorption of the exportable surplus. Nevertheless, the manufacturing sector is more rigid vis-a-vis an expansion of income in the primary sector than vice versa. Thus a 10 per cent increase in the income of the primary sector will result in a 4 per cent increase in total income and an equivalent rise in the demand for manufactured goods. On the other hand, a 20 per cent increase in

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(footnote continued from previous page)

3/ primary activities 40 per cent, manufacturing and building 25 per cent, and other activities 35 per cent. See J.B.D. Derksen Comparabilidade Internacional das Estatisticas da Renda Nacional published in the Revista Brasileira de Economia, June 1950.

the income of the secondary sector will result in a 5 per cent increase in total income and a 3.5 per cent rise in the demand for primary products.[1/]

These facts are relevant to the study of the manner in which inflationary pressure spreads. When inflation is due to an external source, its pressure is initially reflected in the rise of income in the primary sector. In view of the rigidity of the manufacturing industry, this pressure leads to a rise in the price of manufactured goods or, alternatively, to an increase in imports of these goods. During the last war, imports not only could not expand, but were greatly reduced. The pressure, therefore, was concentrated on the domestic manufacturing industry, which became even more inelastic owing to the difficulty of importing equipment and some of the basic raw materials.

The manner in which inflationary pressure acts upon Brazil's economy is a factor of importance in the process of capital formation. Inflationary pressure due to external causes has in the past taken two typical forms: a) under normal conditions of foreign trade it has led to an increase of imports and so to higher standards of consumption: b) under abnormal conditions of foreign trade, it has led to an increase in the price of domestic manufactured goods, to an increase of profits, and, consequently, to the development of internal manufacturin production. This is, naturally, a mere indication of the general trend, since in the former case, the pressure of inflation may cause the development of certain industries for which favourable conditions exist within the country, whereas in the second case, the standard of individual consumption or of group consumption may be raised at the expense of other individuals or groups.[2/] What is important

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1/ On the basis of the distribution of the national income according to sectors, as shown above. In reality, it does not work out like this since the increas of income modifies the structure of consumption. However, this detail does not invalidate the argument set forth, but rather tends to confirm it, since the consumption of manufactured articles expands at a greater rate when income is increased than does the consumption of primary goods.

2/ We do not propose to define herein which is the better policy whereby to increase the formation of capital and guide investment. We only wish to indicate what occurred in Brazil in the past. The fact that inflationary pressure, allied to restrictions on foreign trade, caused an intensification of capital formation and channelled investments towards the industrial sector, does not necessarily imply that that is the best means of obtaining this objective.

/to stress

to stress is that under normal conditions of trade, the influence of an expansion of income caused by external stimuli on the process of capital formation is small. 1/

There is ample evidence to indicate that the formation of capital became more intensive during the two wars and during the 'thirties, when foreign supplies of manufactured consumer goods suffered either from shortages or the introduction of direct control. A selective import policy such as that adopted by Brazil in 1948 as a necessary result of its exchange difficulties, also affects the process of capital formation. The import restrictions on consumer goods create an excess liquidity which exerts pressure on domestic producers; this attracts investments to the sectors which profit directly or indirectly. Whether the inflationary pressure will be absorbed or turn into real inflation depends on the greater or lesser elasticity of domestic industry. The time required by domestic industry to expand its productive capacity is therefore a factor of fundamental importance. As it expands, the industrial sector becomes more elastic and inflationary pressure may be absorbed more rapidly. In other words, the slower the formation of new capital required for the development of productive capacity, the longer the period necessary for the absorption of inflationary pressure, and, conversely, the more rapidly savings can be transformed into fixed capital and skilled labour the shorter the period required for this process. The dependence on imported equipment constitutes a factor in inelasticity. During the last war this factor came to be of paramount importance and it is largely responsible for the fact that during this period inflationary pressure was transformed into real inflation. The capacity to convert savings into purchasing power in a given area, that is, the foreign exchange resources with which to purchase equipment, is a factor which controls the degree of inelasticity. During the 'thirties, this factor was of great importance in Brazil. Finally, the country's resources of technical skill and of skilled labour must also be taken into account. In the specific case of Brazil, the need for training of workers is generally recognized; this involves an initial outlay which increases in direct proportion to the deficiencies in primary education, nourishment, health, and housing of the mass of the population. Technical skill must be

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1/ Historically, an improvement in foreign coffee prices has meant an improvement in the standard of living of certain groups of the population. Because consumer goods, demand for which increased, were principally of foreign origin, the new incomes soon melted away. The coffee industry itself, the beneficiary of the price increases, tended to attract new investments, which in turn produced the well-known effects on the supply and prices of the product.

largely imported and experts and organizers have to be trained abroad, which involves supplementary investments for the entrepreneurs and greater foreign exchange expenditure for the country.

The mere listing of these factors shows that, owing to its rigidity, an under-developed economy cannot easily absorb inflationary pressure and that the entrepreneurs in such an economy have difficulty in turning available savings into reproductive investments.

When dealing with the spread of inflationary pressure we observed that the manufacturing section is affected first, because of its greater rigidity. However, primary activities connected with the domestic market and services also tend to react if the pressure persists. The rise in prices therefore begins in the manufacturing sector and tends to spread to the other sectors connected with the domestic market. But primary activities connected with the foreign market cannot follow this general trend and are therefore compelled to transfer their income to the other sectors of economic activity. There is, in fact, a general transfer of income from the more elastic to the more inelastic sectors, manufacturing receiving the greatest advantage in this movement, and exports suffering the most serious damage.[1/]

The transfer of income, caused by the form in which inflationary pressure spreads, not only takes place as between the various sectors of economic activity, but also as between the different economic regions. In Brazil there are areas which are almost entirely engaged in primary export activities and there are others, similarly, which are essentially manufacturing areas. The relative increase in the prices of products of the domestic industry implies a transfer of income from regions of primary export occupations to the industrialized areas. Naturally this transfer will not occur or, alternatively, it will occur on a much smaller scale, under normal conditions of foreign trade. However, in this case also, the possibility of diverting the demand for consumer goods to the foreign market would hamper the process of capital formation.

1/ Obviously, if inflationary pressure is caused by a sharp rise in the export prices of the primary sector, this sector will only transfer a part of its added income. If the rise in export prices leads to higher domestic prices of the respective products, the primary sector will be able to retain a larger proportion of the initial addition to its income.

/Under present

Under present conditions of restricted foreign trade, it is simple to estimate the rate of transfer of income as between these zones. Let us, for instance, take the example of pine wood and carnauba wax. In 1949 the per unit export prices for these products stood practically at the same level as in 1945. Two large areas in the country obtain most of their income from the export of these products. The example of carnauba wax is even more characteristic because virtually the entire production is exported. The manufactured articles consumed in these areas are principally supplied by Rio and Sao Paulo, where the prices of industrial products increased at least 50 per cent between 1945 and 1949.[1/] Moreover, the foreign exchange derived from primary exports is largely absorbed by the industrial areas, where it is employed in importing equipment, fuel and industrial raw materials.[2/]

These transfers of income as between areas, and as between sectors of economic activity, have certainly contributed towards the concentration of savings and the increase of capital formation in Brazil. In view of the low level of national income, economic development would, but for these forces, naturally have to be slower.

1/ There are no indices for the prices of domestic manufactured articles, but the cost of living indices for a workman's family in the city of Sao Paulo show an increase of 50 per cent for textiles and tobacco, and an even greater increase in the cost of furniture and household cleaning goods, between 1945 and 1949.

2/ The transfer may take place even when the index of export prices rises pari passu with the index of domestic manufactured goods, since the latter may benefit from the terms of trade through imports of equipment, raw materials or semi-manufactured goods, and fuel. On the other hand, primary activities in the industrialized areas of the country are in a better position to defend the level of their income. Hence, what is needed is a study according to regions before the extent of such transfers can be gauged.

APPENDIX A

CALCULATION OF THE PRODUCTION OF GOODS DURING THE PERIOD 1945-1950

The production of goods as an index of economic development

Before the growth of an economy can be measured, a more exact and more detailed calculation of the national income than that so far made for Brazil is required. In fact, the first scientifically prepared calculation of Brazil's national income was that for 1947, and even this has not yet been finally worked out. However, relatively full data have been published in Brazil for nearly all the branches of the production of goods, and hence a partial calculation of the gross national product is possible. The total of goods produced must not, of course, be confused with the national product, since the latter also includes services. Still, in calculations using merely approximate data covering relatively short periods, the error entailed in using the changes in the production of goods instead of the changes in the national product would not necessarily be greater than the error implicit in a rough estimate of the national income.

It is a possible objection to using the data relating to the production of goods as a measure of the changes in the total of the national product that the production of services does not always expand on a par with the production of goods. Experience in the industrialized countries shows that, for instance, during the development stage the production of services expands at a much higher rate than that of goods. However, it would be a mistake to assume this to be the general rule. On the contrary, it would be better to distinguish between cyclical and long-term phenomena. As real per capita income increases, from the historical standpoint its rate of expansion tends to be lower than that of demand for certain services, and higher than that of other services. The services, the demand for which increases at a higher rate than real income, are those benefited by the development of technical skill, that is to say, those which reduce their costs in terms of wages. But there are a number of other services which draw little or no advantage from the increase of productivity and the cost of which tends to become greater with the increase of real income.

In high-income countries, services of the former category prevail, owing to a protracted selective process whereby individual services are progressively replaced by collective services and during which personal labour is gradually superseded by mechanical labour. In under-developed countries, however, it may happen that the second class of services acquires great importance. In these circumstances, during the first stage of development many personal services may disappear and the demand for goods increase proportionately. At all events, when individual incomes exceed a certain level, in an advanced stage of development, the demand for services increases more than that for goods.

Be that as it may, in the present stage of economic research in Latin America, it is difficult to venture beyond the realm of conjecture when dealing with this question.

There is, however, one other point which is of considerable significance; since the object is to measure economic development, what is the best index to use, that of the production of goods or that of the national product? What, in fact, we are seeking to measure with the index of the national product, or better still, with that of national income, is the degree of social well-being. Yet an improvement in social well-being, at least over the short period, is not exactly synonymous with economic development. Economic development implies a notion of increased productivity, which in turn involves either increased utilization of equipment per gainfully employed person, or the introduction of improved technique or of more rational methods of production. It is possible that in a country which is still in an early stage of development social well-being may improve from one year to the next, as a result of non-productive government services financed out of higher taxes, though in fact no real economic development may have occurred. Since a part of the income absorbed by the new taxes would have been invested in productive activities, there may be a falling off in the rate of development which will be reflected in the index of production of goods but not in that of the national product. This is obviously a particular example from which it would be unfair to generalize. Like other problems connected with economic development, this requires more detailed investigation.

Another difficulty in measuring the rate of Brazil's economic development is the existence of an important sector beyond the scope of the monetary economy. Several attempts have been made to estimate the relative importance of this sector, but to admit them as fact would be to widen the margin of error in what is in any case a mere rough estimate. Still, the sector which has not as yet been incorporated in the monetary economy is nevertheless being progressively absorbed by it, which suggests that a part (though it is hardly perceptible from year to year) of the increase in the production of goods is fictitious.

Calculation of the production of goods

The value of the production of goods in the following sectors has been calculated at constant prices: (a) agriculture, (b) livestock, (c) forest products other than wood, (d) mining and (e) manufacturing and building. The series of values at constant prices were obtained by multiplying the values of the base year (1947) by the respective quantum indices.

(a) Agriculture - The index for the quantum of agricultural production was weighted by the 1947 producer prices and includes the following 30 products: pineapples, alfalfa, ginned cotton, garlic, ground nuts, rice, oats, bananas, sweet potatoes, potatoes, cacao, coffee, sugar cane, cotton seed, barley, rye, tea, coconuts, broad beans, beans, tobacco leaf, oranges, caster-oil seeds, manioc, maize, tomatoes, wheat, tung oil, and grapes.[1/] The following index shows the quantum and the value of agricultural production at constant prices:

Years	Agricultural production: Quantum index[b/]	Value in millions of cruzeiros, at 1947 prices
1945	91.2	26,849
1946	99.5	29,293
1947	100.0	29,440
1948	103.9	30,588
1949	110.4	32,502
1950[a/]	116.7	34,356

a/ Provisional data.

b/ Weighted by 1947 producer prices.

1/ Basic data supplied by the Production Statistics Service of the Ministry of Agriculture.

(b) Livestock

(b) Livestock - The quantum index for animal produce was similarly weighted by 1947 producer prices and includes the following products: beef, pork, lamb, goat flesh, cattle hides, pigskins, goat skins, lard, animal fat, bacon, tallow, dairy produce and others. It was estimated that 30 per cent of the gross value of animal produce was derived from the industrialization thereof, and therefore only 70 per cent of this value was taken into account under livestock.

Years	Animal produce: Quantum indices[a]	Gross value	Value added by industrialization	Value of cattle products
		(in millions of cruzeiros at 1947 prices)		
1945	88.6	9,867	2,960	6,907
1946	94.4	10,513	3,154	7,359
1947	100.0	11,137	3,341	7,796
1948	107.3	11,950	3,585	8,365
1949	111.1	12,373	3,712	8,661
1950[b]	115.0	12,777	3,833	8,944

a/ Weighted by 1947 producer prices.

b/ Estimated.

(c) Forest products other than wood - The quantum index for forest products other than wood was calculated in the same manner as the preceding indices and includes the following products: sisal (agave), babassú, rubber, caroá, Pará nuts, carnaúba wax, mate, guaraná, guaxinaa, vegetable ivory, jute, licuri (wax), licuari (shells) oiticica, piassavá, timbó roots.

Years	Forest products other than wood: Quantum indices[a]	Value in millions of cruzeiros at 1947 prices
1945	105.6	1,410
1946	103.1	1,376
1947	100.0	1,335
1948	107.1	1,430
1949[b]	107.7	1,438
1950[b]	108.5	1,449

a/ Weighted by 1947 producer prices.

b/ Estimated.

(d) Mining

(d) Mining -- The index for mining production was calculated as above and includes the following products: Mineral waters, asbestos, arsenic, bauxite, beryllium, coal, cassiterite, tin, graphite, marble, mica, iron ore, manganese ore, salt and silver. Gold production was not included though during the period under observation it represents 20 per cent of the total value of mining production.

Mining production

Years	Quantum indices a/	Value in millions of 1947 cruzeiros
1945	96.8	471
1946	96.7	470
1947	100.0	486
1948	112.7	548
1949 b/	117.2	570
1950 b/	121.9	592

a/ Weighted by 1947 producer prices.
b/ Estimated.

(e) Manufacturing and building -- Statistical information in this branch of production is more incomplete than for other sectors. The index of industrial production which the Economic Commission for Latin America of the United Nations has employed in previous surveys and which are also used herein, is that of Conjuntura Económica. This index includes the production of electricity and of coal but does not include building. It cannot therefore strictly be considered either as an index of industrial production or of manufacturing production. However, if it is assumed that electric power and coal are contained in the index as indirect indicators to make up for the shortage of data relating to important sectors of manufacturing production, this index may be accepted as a rough approximation of changes in the quantum of manufacturing production. On the other hand, this index gives undue prominence to the share of the textile industry (50 per cent) though the industry has remained practically stationary during the past few years, or may even have declined since 1946. It is therefore possible that the index in question underestimates the growth of manufacturing production in the strict sense of the term. If this is the case, the index used herein will fairly

will fairly closely reflect the changes which have occurred in manufacturing and building together since during the past five years the latter has, to a certain extent, followed the trend of the textile industry.

The value of manufacturing production and building -- treated as secondary production in this context -- was calculated on the basis of an estimate made in 1947, based on data obtained by the State Statistical Departments and by the "Inquéritos Económicos" of the Brazilian Institute of Geography and Statistics. 1/ From this total which relates to the gross value of industrial production in its widest sense, the following have been deducted:

1. the gross value of forest products other than wood;
2. the gross value of mining production, including gold; and
3. the gross value of animal produce.

From the remainder, the value added was calculated, this being taken at 45 per cent of the gross value. Finally, 30 per cent of the gross value of animal produce was added to this result; the details of the calculation are given below:

	In millions of cruzeiros
Gross value of industrial production of 1947	91,113
Minus	
Forest products other than wood	1,335
Mining production	598
Animal produce	11,137
Balance	78,043
Value added (45 per cent)	35,119
Plus	
Value added to animal produce	3,341
Total	38,460

1/ Estudios Económicos, Vol. 1, No. 1, National Federation of Industry, Rio de Janeiro, March 1950.

Manufacturing and building industries

Years	Quantum index	Total value in millions of cruzeiros at 1947 prices
1945	97.3	37,422
1946	103.4	39,768
1947	100.0	38,460
1948	115.1	44,229
1949	118.3	45,498
1950 a/	121.3	46,652

a/ Partly estimated

Based on the calculation of the added value of building which is contained in Appendix C. the following breakdown can be made:

Years	Building (value added)	Manufactures (value added)
	(in millions of cruzeiros at 1947 prices)	
1945	4,298	33,124
1946	5,748	34,020
1947	4,901	33,559
1948	4,455	39,774
1949	4,342	41,156
1950	4,435	42,217

Value of the production of goods - The total value of the production of goods is obtained by adding the preceding sectors, shown above:

Years	Manufacturing	Building	Agriculture	Livestock	Forest products other than wood	Mining	Total
	(in millions of cruzeiros at 1947 prices)						
1945	33,124	4,298	26,489	6,907	1,410	471	72,699
1946	34,020	5,748	29,293	7,359	1,376	470	78,226
1947	33,559	4,901	29,440	7,796	1,335	486	77,517
1948	39,774	4,455	30,588	8,365	1,430	548	85,160
1949	41,156	4,342	32,502	8,661	1,438	570	88,669
1950 a/	42,217	4,435	34,356	8,944	1,449	592	91,993

a/ Provisional data

/APPENDIX B

APPENDIX B

CALCULATION OF THE AVAILABILITY OF GOODS

The apparent volume of available goods is the algebraic sum of the value of the total production of goods (see Appendix A) plus the adverse balance of trade. This is naturally an approximation, since the value of production was calculated at producer prices whereas exports have been estimated at f.o.b. prices and imports at c.i.f. prices. Moreover, exports are partly drawn from stocks carried over from preceding years, and, on the other hand, part of the production is used to form stocks to be used, within the country or abroad, in later years. Accordingly, the figures of the volume of available goods have to be corrected to allow for the movement of stocks. We have attempted to make this correction in the case of two principal export products, coffee and cotton. The data for production, domestic consumption and export, as well as those relating to stock movements of these two products, are contained in the following table.

Production, consumption, exports and stock movements of coffee and cotton over the period 1945-1950

Years	Coffee				Cotton			
	Production	Consumption	Exports	Stock movements	Production	Consumption	Exports	Stock movements
	(thousands of 60 kilo bags)				(Thousands of tons)			
1945	13,915	3,032	14,172	- 3,289	378	134	163	81
1946	15,289	3,090	15,505	- 3,306	378	143	353	- 118
1947	15,791	3,150	14,830	- 2,189	347	133	285	- 71
1948	17,291	3,210	17,492	- 3,411	320	140	259	- 79
1949	17,805	3,270	19,369	- 4,834	396	142	140	114
1950 a/	17,977	3,300	14,800	- 123	422	145	125	152

a/ Partly estimated

/Note:

Note: Data relating to production supplied by the Production Statistics Service of the Ministry of Agriculture, and export data by the Economic and Financial Statistical Service of the Finance Ministry. The data for the consumption of coffee were obtained from Conjuntura Economica, July 1950, and those for cotton consumption were estimated on the basis of cloth manufacture.

In calculating the volume of available goods, coffee and cotton exports made from stocks were ignored and the increase in these stocks was added to the value of exports for the respective year.

Value of coffee and cotton exports during the period 1945-1950

(in millions of cruzeiros at 1947 prices)

	Coffee			Cotton				
Years	Exports	Stock Movements	Balance	Exports	Stock movements	Balance	Total exports	Total corrections
1945	7,307	- 1,697	5,610	2,152	1,060	3,212	19,899	19,262
1946	7,994	- 1,706	6,288	4,616	- 1,544	3,072	25,124	21,874
1947	7,646	- 1,130	6,516	3,735	- 929	2,806	21,982	19,923
1948	9,019	- 1,760	7,259	3,385	- 1,034	2,351	21,654	18,860
1949	9,986	- 2,494	7,492	1,829	1,492	3,321	19,668	18,666
1950	7,637	- 6	7,631	1,636	1,989	3,625	16,738	13,119

Note: The total value of exports has been weighted by 1948 prices.

The total corrected value of exports has been adjusted to the level of 1947 prices for the purpose of calculating the volume of available goods. For this purpose we used the current value of total 1947 exports minus exports drawn from cotton and coffee stocks, and a quantum index of exports corresponding to the corrected total shown in the preceding table.

/Total volume

Total volume of available goods in the period 1945-1950

(in millions of cruzeiros at 1947 prices)

Years	Production	Imports	Exports a/	Availability
1945	72,699	12,625	18,629	66,695
1946	78,226	14,676	21,153	71,749
1947	77,517	22,789	19,265	81,041
1948	85,160	18,801	18,244	85,717
1949	88,669	19,371	18,051	89,989
1950 b/	91,993	20,715	16,738	95,970

a/ Corrected to allow for changes in coffee and cotton stocks.

b/ Provisional data.

On the basis of the totals of available goods and of the series of available capital goods, particulars of the calculation of which are given in Appendix C, an estimate was made of the volume of available consumer goods.

Available consumer and capital goods during the period 1945-1950

(in millions of cruzeiros at 1947 prices)

Years	Total available goods	Capital goods	Consumer goods
1945	66,695	12,254	54,441
1946	71,749	18,637	53,112
1947	81,041	21,198	59,843
1948	85,717	18,377	67,340
1949	89,989	20,193	69,796
1950	95,970	22,110	73,860

Note: Imported capital goods were estimated at c.i.f. prices, which explains the difference between this series and that contained in Appendix C.

The quantum indices of imports and exports were calculated on the basis of 1948 prices, but the totals were adjusted to 1947 prices. The following table includes the basic indices used in the calculations relating to foreign trade.

/Indices

Indices of the quantum of imports and exports and of the terms of trade and the capacity to import - Basis of the weighting: 1948 prices

Years	Quantum		Prices		Terms of trade	Capacity to import
	Imports	Exports	Imports	Exports		
1945	100.0	100.0	100.0	100.0	100.0	100.0
1946	116.1	126.2	131.5	118.0	89.7	113.2
1947	180.4	110.4	149.7	156.2	104.2	115.1
1948	148.8	108.8	169.4	163.6	96.5	105.0
1949	153.3	98.8	159.6	167.7	105.0	103.7
1950 a/	164.0	84.1	133.1	236.2	177.4	149.3

a/ Provisional data

Note: Basic data from the Economic and Financial Statistical Service of the Ministry of Finance

APPENDIX C

CALCULATION OF THE SUPPLY OF CAPITAL GOODS DURING 1945-1950

The value (at constant prices) of the volume of available goods for the formation of capital was calculated as described below:

a) Building. The gross value of civilian building has been estimated by the Equipe de Renda Nacional of the Fundacao Getulio Vargas at 8,751 thousand cruzeiros for the year 1947 [1]. The quantum indices for building were calculated by the Economic Commission for Latin America of the United Nations on the basis of the data relating to floor space (building licenses) in the ten leading cities of Brazil [2]. It was assumed, furthermore, that 56 per cent of the gross value is value added in the process of construction. This figure was obtained by weighting the index of the cost of building prepared by Conjuntura Economica [3] and although the proportion is lower than that which emerges from the data of the 1940 industrial census, it would appear to be more in keeping with actual fact.

Estimate of the value of building.

Years	Quantum indices	Gross value	Value added
		(in millions of cruzeiros at 1947 prices)	
1945	87.7	7,675	4,298
1946	117.3	10,265	5,748
1947	100.0	8,751	4,901
1948	90.9	7,955	4,455
1949	88.6	7,753	4,342
1950 [a]	90.5	7,920	4,435

[a] Partly estimated.

[1] Estimativa da Renda Nacional do Brasil, Rio, June 1950, page 63.

[2] Boletin Estatistico (IBGE), January to March 1950, page 128. It is estimated that the area actually built up is 20 to 30 per cent lower than that for which licenses have been issued, but as the data is only used for comparative purposes, the error is of little significance.

[3] Conjuntura Economica, March 1950, page 13.

/b) Production

b) Production of other capital goods. The value of other capital goods was calculated on the basis of supplies of iron, steel, cement and other basic materials required in the production of capital goods, subject to deduction of the proportion absorbed by building.

The first great difficulty encountered in a calculation of this kind is that of establishing a criterion for prices, since the data relating to domestic production of steel and cement are given at producer prices and at import prices, and other semi-manufactured products are quoted at c.i.f. prices. Since the value of building is given at market prices, the use of producers and c.i.f. prices naturally lead to under-estimates. It was therefore decided to take domestic production of steel and cement at prices quoted in coastwise trade, which should be more or less equivalent to wholesale prices. Moreover, 20 per cent was added to the c.i.f. price of imported cement and 50 per cent to the c.i.f. prices of semi-manufactured metals. In this way it was attempted to cover the increment involved by customs tariffs, import and consumer taxes, transport from the port to the distributor and the latter's profits. The result is naturally a somewhat arbitrary average which may possibly be exaggerated in the case of the goods imported by large companies and by the State. However, in the case of a large number of products which are handled successively by a distributor and a retailer and which become liable to sales taxes more than once, the result is possibly an under-estimate. The tax levied on cement is lower because of the import privileges granted for this product and because of the price control to which it has been subjected. As there are no direct data relating to the consumption of iron, steel and cement in civilian building, this consumption was estimated on the basis of the aforesaid cost of building index. According to this index, the cost of cement accounts for 6 per cent of the final value of the building (minus the land) and iron for 4 per cent. Bathroom installations account for 6 per cent and kitchen fittings for 8 per cent. For the purpose of estimating the use of iron and steel in these installations, it was assumed that the proportion of these materials contained in the final value of building in Brazil is about 10 per cent. The following estimate of the use of iron, steel and cement in building also contains figures of the total supply of these products and the remainder thereof available for use in other industries producing capital goods:

/Iron and

Years	Iron and Steel			Cement		
	Total supply a/	Consumption in civilian building	Remainder	Total supply	Consumption in building	Remainder
	(in millions of cruzeiros at 1947 prices)					
1945	1,252	768	484	746	461	285
1946	2,082	1,027	1,055	864	616	248
1947	2,495	875	1,620	920	525	395
1948	2,282	796	1,486	1,069	477	592
1949	2,894	775	2,119	1,246	465	781
1950	3,476	792	2,687	1,254	475	779

a/ So far as imports are concerned, only iron and steel for building purposes have been included.

If the imports of iron and steel not included herein, and also imports of other basic metals, are added to the remainder of the iron and steel shown above plus the remainder of the supply of cement, the total value of semi-manufactured basic products used in capital goods industries other than civilian building will be obtained. Finally it was assumed that the price of iron and steel is doubled with processing[1/], and that the price of cement is trebled in public works. It was thus possible to estimate the value of the production of capital goods other than building.

Years	Basic metals absorbed by engineering industries	Value added to metals by engineering industries	Cement used in public works	Value added to cement	Total
	(in millions of cruzeiros at 1947 prices)				
1945	1,309	1,309	285	570	3,463
1946	2,365	2,365	248	496	5,474
1947	2,829	2,829	395	790	6,843
1948	2,071	2,071	592	1,184	5,918
1949	3,301	3,301	781	1,562	8,945
1950	3,860	3,860	779	1,558	10,057

1/ According to the Industrial Census of 1940, the value added by the engineering industry was 90 per cent of the value of raw materials, not including sources of power.

c) Imports of capital goods. The quantum of imported capital goods was weighted by 1948 prices, but the grand total was calculated at 1947 prices.[1] Durable consumer goods are not included in this category. The c.i.f. prices of finished capital goods have been increased by 50 per cent for the reasons given above. Imported capital goods which enter the country in the form of building materials are regarded as having been included in the category of "building" and those imported in the form of other semi-manufactured or raw materials are treated as included in the category of "domestic production of other capital goods". Below are shown the data for imports of the three groups of capital goods imports, at c.i.f. prices to which no increment has been added.

Years	Finished products	Building materials	Semi-manufactured and raw materials	Total
		(in millions of cruzieros at 1947 prices)		
1945	1,636	510	550	2,696
1946	3,728	785	873	5,386
1947	6,497	979	806	8,282
1948	4,885	571	390	5,846
1949	4,214	680	788	5,682
1950	4,799	550	782	6,131

d) Total supply of capital goods. The total supply of capital goods is made up of the following three items: (a) building, (b) domestic production of other capital goods, and (c) imports of finished capital goods as shown below:

Years	Gross value of building	Production of other capital goods	Imports of finished capital goods[a]	Total
		(in millions of cruzeiros at 1947 prices)		
1945	7,675	3,463	2,454	13,602
1946	10,265	5,474	5,591	21,330
1947	8,751	6,843	9,745	25,339
1948	7,955	5,918	7,327	21,300
1949	7,753	8,945	6,321	23,019
1950 [b]	7,920	10,057	7,199	25,176

a/ C.i.f. prices increased by 50 per cent.

b/ Provisional data.

1/ Brazilian import statistics do not include the total of the capital goods entering the country but only those which pass through the customs. Many ships and aeroplanes acquired abroad are thus not included in these data.

On the basis of the comprehensive data, an attempt has been made to estimate the distribution of these goods among private and official investors. In the budget message submitted by the Executive Power to Congress in 1950, an estimate is made of the total Federal Government investments during the period 1939-1950. These figures were scaled down by the use of a combined index of wholesale prices and the cost of living (weights 2 and 1 respectively)

	Government investments		
Years	At current prices (millions of cruzeiros)	Price index	At 1947 prices
1945	1,223	70.6	1,732
1946	1,121	82.5	1,358
1947	2,890	100.0	2,890
1948	3,056	111.7	2,736
1949	5,694	121.3	4,694
1950	4,707 a/	136.3	3,453

a/ Budget estimate

Private investments were calculated by subtraction, as have investments from private sources in "other activities".

Years	Total investments	Government investments a/	Private investments		
			Total	Building	Other activities
	(in millions of cruzeiros at 1947 prices)				
1945	13,602	1,737	11,870	7,675	4,195
1946	21,330	1,358	19,872	10,265	9,607
1947	25,339	2,890	22,449	8,751	13,698
1948	21,300	2,736	18,564	7,955	10,609
1949	23 019	4,694	18.325	7,753	10,572
1950	25 176	3,453	21.723	7,920	13,803

a/ This does not include investments by state governments and municipal authorities which, however, are much smaller than those of the federal Government. It should be remembered that these data relate to investments which are made by the Government during the year, but which sometimes materialize only two or three years later, as in the case of imports of ships. These therefore are financial data which are not strictly comparable with the total since the latter relates to the real supply of capital goods during the year.

FINANCIAL AND MONETARY TRENDS

1. Public Finance

(a) Structure of the fiscal system

Taxation and the national revenue. Public finance is one of the most important factors in Brazilian economic life. The central and local governments (States and municipalities) probably contribute more than 20 per cent of the national product.[1/] However, this share does not appear to have increased to any significant extent during the five-year period 1945-49; at least, not if tax revenue is accepted as an index of Government activity and the production of goods as an index of the national product.[2/]

Table 1. Brazil: Government Revenue from Taxation compared with the Total Production of Goods, 1945-49
(in millions of cruzeiros at 1947 prices)

Year	Total Tax Revenue	Annual Increase (per cent)	Production of goods	Annual Increase (per cent)
1945	17,400		72,699	
1946	19,800	13.8	78,226	7.6
1947	19,700	- 0.5	77,517	- 0.9
1948	19,900	1.0	85,160	9.9
1949	21,800	9.5	88,669	4.1
Average		6.0		5.2

Source: Tax revenue data were supplied by the Ministry of Finance and have been deflated on the basis of a combined index of wholesale prices and the cost of living. Data for the production of goods are given in Chapter I.

1/ The data on the gross national product given in Chapter I are not strictly applicable in this case, since they are based principally on tax revenue figures. According to that estimate the gross national product rose in 1949 to a sum of 173,600 million cruzeiros, Government activity having contributed 22 per cent of this amount.

2/ The relative importance of Government revenue from other sources is unlikely to have increased, since in 1947 and 1948 there were budget surpluses, as against the substantial deficits in the preceding years. On the other hand, the national product may have expanded at a greater rate than the production of goods.

/In 1947

In 1947 and 1948, the Government's share in the formation of the national product would appear to have decreased, but in 1949 it recovered its 1945-48 position; a conclusion confirmed by the fact that 1947 and 1948 were the only years during this period showing budget surpluses.

Tax Jurisdiction. One of the characteristics of the Brazilian financial system is the substantial share of the States in total revenue, which increased from 33 per cent in 1940 to 36 per cent in 1945 and 39 per cent in 1949. So far as tax revenue is concerned, the share of the States and municipalities is practically as large as that of the Federal Government.

Tax jurisdiction is strictly regulated by the Federal Constitution of 1946. For instance, the export tax, which had formerly been one of the States' principal sources of income, was limited to a maximum of 5 per cent ad valorem, which could be raised to 10 per cent only in exceptional cases, and with the prior and specific authorization of the Federal Senate. In fact, the State of São Paulo, the Federal District and some of the lesser federal units have abolished this tax, the total yield from which amounted to barely 2 per cent of the value of Brazil's exports. However, the States, whose autonomy was appreciably strengthened by the 1946 Constitution, have the right to fix the rates and other aspects of the taxes within their jurisdiction; and it will be shown below that they have made ample use of this prerogative, during the past few years, particularly in connexion with the taxes on domestic trade.

Municipal budgets are relatively small -- representing barely 10 per cent of total public expenditure -- and their share in fiscal revenue is even smaller.

The fiscal powers of the municipalities are substantially limited to fixing taxes on real property and the exercise of certain professions, and taxes of a local nature. In addition, the municipalities receive a share, fixed by the Constitution, of the total revenue accruing to the Federal Government, particularly from the income tax.

Budgetary and extra-budgetary finances and finances of autonomous institutions. Budgetary procedure is less strictly defined. The Federal Constitution now in force, like those of 1934 and 1937, provides that the budget should be universal, single, annual and specific, in conformity with the four classic rules of French budgetary law. These same principles are applied to the

State and municipal budgets, all of which are subjected to a fairly substantial degree of uniformity. In practice, however, it is found that the first two principles -- particularly that of universality -- are far from being rigorously observed; that is to say, the so-called General Budget of the Union does not cover all the revenue and expenditure of the Federal Government; and the same applies to a number of States and municipalities. This, of course, is not a peculiarly Brazilian characteristic. Similar deviations from the standard procedure may be noted in other Latin American countries and, in fact, throughout the world, since the multiplicity of governmental economic and financial activities and the variety of ways in which these activities are organized make it difficult to meet all expenditure out of a common fund of revenue (principle of universality), and to cover all types of revenue and expenditure in a single budget (principle of unity).

Reports on the execution of the Federal and State budgets are published with remarkable promptitude -- the Federal reports appear four or five months after the close of the financial year -- and offer a general picture of budgetary and extra-budgetary finances. They indicate that Federal extra-budgetary expenditure normally constitutes about 15-20 per cent of the total Federal expenditure, except when the budget proper shows a deficit; that is to say, when it is found necessary to resort to loans -- which are considered in principle as extra-budgetary sources of revenue. The greater part of extra-budgetary expenditure is made up of Government credits for financing crops, especially of cotton. The Government meets this temporary expenditure by selling the produce acquired. Wheat imports are financed in a similar manner.

In addition to these operations, which are considered to be extra-budgetary, there is a substantial volume of public revenue and expenditure connected with the autonomous institutions, each of which is required to draw up its annual budget in advance, and on the basis of a standard pattern. The Federal administration alone now includes about fifty of these autonomous bodies some of which are industrial (the railways, Lloyd Brasileiro etc.), others financial (Savings Banks), others connected with social services (Social Security Institutions), others concerned with economic activities (sugar, salt, pine and other institutions), and, finally, others concerned with cultural activities (universities).

/As a rule

As a rule these autonomous bodies have their own funds -- industrial earnings, members' contributions etc. -- which are adequate to cover their expenditure. Many of them are able to show substantial surpluses, but where deficits occur, they are obliged to turn to the Government which has appropriated budgetary funds amounting to several hundreds of millions of cruzeiros for such items over the past few years. In the 1951 Budget, for instance, 300 million cruzeiros have been earmarked for this purpose.[1/]

(b) Federal finances

The four principal taxes. The Federal Government's finances reflect Brazil's economic evolution with a reasonable degree of accuracy. Until 1939, half of the Federal fiscal revenue were derived from customs duties on imports; but the tariff on which these were imposed shows them to have been intended rather as revenue taxes, designed to provide the Government with funds for budgetary purposes, than as protective duties. Most manufactured products -- both capital and consumer goods -- were imported, and it was believed that duties on them would provide the most convenient and fair means of meeting public expenditure. After a sharp decline during the war (caused by the fall in imports), revenue from this source has begun to rise again, though it has not yet recovered its former level. During the past five years it has supplied from 12 to 15 per cent of the fiscal revenue and about 10-12 per cent of total revenue.

Since before the war, thanks to the development of industrial production in Brazil and to the expansion of the domestic market, the most important tax in the Federal fiscal system has been the consumption tax, which despite its somewhat misleading designation is a charge on the manufacture of industrial products, levied at the factory itself according to the quantity and, particularly, the value of the merchandise, only export goods being exempt. Government revenue from this source at present exceeds 6,000 million cruzeiros annually, that is, about 40 per cent of the tax yield and more than 30 per cent of the total budgetary revenue.

1/ Presidential Message to the National Congress on the Budget for 1951. Supplement to Diario do Congresso Nacional (Congressional Records), No. 83, page LXI.

/Since the

Since the early years of the war, direct taxation has been of the utmost importance in the Federal finances. Income tax, which was first levied in 1924 and yet in 1939 contributed no more than 10 per cent of budgetary revenue, today produces a yield of 5,500 million cruzeiros, and is one of the principal sources of revenue, coming next in importance after the consumption tax.

Private incomes and corporate profits contribute to the total revenue from income tax in more or less equal proportions.

The effect of the tax on capital formation is attenuated by the fact that income derived from bearer securities is subject not to the progressive tax but to fixed charges, namely, 6 per cent on government bonds and 15 per cent on shares and debentures. This tax relief enjoyed by bearer securities has undoubtedly contributed substantially to the development of corporations in Brazil. Similarly, the tax on business earnings is comparatively moderate. Until 1947 it was levied at a flat rate of 8 per cent but since then progressively graduated rates have been introduced, with a maximum of 15 per cent. Distributed company profits are taxed only once.

The fourth important source of Federal revenue is a mixed tax, paid in various ways, for either administrative or commercial transactions by means of a stamp. It is therefore known as the Stamp Tax (Imposto do Selo). All documents liable to taxation must be stamped with a special stamp, and the revenue thus obtained goes to Public Health and Education. More than 200 million transactions a year are taxed in this way. Though these fees are for the most part quite moderate, they produce a substantial yield, amounting in 1950 to more than 1,600 million cruzeiros, or about 8 per cent of the total budget revenue.

In view of its importance, which is economic rather than financial, reference should also be made to a fifth tax: that on transfers of funds abroad. This tax, instituted just before the war, was suspended in 1946 but reintroduced soon after. It consists of a 5 per cent ad valorem charge on purchases of foreign exchange for import purposes, the payment of services and the settlement of financial transactions. Certain essential goods, such as coal, petroleum, wheat etc. carry exemption from this tax, which is intended primarily as a supplement to the import duty. It should be remembered that the Brazilian customs tariffs are specific, duties being levied according to quantity, not value; which means that in periods of rising prices its economic effects and financial importance are inevitably reduced.

/Another tax,

Another tax, of lesser significance, is known as the Social Security Tax, since the yield from it is used for that purpose. It is levied at a rate of 2 per cent on imported goods, which are thus subject to a tax of 7 per cent ad valorem over and above the customs duties properly so-called.

Revenue from industry and property. Despite the Federal Government's extensive economic interests, its revenue from industry and property is quite limited, representing in all barely 5 per cent of budgetary revenue. Since 1945 revenue from industry has increased at a slower rate than taxes.

At least one of the reasons for this is the fact that many Government operations (including the most profitable, like the financing of the cotton crop during the early post-war years) are extra-budgetary.

However, the favourable development of a number of mixed enterprises in which the Federal Government has large holdings is beginning to provide an important source of revenue. For instance, earnings from the National Iron and Steel Company (Companhia Siderurgica Nacional), which in 1950 paid a dividend of 8 per cent on its ordinary shares, have steadily increased.

Administrative Costs: Between 1945 and 1949, Federal expenditure doubled but effective revenue followed the expenditure curve very closely, as may be seen from the following table:

Table 2. Brazil: Federal Revenue and Expenditure

(in millions of cruzeiros)

Years	Revenue	Expenditure
1945	8,852	9,850
1946	11,570	14,203
1947	13,853	13,393
1948	15,699	15,696
1949	17,917	20,727

Source: The Department of Economic and Financial Statistics of the Brazilian Ministry of Finance.

Expenditure is carefully classified according to purpose; e.g. personnel (an average over the past five years of 38 per cent of total expenditure) and materials (12 per cent). The remaining half is shared among services and charges (26 per cent) -- a complex category, including contractual services and certain Government services proper -- subsidies, public works appropriations and the purchase of buildings (i.e. the bulk of investment) and the service of the national debt. The two last items will be studied in detail below.

Owing to the form in which the Brazilian budget is drawn up, it is not always possible to determine the expenditure of a given service with the desirable accuracy. In most cases expenditure on a particular item coincides with the appropriation budgeted for the Government department concerned, so that the appropriations for each Ministry or other Governmental organ reflect, at least in its general outlines the functional distribution of public expenditure. It will thus be noted that national defence very regularly absorbs 30 per cent or, if the cost of internal security (police and the judiciary) is added, one-third of total Federal expenditure. Another third goes to the Ministries concerned with economic matters (agriculture, transport and communications), and the remaining

third to a variety of services. Expenditure on cultural and social items constitutes only 10 per cent of the total, while government administration proper -- particularly financial administration and the service of the Public Debt -- accounts for 18 per cent.

Investment. In a country like Brazil, which is undergoing a phase of intense economic development, Government expenditure on capital goods must inevitably be high, even if the Government limits itself to providing the essential minimum of means of transport and other fundamental services for the use of private enterprise.

A recent estimate of Federal expenditure in this category from 1939 to the present showed that over the past decade about 20 per cent of total expenditure has been applied to purposes which could be defined as investment. In public administration, clearly, it is impossible to lay down a precise dividing line between operating expenditure and investment. Many buildings and durable goods intended for military purposes (for example, airfields and aeroplanes which may at any given moment be turned to productive civilian use) might be classified as investment.

Undoubtedly, however, there has been a substantial increase in government investment of a strictly economic order during the past few years. In 1949, investment amounted to 27.5 per cent of total expenditure; a striking contrast with the figures for 1945 and 1946 (11.3 and 8 per cent, respectively). The expansion of government investment in 1949 was due to advance implementation of parts of the SALTE Plan.

c) State and Municipal Finances

Sales Tax. Much of Brazil's public expenditure, as has already been noted, is effected through the States, which also benefit by an extremely productive source of revenue, the Imposto de Vendas e Consignacoes (Sales and Consignments Tax). This is a general turnover tax on all commercial, industrial and agricultural undertakings with the exception of agricultural smallholdings. Most products are thus taxed a number of times.

States have the right to levy the tax on the value of any product, the rate being uniform within each State. Up to 1947 the rate applied in the principal States varied between 1.4 and 2 per cent, but owing to the steady increase in expenditure during the past few years, it has almost everywhere been raised appreciably, with the result that in 1949 the average for Brazil stood at about 2.5 per cent. In view of its nature, this tax represents a real burden of between 5 and 6 per cent on any finished product. For certain categories of goods, such as textiles, which are taxed up to five times at the various phases of production and distribution, the fiscal burden is considerably greater.

It is certain that the Sales Tax not only helps to raise the domestic price level but also weighs heavily on export prices. It has been estimated that in 1949 its effect on the prices of export goods amounted to a total increase of 877 million cruzeiros, that is, about 4.3 per cent of the total value of exports. [1/] Efforts made to reduce the tax have all been unsuccessful since it constitutes one of the States' richest sources of revenue, contributing about half of their total revenue. In 1949, the Sales Tax produced a yield of 7,000 million cruzeiros, more than any other source of revenue in Brazil.

Property tax. As in most other countries, property taxes in Brazil are levied by the local governments. Thanks to the activity of the property market, they provide the States and municipalities with considerable revenue.

The most productive of these sources of revenue is a sales tax known as "the tax on the transfer of immovable property inter vivos". (Imposto de transmissao de propriedade imobiliaria inter-vivos). During the post-war period, in spite of some decline in the volume of transactions, this tax has brought the States an annual yield of some 800 million cruzeiros.

This yield corresponds to a total value of property sales amounting to some 10,000 million cruzeiros, a very high figure due to the fact that most of the transactions taxed are sales of new apartments, generally made before the building is fully completed. Consequently the sales tax is to some extent at least a form of tax on the building industry. Since 1947 profits from the resale of buildings have been subject to a Federal Tax of as much as 30 per cent.

[1/] Conjuntura Economica, October 1950, page 17

/As against

As against the relatively high taxes levied on the transfer of immavable property inter vivos, the tax on transfers mortis causa -- i.e. the succession tax -- is still comparatively low. This also is levied by the States, but yields only a little more than 200 million cruzeiros annually.

Expenditure, particularly for investment. Since the end of the war, local government expenditure has increased much more rapidly than that of the Federal Government. This increase is to some extent due to the expansion of administrative services, but its main cause lies in the development of public works by the States and municipalities.

One of the most important activities of the local governments is road building. In addition to the funds allocated to them for this purpose out of a tax on the importation of petroleum products -- 60 per cent of the yield of this tax goes to the local governments, the remainder being retained by the Federal Government -- the State and municipal authorities have disbursed large sums in the past few years for the improvement of road transport, the State of Sao Paulo being particularly prominent in this respect.

Some States also participate actively in economic affairs, though as a rule such operations, like those of the Federal Government, are effected through the Institutos. Cases in point are the States of Bahia (cacao) and Rio Grande do Sul (rice etc.); and there are other similar autonomous agencies.

d) Public debt

Foreign debt. Ever since the Declaration of Independence, the public debt has been one of Brazil's most critical problems. For long periods during the last century, and indeed up to very recently, foreign credits provided the only means of meeting extraordinary, and in some cases even normal Government requirements of funds owing to the shortage of domestic capital and the absence of a well-organized domestic market for Government securities. On the eve of the second World War, Brazil's foreign debt stood as follows: 156 million pounds sterling, 356 million U.S. dollars, 521 million French francs (paper), 229 million French francs (gold) and 8 million Dutch florins. The annual interest on this economic debt was about 100 million dollars, that is about 20 per cent of Federal and local government expenditure.

In addition to the pressure which it exercised on the balance of payments, this position had very adverse effects on Government finances. Since interest on the foreign debt had to be paid in foreign exchange, the frequent fall in the rate of exchange of the milreis was equivalent to an increase in Government expenditure.

After a number of attempts, a satisfactory solution to this problem was finally achieved during the war. In November 1943 the Brazilian Government signed an agreement with its British and United States creditors under which it offered holders of Brazilian bonds immediate redemption of a substantial part of their holdings in return for which the total amount of the debt was written down and the rate of interest reduced. The redemption period for holdings of creditors who would not accept this proposal was extended to thirty years, and the rates of interest drastically reduced. Many creditors opted for the former solution, known as "Plan B", with the result that the total amount of the Brazilian foreign debt was reduced by about one-third and the cost of service of the debt by about two-thirds.

In 1946, by agreement with the French creditors, the franc debt was redeemed immediately and in full by payment of 19.3 million dollars.

As a result of these agreements, Government expenditure for service of the foreign debt (interest and amortization) was reduced to about 33 million dollars (some 600 million cruzeiros). The devaluation of the pound sterling was another favourable development for Brazilian Government finances; and to add to this, the improvement in trade has enabled the Government to effect repeated unscheduled amortizations. The most important such transaction took place in April 1950, when the Brazilian Government used 15.2 million pounds out of its blocked sterling reserves to pay off at par foreign bonds in that currency.

As a result of these operations, the foreign debt now stands at less than one-half of its 1939 figure. On December 31, 1949, the total value of bonds in circulation amounted to 72.5 million pounds sterling, and 164 million dollars -- that is, 6.8 thousand million cruzeiros. About 60 per cent of this total represents Federal debt, and in addition the Federal Government has guaranteed all bonds under "Plan B".

Foreign debt service accounted for a total of 320 million cruzeiros in the 1950 Federal budget and 120 million cruzerios in the State budgets, representing 1.4 per cent of the total budgeted Federal expenditure and less than 1 per cent of total State expenditure.

Consolidated internal debt. The consolidated internal debt has never presented a very great problem for Brazil's public finances, since the fall in the purchasing power of the national currency has reduced the cost of debt service, which in any case is limited, as far as the Federal debt is concerned, to payment of interest. Moreover, the very restricted capital market for Government bonds, has prevented any excessive increase in the debt.

In 1940 the Federal consolidated internal debt amounted to 6.2 thousand million cruzeiros. With the War Bond issue -- totalling 4.3 thousand million cruzeiros -- the debt had reached a total of 10 thousand million cruzeiros in 1946, and has since remained at about this level. On the eve of the war the consolidated internal debt was equivalent to 140 per cent of the Federal Budget, whereas in 1949 it represented scarcely more than 50 per cent. However, the relatively high rates of interest -- from 5 to 7 per cent per annum -- involve a budgetary appropriation of some 600 million cruzeiros (3 per cent of total expenditure).

The position of the local governments in this connexion is less favourable. The internal consolidated debt of the State Governments increased from 6.5 thousand million cruzeiros in 1945 to 9.1 thousand million in 1948, the last year for which full data are available. This increase has probably continued in the last two years, despite which the total amount of the debt is almost certainly still less than the total amount of the annual State budgets, and the cost of service is generally less than 8-10 per cent of total expenditure.

Floating Debt. The Federal floating debt shows marked fluctuations, caused primarily by extra-budgetary operations pre-financed by the Bank of Brazil. At the end of the war, it stood at about 10,000 million cruzeiros, principally as a result of Bank of Brazil financing of gold purchases by the Federal Government. It subsequently fell to less than 2,000 million cruzeiros, but has again shown an appreciable rise in recent years thanks to the expansion of commercial transactions (financing of crops, wheat imports, etc.), so that by 1949 it stood at about the same level as at the close of hostilities.

However, the Bank of Brazil has concluded a number of agreements which have considerably reduced the cost to the Government of debt service. As a result this item, which amounted to 670 million cruzeiros in 1946, had fallen to 250 millions in 1950.

/Compulsory

Compulsory loans. On a number of occasions, the inadequacy of the open capital market has compelled the Federal Government to resort to compulsory loans. A major part of the extraordinary expenditure caused by the war was financed by this means. Compulsory subscription to War Bonds was closely linked with the income tax, but it was far from constituting a form of supplementary tax, since War Bonds bear interest at the rate of 6 per cent per annum and are freely negotiable.

Another form of compulsory loan was introduced in 1946 when the balance of trade left a large surplus. In order to lessen the inflationary effects of the development, exporters were required to purchase treasury bonds up to 20 per cent of the value of their sales; that is, on compulsory sale of the foreign exchange accruing from their exports to the Bank of Brazil, they received one-fifth of its cruzeiro equivalent in the form of short-term notes (120 days), bearing interest at the rate of 3 per cent per annum.

The conditions which led to the issue of these notes no longer obtain, but exporters are still required to subscribe to them, since any final settlement would involve the Government in considerable expenditure. The total amount of notes in circulation varies with the total volume of exports, but fluctuates around 1.2 thousand million cruzeiros. A number of plans for the solution of this problem are under consideration.

Market for government bonds. The various difficulties connected with the public debt may in fact be reduced to a single problem: that of finding a means to expand the open market for government bonds.

It is true that there is a regular trade in Federal bonds and bonds issued by the principal States on the Brazilian stock exchanges, particularly that of Rio de Janeiro. In fact, the volume of such transactions even exceeds the trade in debentures and shares. However, the public shows little interest in this category of investment, and the high returns offered on the real estate market, and in other branches of the capital market, make it practically impossible to place new issues of Government bonds, except at terms incompatible with sound public finances.

As a result of this weak demand, the bulk of government bonds are quoted on the stock market at well under par. Market quotations are virtually independent of the Government's financial position; a fact which would seem to indicate that the causes are psychological and traditional.

/Since 1945

Since 1945 a Government agency, the Superintendencia da Moeda e do Crédito (Board of Money and Credit) has been authorized to conduct open market operations. In practice, however, the Government does not enter the market. Very recently, a number of attempts have been made to improve the marke for Government bonds, but it is still too early to ascertain whether these efforts are likely to bring about a radical change.

2. Money and Credit

(a) Monetary policy

Issue of paper currency. Not infrequently the Brazilian Government has been induced to resort to the issue of paper currency in order to overcome the difficulties it has encountered in covering the budgetary deficit and financing extraordinary expenditure by loans.

The chronic inflation which independent Brazil inherited from its colonial period is due to the disparity between Federal expenditure and revenue; but it would be inaccurate to attribute the expansion of the monetary issue to financial policy alone. Clearly, a country with an annual population growth of 2 per cent and a steadily increasing per capita income requires a corresponding expansion in its means of payment. The development of a market economy in Brazil and especially the decline in barter and its replacement by monetary trade, have exerted pressure in the same direction.

A further factor has also been mentioned -- especially during the war -- in explanation of the issues of paper currency; namely, the credit balance of foreign trade, the need to finance the export surplus by Government or Bank of Brazil credits and the Government purchase, through the Bank, of the foreign exchange derived from such exports. The extraordinary accumulation of gold reserves and foreign exchange during the war was almost entirely financed by Bank of Brazil credits, and the necessary means of payment were created largely by issue of paper currency. In this way 11,000 million cruzeiros in foreign exchange were accumulated in the period 1941-1945, and of these funds 6,000 million cruzeiros were reconverted to gold.

In the post-war period there has again been a certain parallelism between the balance of trade position and the issue of paper currency, whenever the budgetary deficit has not exerted too great a pressure. However, the inadequacy of the data on the balance of payments makes it impossible to analyse this problem with any degree of accuracy.[1/]

1/ The data on the balance of payments cover only 1947 and 1948; see below.

/Whilst

Whilst the other causes of monetary expansion should not be overlooked, it must be recognized that Government financial policy continues to be the fundamental factor. The following table is somewhat instructive in this connexion. It gives comparative data for the budgetary position, the balance of trade and the paper currency issue during the post-war period.

Table 3. Brazil: Budgetary Position, Balance of Trade, and Issues of Paper Currency

(in millions of cruzeiros)

Years	Budgetary surplus (+) or deficit (-)	Balance of Trade	Increase or decrease in paper currency issue
1946	-2,633	5,201	2,959
1947	460	-1,610	- 195
1948	3	712	1,297
1949	-2,810	- 495	2,349
1946/49	-4,980	2,384	6,510

Sources: For the budget, Contadoría Geral da República (Federal Government Auditing Office); for the balance of trade, Economic and Financial Statistics Service of the Ministry of Finance; for paper currency issue, Amortization Fund.

It should be noted that there have been budget surpluses twice during the first four years of the post-war period, thus making it possible to maintain the paper currency issue practically unaltered over a period of 22 months (from January 1947 to October 1948) -- a somewhat rare achievement in Brazil's monetary and financial history. The year 1950 is similar in more than one respect to 1946. When the budget was presented to Congress for approval it showed a substantial deficit, which was later reduced by introducing economies. At the same time, the balance of trade was clearly positive; the first six months showing a credit balance of 1,131 million cruzeiros. These two factors led to issues amounting to over 780 million cruzeiros from January to June.

Between 30 June 1945 and 30 June 1950 the paper currency issue rose from 15,438 million to 24,825 million cruzeiros: an increase of 61 per cent, which undoubtedly exceeds the rise in production and the expansion in the internal market over the same period.

Deposit Money. The use of deposit money had increased in Brazil at a relatively high rate. Before the war it constituted two-thirds of the total money supply, and this proportion has increased during the past decade, as may be seen from the following table:

/Table 4

Table 4. Brazil: Money supply

(in millions of cruzeiros)

Years and months	Note issue		C. Demand deposits excluding inter-bank deposits	D. Total money supply a/ (B + C)	Ratio D / A
	A. Total	B. Outside banks			
1939-XII	4,971	3,854	7,380	11,234	2.26
1940-XII	5,185	4,095	7,474	11,569	2.23
1941-XII	6,647	5,310	9,713	15,023	2.26
1942-XII	8,238	6,130	12,595	18,725	2.27
1943-XII	10,981	8,542	19,895	28,437	2.60
1944-XII	14,462	11,662	24,047	35,709	2.47
1945-XII	17,535	14,321	27,169	41,490	2.36
1946-XII	20,494	16,820	29,837	46,657	2.28
1947-XII	20,399	16,882	33,256	50,138	2.46
1948-XII	21,696	17,733	36,186	53,919	2.49
1949-VI	21,610	17,467	40,093	57,560	2.66
1949-XII	24,045	19,361	41,141	60,498	2.52
1950-VI	24,825	20,175	46,651	66,826	2.69

a/ Excluding coin.

Note: Brazilian statistics on demand deposits, unlike the International Monetary Fund statistics, include Federal Government deposits. On the basis of the I.M.F. classification, the ratio D-A rose from 2.3 in 1939 to 2.33 in June 1950 (see International Financial Statistics, October 1950)

Source: Bank of Brazil, Resenha Mensomica (Economic Summary), February and September 1950.

Demand deposits are not necessarily used as a means of payment, particularly in a country like Brazil, where they yield as much as 6 per cent per annum in interest. Many deposit accounts, especially the smaller ones, are in fact a form of savings and remain untouched over long periods. Since the war, however, the use of cheques has spread greatly. In the wholesale trade they are virtually the sole means of payment used; on the other hand, little use is made of them in the retail trade and for payment of wages.

Available data on payments by cheque make it possible to estimate approximately the rate of circulation of deposit money. At present some 25 to 30 thousand million cruzeiros in cheques are handled monthly by the Clearing Houses. Assuming that long-term deposits have an average annual rate of turnover of 1.5 -- the statistics do not distinguish between the various types of deposits -- it will be found that the annual rate of turnover of demand deposits is now 4 to 5, as compared with 3 to 3.5 before and during the war. The following table shows the post-war trend:

Table 5. Brazil: Cheque clearings and turnover of bank deposits

Year	Millions of cruzeiros Total deposits	Cheques	Annual rate of turnover	Millions of cruzeiros Demand deposits	Cheques a/	Annual rate of turnover
1945	45,286	129,850	2.9	30,748	106,943	3.5
1946	48,768	165,816	3.4	33,486	142,893	4.3
1947	51,809	184,272	3.6	37,476	162,772	4.3
1948	57,218	204,128	3.6	41,057	179,886	4.4
1949	64,021	244,445	3.8	46,392	218,001	4.7

a/ On the assumption of an annual rate of turnover of 1.5 for long-term deposits.

Source: For bank deposits, Economic and Financial Statistics Service of the Ministry of Finance; for cheque clearings, Bank of Brazil.

The data contained in the above table cover only cheque clearings by the fourteen Clearing Houses which operate in conjunction with the Bank of Brazil, in the principal commercial centres of Brazil. Clearing is purely local, and only selected banks may make use of the available facilities. However, a large number of cheques are cleared by the banks themselves, independently of the Clearing Houses -- particularly in the case of banks having a considerable number of branche

(b) Banking policy.

Deposits and loans. Banking legislation compels commercial banks to maintain a reserve, either in currency or in the form of deposits in the bank of Brazil, equivalent to 15 per cent of the demand deposits and 10 per cent of the long-term deposits held by their customers. The Bank of Brazil is exempt from this condition and may use funds deposited by other banks to make loans to the Government, to business undertakings, or to private persons. Hence the extraordinarily high ratio of loans to deposits.

/Table 6.

Table 6. Brazil: Bank deposits and loans

(in millions of cruzeiros)

Year and month	A. Deposits	B. Loans	Percentage ratio of B to A
1940-XII	13,664	12,837	93.9
1941-XII	16,532	15,894	96.1
1942-XII	21,541	18,206	84.5
1943-XII	31,570	28,757	91.1
1944-XII	39,703	40,107	101.0
1945-XII	45,286	43,860	96.9
1946-XII	48,768	45,276	92.8
1947-XII	51,809	46,539	89.8
1948-XII	57,218	51,309	89.7
1949-VI	61,711	57,176	92.7
1949-XII	64,026	62,419	97.5
1950-VI	71,682	69,748	97.3

Source: Economic and Financial Statistics Service of the Ministry of Finance

The decline in the ratio of loans to deposits which may be noted after 1945 was principally due to the creation in February 1945 of the Money and Credit Board (Superintendência da Moêda e do Crédito), a government agency responsible for regulating and supervising the credit policies of the commercial banks. Immediately following its establishment, the Board compelled all banks to deposit with it, independently of their existing statutory reserves, amounts equivalent to 8 per cent of the demand deposits and 4 per cent of the long-term deposits held by their customers. As, however, these restrictions proved incompatible with the demand for credit, the rates of these compulsory deposits were later reduced to 3 per cent and 2 per cent respectively, of which half might be made in government bonds.

As in other countries, there is a tendency in Brazil for demand deposits to expand. The ratio of demand deposits to long-term deposits, after subtracting Government and interbank deposits, rose from 1.7 in 1945 to 2.2 in 1950.

/Position

Position of the Bank of Brazil. An unusual feature of the Brazilian banking system is the peculiar position of the Bank of Brazil. Though from a strictly formal standpoint it is a commercial bank, organized as a joint-stock company in which 55.73 per cent of the capital is held by the Government[1/], in practice it enjoys many privileges and fulfils a variety of functions -- such as exchange control -- which in other countries are discharged by the central banks. It is not, however, a bank of issue. It operates as a state bank in respect of both assets and liabilities, about one-third of its deposits being made by, and about one-half of its loans issued to the Federal Government.

The bulk of these governmental credits and debits, however, represent foreign exchange transactions. As of 30 June 1950, Government deposits accounted for only 1.8 thousand million cruzeiros and Government loans for 6.9 thousand million cruzeiros of the Bank's total deposits of 33.5 thousand million cruzeiros and total loans of 34.3 thousand million cruzeiros.

A comparative analysis of these figures shows that the Bank of Brazil's commercial activities are extremely extensive, far exceeding those of any other Brazilian bank. As there are no specialized institutions practically all agricultural credit, for instance, is handled by the Bank of Brazil. Despite the marked development of private banking during the past ten years, the Bank of Brazil has maintained and even strengthened its position as a credit establishment serving the national economy. It does, in fact, handle about a quarter of all bank credits made to commercial undertakings and private parties.

Table 7. Brazil: Bank loans to the public.
(in millions of cruzeiros)

Year	Bank of Brazil	Other banks	Total	Bank of Brazil's percentage of total loans
1940	1,693	8,735	10,418	16.3
1945	8,830	31,324	40,154	22.0
1946	8,922	30,889	39,811	22.4
1947	9,517	31,995	41,512	22.9
1948	10,653	35,044	45,697	23.3
1949	12,918	39,081	51,999	24.8

Note: The credits granted by banks other than the Bank of Brazil include a small part of the loans granted to public authorities, particularly local governments (by the end of 1949 the 78 principal Brazilian banks had granted loans of this type to the value of 1,346 million cruzeiros).

Source: Bank of Brazil, Resênha Econômica, September 1950; Economic and Financial Statistics Service of the Ministry of Finance, Bank of Brazil.

1/ Banco do Brasil, S. A., Memoria de 1949, page 110.

Plans for the creation of a Central Bank. The issue of money, formerly a prerogative of the Bank of Brazil, is at present the exclusive responsibility of the Federal Government, which is fully liable for all money in circulation, including the old banknotes, a small proportion of which (32 million cruzeiros in 1949) are still in circulation. Brazilian money therefore is legally State currency.

The technical process of issue is effected through various channels, the principal of these being the Carteira de Redescontos (Rediscount Office) and the Caixa de Mobilização Bancária (Banking Mobilization Fund), both of which operate in conjunction with the Bank of Brazil. 25 per cent of the issue is backed by gold and foreign exchange held by the Federal Government. Most of the issues made during the past few years have been effected at the request of the Carteira de Redescontos, and are backed by commercial securities, but recently (August-September 1950), as during the war, they were backed by Treasury Bonds. The Government itself does not issue currency for its own benefit; when need arises it applies to the Bank of Brazil, which, if its funds prove inadequate, draws on the Carteira de Redescontos. This agency in its turn applies to the National Treasury (Tesouro Nacional), the only organ authorized to issue paper currency.

The complexity of this procedure has led to the formulation of a project for the establishment of a bank of issue. Several efforts in this direction had already been made before the recent World War, but none met with success. The need for more efficient control of the expansion of credit gave new impetus to these plans, and in 1947 the Government placed before the National Congress a bill providing for the radical reform of the banking system. In addition to the Central Bank, this project envisages five other banks, namely a mortgage bank, a rural bank, an industrial bank, an investment bank, and an export/import bank. 50 per cent of the capital of these banks would be contributed by the Government. Though this plan met with public support, its execution has proved difficult, partly owing to the scope of the programme itself. Several counter-proposals[1/] were presented to Congress, and discussion continued until the end of 1950 without leading to any

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1/ The text of the Government project and of the principal counter-proposals presented to the Chamber of Deputies will be found in O crédito e o sistema bancário no Brasil (Credit and Banking System in Brazil), Imprensa Nacional, Rio de Janeiro, 1948. See also in this connexion the Report of the Joint Brazil/United States Technical Commission (Abbink Mission).

decision. Since, however, the need for a Central Bank is still felt, it would appear useful to summarize the essential provisions of the proposals under review.

Under the Government's plan, the Central Bank's operations would be limited to the same functions as those discharged by the federal reserve banks in the United States. Save in exceptional cases, it would not deal direct with private parties or undertakings other than banks or conduct transactions with the Government for its own account. However, the Government would be credited annually with a current account of up to 25 per cent of the total budgeted revenue -- a limit far higher than that at present in force. The plan embodies no special conditions with regard to the issue of money, except that the Central Bank would be required to secure not less than 25 per cent of the paper issue by gold reserves.

The Central Bank's credit control powers would be wide, and would also cover investments by social security institutions and savings banks. The Bank would be authorized to fix the rates of interest on deposits, discounts, loans, mortgage notes, rural and industrial debentures and exchange operations.

The proposals submitted by the members of Congress tend to give the private banks and other economic groups greater weight in the administration of the Central Bank. In the main, however, they follow the general lines of the Government plan. There is thus general agreement on the need for reasonably wide and strict control of the monetary and banking systems.

Limitation of the rates of interest. One of the most delicate problems in Brazil's credit system is the very high prevailing rates of interest. In the case of ordinary bank loans, these vary between 7 and 10 per cent per annum, though the legal maximum of 12 per cent is often reached. These rates are due not only to the great demand for credit, but also to some extent, to inflation and the frequent devaluations of Brazilian currency in the past.

/In August

In August 1950, anticipating the future Central Bank legislation, which is to regulate these matters in full detail, the Government introduced an important measure. Under Instruction No. 34 issued by the Money and Credit Board, rates of interest for the various types of bank deposits were limited to a scale of 3 to 6 per cent per annum -- representing a very appreciable reduction of interest on many accounts. Despite the partial nature of this measure -- due to the Board's limited powers -- it constitutes an innovation which may have far-reaching effects on the credit market.

(c) Long-term credit.

Capital issues. The repercussions of the chronic inflation are particularly felt in the long-term credit market. The problems encountered in floating Government loans and in finding a market for debentures are similar. Quotations on the Rio de Janeiro and Sao Paulo stock exchanges show that the annual yield of first-class debentures fluctuates around 8 per cent; yet even at this rate it is difficult to place new issues. On the domestic capital market, shares have virtually eclipsed debentures, since variable-income securities offer the holder the dual advantage of sharing the profits of a process of extraordinary development and of enjoying the most convenient form of protection against the risks of monetary depreciation.

The following table shows the capital issues of corporations with headquarters at Rio de Janeiro.

Table 8. Brazil: Corporate Capital Issues in Rio de Janeiro
(millions of cruzeiros)

Year	Shares	Debentures	Total	Percentage ratio debentures to total
1942	879	311	1,190	26.1
1943	1,033	154	1,187	12.9
1944	1,920	113	2,033	5.6
1945	2,029	67	2,096	3.2
1946	1,947	356 a/	2,303	15.4
1947	2,115	117	2,132	5.5
1948	2,499	271	2,770	9.8
1949	1,484	4	492	0.3

a/ Including 200 million cruzeiros issued by a mortgage bank.

Source: Conjuntura Economica, November 1947, January 1948, February 1949 and February 1950.

/The real

The real estate market. The principal avenue for fixed income investment in Brazil is urban real estate. This market has been stimulated by the intensive new building, both of offices and dwellings, which took place before and immediately after the war.

This branch of the capital market is financed in two ways, i.e. by mortgage or by the Price Table (Tabela Price) or instalment system. Rates of interest on mortgages are high, for the same reason as in the case of debentures, and mortgage terms relatively short. It has been shown that in 1949 one third of the new mortgages raised in Rio de Janeiro were for short periods -- as a rule for only one year. Generally speaking rates of interest on short-term mortgages are higher than those on long-term mortgages, an apparent paradox due to the fact that in the former case the mortgagors are predominantly private parties whereas in the latter they are mortgage banks, insurance companies, savings banks and social security institutions. The average rate of interest in 1949 in Rio de Janeiro was 9.7 per cent.[1/]

The Price Table system is the most common method of buying apartments. Normally, the purchaser pays 50 per cent of the price during building, the remaining half being paid in monthly instalments over a period of up to fifteen years at 9 per cent interest. However, the system has a number of forms, varying with the general economic situation.

The number of persons in a position to purchase or rent new apartments is limited, firstly, by the cost of building, now about four times higher than before the war, and secondly, by the freezing of rents in old buildings. Though saturation point has by no means been reached, demand nevertheless fell off slightly from 1947, rising again with the general expansion of business in 1950.

Insurance and savings companies. Despite the many gaps which still exist in the organization of long-term credit, particularly in regard to agricultural mortgage loans, the capital market is solidly backed by the insurance and savings companies (companhias de capitalização). These latter operate along similar lines to the insurance companies, with which some of them are closely associated.

At the end of 1949, total investment by these two types of institution amounted to some 5,000 million cruzeiros. The following table shows the expansion and distribution of such investment from 1945 to 1949:

1/ Conjuntura Econômica, January 1950

/Table 8-a

Table 8-a Brazil: Investment by insurance and savings companies

(millions of cruzeiros)

Year	Guaranteed loans	Fixed or variable income securities	Real property	Cash deposits	Total
1945	693	1,062	540	620	2,915
1946	1,219	818	893	587	3,517
1947	1,121	1,289	1,061	563	4,034
1948	1,565	1,352	1,286	691	4,894
1949	1,728	1,390	1,220	700	5,038

Source: Conjuntura Economica March and September 1949, April 1950.

The trend of investment since 1945 has increasingly been towards real property and loans secured either by real property or by insurance policies and savings bonds. Investment in securities negotiable on the stock exchange, particularly Government securities, constituted only 27.6 per cent of the total investment in 1949, as against 36.4 per cent in 1945 and 40.4 per cent in 1943. To some extent this trend is shared by the capital market as a whole.

3 Exchange policy and the Balance of Payments

(a) Gold and foreign exchange.

Production and price of gold. Whereas two centuries ago Brazil supplied about 40 per cent of the world's gold production, it now figures among the lesser producers. However production is fairly regular varying between 4 and 5 tons annually. Nine-tenths of this output is from a single mine at a depth of 3 000 metres which has been worked for more than a century by a British company.

Between 1933 and 1945 the Brazilian Government had a monopoly of the domestic purchase of gold, reselling a small part to processing industry and accumulating a reserve of 52 tons. However, the peculiar conditions of production, together with the rise of wages and other costs led to a serious price problem. The Government was obliged to pay a much higher price for gold mined in Brazil than the current price of gold of foreign origin. In 1945 therefore/ the monopoly was abolished, and in the following year Government gold purchases ceased entirely. This measure also had anti-inflationary effects since in order to buy gold the Government was obliged to issue paper currency.

/Gold was

Gold was then placed on the open market; but prices were fixed by the Government. In order to enable domestic production to continue, the price of domestic gold has been raised several times, reaching the figure of 28 cruzeiros per gramme that is, about 35 per cent more than the price at which the Bank of Brazil buys gold at the current rate of exchange of the cruzeiro. Even this price, however, has been insufficient to offset the constant increase in the cost of production.

In December 1948 control of gold prices was abolished completely. Since then, the mines have been authorized to sell 80 per cent of their output at free market prices but are required to sell the remaining 20 per cent to the Bank of Brazil at the official price of 20.8176 cruzeiros. Up to 31 October 1950, the Bank of Brazil had in this way purchased 1 142 kilogrammes of gold. The export of gold by private persons is still prohibited.

Gold reserves and foreign exchange. The improvement in foreign trade during the war enabled the Government to make substantial additions to its gold reserve which until then had been accumulated almost exclusively out of the domestic output. The gold reserve expanded from 35 tons in 1939 to 315 tons in 1946 258 tons of this increase of 280 tons having been bought abroad. The increment would have been even greater, however, if the Provisional Government of November 1945 had not decided to offer gold to a value of 300 million cruzeiros for public sale at a price of 25.25 cruzeiros per gramme, thus reducing the Government reserve by almost 12 tons.

But for this transaction the reserves accumulated during the war have been maintained intact, the only reduction being due to the transfer to the International Monetary Fund of 25 per cent of Brazil's quota, an operation which, in September 1948 involved a decrease in the gold reserve of some 33,312 kilogrammes, at a value of 37.5 million dollars (694 million cruzeiros).

Since then the Government gold reserve has not changed. A total of 281,570 kilogrammes is deposited in the Bank of Brazil, figuring in the balance sheet at a value of 6,403 million cruzeiros. The foreign exchange reserve has also varied little between 1945 and 1949. The following table shows the variations in total gold and foreign exchange reserves since 1940:

/Table 9

Table 9. Brazil: Gold and Foreign Exchange Reserves in the National Treasury

Year (end of December	(millions of cruzeiros) Gold	Foreign Exchange	Total
1940	924	95	1,019
1941	1,320	664	1,984
1942	2,244	2,405	4,649
1943	5,103	4,065	9,168
1944	5,628	5,016	10,644
1945	7,115	5,252	12,367
1946	7,096	6,847	13,943
1947	7,096	6,624	13,720
1948	6,403	6,470	12,873
1949	6,403	6,309	12,712

Source: Bank of Brazil

The foreign holdings of all Brazilian banks but the Bank of Brazil have declined in the past few years. Rising from 100 million cruzeiros early in 1944 to 600 million cruzeiros by the end of 1945, the deposit balance fell to 50 million in 1949. This decrease is due to the measures adopted by the Brazilian monetary authorities with a view to concentrating foreign exchange resources in the Bank of Brazil.

1950 proved to be an eventful year for foreign exchange accounts. The advance amortization of a large part of the foreign sterling debt and the settlement of the trade dollar debt caused a sharp contraction during the first five months of the year, the National Treasury reserves falling from 6,309 million cruzeiros in December 1949 to 2,472 million cruzeiros by the end of May 1950. Thanks to the favourable trend in the balance of trade, however, half this loss was recovered in the following five months. By the end of October, the Government's foreign exchange reserve had risen to 4,237 million cruzeiros, while bank foreign exchange holdings reached 200 millions. The foreign trade position suggests that this recovery of foreign exchange reserves is likely to continue.

/The problem

The problem of the rate of exchange. Given a free market, this rapid increase in gold reserves and foreign exchange during the war would probably have led to a rise in the value of the cruzeiro. However, Brazil's contractual obligations to its allies, together with exchange controls, checked any such trend. The exchange rate of the cruzeiro remained at virtually the same level as the free market rate of 1940 (19.80 cruzeiros per dollar and 79.90 cruzeiros per pound sterling). As a result of a slight adjustment, effected gradually and in very small fractions, the dollar rate was reduced in 1945 to 19.50 cruzeiros.

Thanks to the excellent balance of payments position, no change in the rate of exchange was necessary. Immediately after the end of the war, however, much lively debate took place with regard to the problem of the rate of exchange.

Faced with conflicting opinions, the Government fixed the cruzeiro exchange rate, in accordance with the Articles of Agreement of the International Monetary Fund, at 18.50 cruzeiros per dollar, the rate still in force (buying price 18.38; selling price 18.72 cruzeiros, to which, for many commercial and financial transactions, a tax of 5 per cent is added). Officially this rate came into force on 14 July 1948.

In the following year the devaluation of the pound sterling gave rise to renewed debate on the problem of the rate of exchange. Some thought was given to the introduction of a multiple rate of exchange, with the object of facilitating the export of Brazilian products to those countries which had devaluated their currency; an argument strengthened by the unfavourable position of Brazil's balance of trade at the time.

The Government decided, however, to maintain the rate of exchange of the cruzeiro, on the ground that the bulk of Brazil's exports went to countries which had not devaluated their currencies, and that devaluation of the cruzeiro would be likely to endanger the favourable state of the coffee market -- coffee contributing more than half of the value of Brazil's total exports. At the same time a system of combined operations was introduced which had the effect of reducing the pressure of the rate of exchange on certain marginal exports.

/b) Exchange control.

(b) Exchange control.

Convertible and inconvertible currencies. In the past few years trade policy has been increasingly dominated by the problem of the money supply. The difference between convertible and inconvertible foreign exchange has frequently exerted a decisive influence on imports, particularly on the placing of orders in certain countries, and has likewise affected exports.

So far as Brazil's foreign trade is concerned, this situation has been unmistakably harmful. If the foreign exchange reserves which had been accumulated by the end of the war had been freely available for use, an unfavourable balance of trade could have been borne without difficulty for a fairly long period. However, 75 per cent of this reserve 1/ (90 per cent by December 1947) consisted of inconvertible currency and more than half of it was held in blocked accounts and was therefore not available for current trade transactions.

The bulk of the assets in this latter category consisted of sterling earned by credit exports by Brazil to Great Britain during the war and in 1946. In 1947, Brazil's blocked assets in Great Britain amounted to 65 million pounds sterling. 2/

Commercial loans to France, Belgium, Sweden, Denmark, Czechoslovakia, Argentina and other countries had enabled Brazil to accumulate reserves of unblocked foreign currencies, but generally speaking these can be used only for the purchase of goods in the debtor countries (compensated currencies).

However, Brazil has been able to use a substantial part of these funds for acquiring capital goods. Thus, the supplies essential for the public works projected in the SALTE Plan -- petroleum refineries and tankers, locomotives, etc. -- were purchased principally in countries where compensated currency accounts were available. By virtue of an agreement signed with the United Kingdom, a large part of the blocked sterling account has been used for the advance amortization of Brazil's foreign debt and the purchase of four railways owned by British companies. The release of another part of the blocked pound sterling account enabled Brazil to place an order for several tankers in British shipyards.

1/ Bank of Brazil Memoria - 1948 -- page 40.

2/ Report of the Ministry of Finance to the Finance Commission of the Brazilian Chamber of Deputies, May 1950.

/Outstanding

Outstanding indebtedness. In 1947 the dollar shortage in Brazil, as in most other countries, began to become critical. The urgent need for industrial goods (which had been difficult to obtain during the war) and the freezing of sterling balances led immediately after the war to heavy Brazilian buying in the United States. Brazil's trade with the United States in 1947 closed with a debit balance of 5,761 million cruzeiros.

The balance of trade deficit not only reduced dollar resources, but also led to delays in the payment of imports. A loan of 80 million dollars granted by the Federal Reserve Bank of New York (and repaid in full in 1948/49), provided a temporary solution to these difficulties, and strict control measures, to which further reference will be made, made it possible to reduce the purchase of less essential goods. Despite these measures the disequilibrium continued, and towards the middle of 1949, outstanding accounts totalled 175 million dollars. The solution of this problem was greatly facilitated by the rise in the price of coffee, exports of which since the second half of 1949, have brought Brazil substantial dollar surpluses.

Table 10. Brazil: Balance of Trade between Brazil and the United States

(millions of cruzeiros)

Period	Brazilian exports (F.O.B.)	Brazilian imports (C.I.F.)	Balance
1946	7,693	7,583	+ 110
1947	8,214	13,975	- 5761
1948	9,387	10,876	- 1489
1949	10,117	8,770	+ 1347
1st quarter 1949	1,984	3,077	- 1093
2nd quarter "	1,970	2,060	- 90
3rd quarter "	2,592	2,170	+ 422
4th quarter "	3,571	1,463	+ 2108
1st quarter 1950	2,404	1,186	+ 1218
2nd quarter "	2,523	1,373	+ 1150

Source: Economic and Financial Statistics Service of the Brazilian Ministry of Finance.

/Thanks

Thanks to the improvement in its trade balance with the United States, which for the period 1 July 1949 to 30 June 1950 closed with a credit of 4,898 million cruzeiros, Brazil has been able not only to settle its outstanding accounts but also to accumulate substantial dollar reserves.

Foreign exchange budget. One of the most effective measures applied for the purpose of restoring balance of trade, particularly with the convertible currency areas, was the introduction in July 1948 of a foreign exchange budget.

The term "budget" is perhaps not the most appropriate one, since in actual fact a complete budget showing receipts and payment in foreign exchange is not compiled. What is done is simply to draw up an advance plan of expenditure in convertible currencies. Payments in dollars, escudos and Swiss francs, which account for between 60 and 70 per cent of Brazil's total imports, are budgeted semi-annually on the basis of estimated earnings in convertible currency. The figures are then readjusted as necessary in accordance with the development of exports. A certain quota is set aside for Government expenditure and the rest apportioned between essential imports and services.

In 1948 and 1949, the limitations of this budget proved far too restrictive. Non-governmental imports ran at 30 million dollars monthly, that is, less than half the corresponding expenditure in 1947. The favourable trend of the balance of trade in 1950 made it possible to expand imports in convertible currency.

Import licencing system. Exchange control has existed in Brazil since before the war, but making due allowance for the restrictions of a war economy, it has been exercised with little rigour or consistency. For the first two years after the war imports were virtually unrestricted.

The deterioration of the balance of trade and the dollar shortage brought about a need for reform. The first attempt made was to reduce imports of less essential goods by restricting the corresponding foreign exchange; but this method met with little success. Since February 1948, however, all foreign trade has in theory been subject to a system of import licences. In the case of exports, restrictions are limited to exceptional cases, determined by domestic market requirements. In 1949, for instance, the exportation of rice, one of Brazil's normal exports, was temporarily prohibited. All imports, with the exception of certain basic and essential products, are subject to licence.

/Goods

Goods are divided into three groups: highly essential, relatively essential and marginal. The granting of import licences for goods in this latter category frequently depends on exports of certain products, i.e. on compensation trade, which in the recent past has assumed considerable importance.

(c) Foreign capital.

Legal provisions. From the standpoint of exchange, foreign capital invested in Brazil is in practice subject to the same provisions as imports of highly essential production goods. The transfer of dividends and interest, up to a maximum of 8 per cent per annum, is given priority over all other payments in foreign exchange, and is exempt from the 5 per cent tax levied on most imports.

The Constitution of 1946 did away with most of the former restrictions on foreign capital, and the special legislation enacted in that year is, according to the Report of the Joint Brazil/United States Technical Commission (Abbink Mission), "relatively liberal" and "liberally administered".1/

Capital which enters Brazil legally, and is registered therein, may be freely returned to its country of origin in annual quotas of 20 per cent. Other foreign capital is subject to the general exchange control regulations. It would appear that the purpose of this differential treatment is the prevention of pseudo-investments of "hot money", the sudden and substantial outflows of which have sometimes seriously endangered the stability of Brazilian currency.

Recent investments. Despite the favourable economic conditions, there has been no great influx of foreign private capital since the war.

Nevertheless, private investments have increased substantially, thanks to the reinvestment of profits of companies already established in Brazil. Moreover, investments by United States and international public credit institutions have partly compensated for the absence of new investment of private capital.

1/ Report of the Joint Brazil-United States Technical Commission, Department of State, Washington, 1949, p.176.

/The most

The most important of the numerous investments in this category, was the 75 million dollar loan granted in 1949 by the International Bank for Reconstruction and Development to the Brazilian Traction, Light and Power Company, the most important electric power supplier in Brazil.[1/] By 30 September 1950, 40 million dollars of this loan had been used to buy materials for Brazilian Traction plants, located in the vicinity of Rio de Janeiro and in the State of Sao Paulo. A small part of this expenditure was in Swiss francs, Canadian dollars and pounds sterling. In 1950 the International Bank for Reconstruction and Development granted a further loan of 12.8 million dollars to the Companhia Hidroelectrica de Sao Francisco (Sao Francisco River Valley Hydro-electric Company), a new electric power plant owned by the Federal Government.

The Export-Import Bank in Washington has also invested large sums in Brazil. Reference may first be made to a loan of 25 million dollars granted to the Companhia Siderurgica Nacional (National Iron and Steel Works), the owners of the Volta Redonda plant, which had previously received two other loans amounting to a total of 45 million dollars from the Bank. Recently the Export-Import Bank announced a loan to the Brazilian group of the Electric Bond and Share Company which owns 14 electric power companies, another to the Companhia Nacional de Alcalis, a government undertaking, another to a Bahia cement company and another to a Sao Paulo railway company.

After an absence of ten years, European investment -- particularly of French, Belgian and Swiss capital -- has reappeared on the Brazilian market.

Though the exact amounts of these investments are not known, it seems probable that foreign capital investments in Brazilian economy during the past two years have reached, and perhaps even exceeded a total of 200 million dollars.

/Total

1/ In 1951 this loan was increased to 90 million dollars.

Total foreign capital. A number of efforts have been made to calculate the total amount of foreign capital invested in Brazil. The estimates arrived at naturally vary according to the criteria and the technical methods employed.

According to the Brazilian Census of 1940, foreign capital investment in the various branches of the national economy amounted to 6.7 thousand million cruzeiros (358 million dollars), distributed as follows: 3,000 million cruzeiros in industry, 1.6 thousand million in commerce and 2.1 thousand million in agriculture. This estimate did not include transport and communications undertakings, though foreign capital was at that time prominent in these sectors. However, in view of the fact that the present value of most of the enterprises covered by the census is much higher than in 1940, the general total must agree fairly well with former estimates.

The United States Government census of 1943 showed that United States investments in Brazil then amounted to 335 million dollars, of which 236 millions consisted of direct investments. Of these, 68 million dollars were in industry, 59 millions in trade (including petroleum distribution) 88 millions in public utilities and transport, and only 10 millions in agriculture.

It has been calculated that British investment, which is falling away markedly in Brazil, amounted to 75 million pounds sterling in 1939 but probably not more than 60 millions in 1947.

A recent investigation[1/] showed that at the end of 1948, foreign capital controlled 366 firms, with capital and reserves amounting to 14.5 thousand million cruzeiros (784 million dollars). However, these figures do not indicate the actual amount of foreign capital, since very often a company is controlled by holders of a small majority, or even a minority of the stock. Furthermore, there are undoubtedly many undertakings in Brazil financed by foreign capital but administered by Brazilian citizens.

Despite differences of detail, the various estimates agree by and large that the total foreign investment in the Brazilian economy varied between 750 and 1000 million dollars[2/] not allowing for the recent nationalization of the British

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1/ Conjuntura Econômica, March, April, May and June 1950.

2/ To obtain some idea of the relative importance of this total, it is sufficient to note that the capital and reserves alone of Brazilian limited companies amounted in 1949 to 53 thousand million cruzeiros (2.9 thousand million dollars).

railways and of the German, Italian and Japanese enterprises sequestrated during the war, some of which have been definitely transferred to the ownership of domestic capital.

(d) Balance of Payments

Movement of Goods and Services. The technical study of the international balance of payments is a new branch of research in Brazil.[1] Of course, the actual balancing of foreign exchange incomings and outgoings has always been a matter of concern to the Government, and its importance for the national economy has been regarded as fundamental. But the problem has been over-simplified by reducing the balance to two items, namely, the credit or debit balance of trade and the service of the foreign public debt, private capital movements and the service of direct foreign investments being left out of account. But these are precisely the two factors which have frequently upset the balance, despite the almost invariably favourable trade position.

In the absence of any other current foreign exchange earnings, the trade balance is still the most important item in Brazil's balance of payments. The amount of the credit trade balance is somewhat uncertain, owing to the present manner of publication of trade statistics in Brazil, where as in most other countries, the export values are shown F.O.B. and import values C.I.F. However, the balances of payment compiled by the International Monetary Fund show import values F.O.B., thus clearing up this point. Both systems of calculation are employed in the following table:

Table 11. Brazil: Balance of Foreign Trade
(millions of cruzeiros)

Years	Foreign trade statistics			"Goods" item of balance of payments		
	Exports	Imports	Balance	Credit	Debit	Balance
1947	21,179	22,789	- 1,610	21,400	19,317	2,083
1948	21,697	20,985	+ 712	21,884	16,733	5,151
1949	20,153	20,648	- 495	- a/	- a/	- a/

a/ Not yet published

Source: For foreign trade: Economic and Financial Statistics Service of the Ministry of Finance; for balance of payments: International Monetary Fund, Balance of Payments Yearbook 1948 and Preliminary 1949, pages 78 et seq.

1/ See Digesto Economico (São Paulo), May 1950, for pre-war balances of payments - which, however, are technically very imperfect.

/The balance

The balance of payments data have been adjusted to allow for the purchase of ships, differences in exchange rates, trade discounts etc.; but the discrepancy between the foreign trade and balance of payments figures is fundamentally attributable to costs of transportation of imported goods. It is calculated that in 1947 this item stood at 3,465 million and in 1948 at 4,109 million cruzeiros, or 18 and 25 per cent respectively of the F.O.B. value of imports.

The cost of maritime transport -- in practice the sole means of transport used in Brazil's foreign trade -- is a factor of fundamental importance in Brazil's balance of payments. Brazil has not lost sight of this fact, and has made efforts in the course of the last few years to expand and modernize its own merchant fleet, in particular by the formation of a large fleet of oil tankers. It may therefore be hoped that within a few years the very heavy pressure of this item on Brazil's balance of payments may be alleviated. Costs of other non-financial services have been reduced by exchange controls. Thus, expenditure on foreign travel was reduced from 680 million cruzeiros in 1947 to only 198 millions in 1948. It should be noted, however, that this figure reflects only the foreign exchange granted for this purpose by the Bank of Brazil. In fact a large part of actual tourist expenditure has been financed by other means.

Financial services continue to occupy a predominant place in the balance of payments, and like other services show a substantial deficit. In 1948, service of investments closed with a debit balance of 1,906 million cruzeiros, whilst the interest payments on the foreign debt amounted to only 311 million cruzeiros. Clearly the actual burden of the service of private investments is reduced by the reinvestment of a considerable portion of the profits accruing from these investments. In 1948, for instance, 740 million cruzeiros of a total of 1,443 million cruzeiros in profits were thus reinvested. However, 700 million cruzeiros were actually transferred abroad, to which must be added the 661 million cruzeiros required for the amortization of the public debt and other contractual payments. Though these latter do in fact constitute capital movements, they constitute a burden similar, from the standpoint of foreign exchange, to that involved in the payment of interests and dividends.

/Capital

Capital Movements. Capital movements closed with a debit balance -- i.e. a net inward movement -- of 3,883 million cruzeiros in 1947, and 342 million cruzeiros in 1948. This variation is considerably greater than that of the balance of trade, which closed with a deficit of 1,610 million cruzeiros in 1947 and a credit of 712 millions in 1948.

This difference springs not only from financial services, which in 1948 were higher than in 1947, but also from several extraordinary transactions, such as the redemption of part of the 80 million dollar loan granted to Brazil in the preceding year. There is, nevertheless, a considerable difference which still remains to be accounted for, and is covered in the balance of payments by "Errors and Omissions". In 1947 this item showed a debit balance of 586 million cruzeiros; which means that apparently the net inward movement of capital exceeded the current transactions deficit, whereas in 1948 the net inward movement of capital failed to cover this deficit, leaving a gap of 739 million cruzeiros.

Public and Private Transactions. Government operations involve large amounts in the balance of payments, but in fact these operations are merely intermediary transactions on behalf of private business.

According to Bank of Brazil exchange statistics,[1/] Government departments imported goods to the value of 2,070 million cruzeiros in 1948 and 2,084 millions in 1949. These substantial sums -- about 10 per cent of the C.I.F. value of total imports -- cover not only materials purchased by the Government to meet its own requirements, but also certain primary products -- like wheat -- bought for resale.

According to the same source, the Government disbursed foreign exchange to the value of 1,856 million cruzeiros in 1948 and 3,786 millions in 1949 for unspecified services. The more detailed analysis of the balance of payments made by the International Monetary Fund shows that Government expenditure in 1948 on specific services, excluding the service of the public debt and relating to "lend-lease" payment operations, amounted to only 305 million cruzeiros, as against revenue of 143 million cruzeiros.

1/ Bank of Brazil, Memoria 1949, pages 246-249.

/In the

In the Bank of Brazil exchange statistics the Government's substantial expenditures on "services" are classified, in the balance of payments, principally as capital transactions. These include, in particular, the purchase of the railroads and the redemption of public debt which, as has been pointed out, were effected by the use of Government's sterling assets. These, therefore, are essentially compensated transactions.

Private capital transactions brought a net inward movement of 2,331 million cruzeiros in 1947 and of 2,197 million cruzeiros in 1948. In both years short-term transactions predominated, though in 1948 investments and reinvestments amounted to more than 1,000 million cruzeiros.

Summary and Prospects. The 1947 and 1948 current transactions accounts closed with deficits. These led to certain difficulties, since foreign capital investment was insufficient to fill the gap. In order to meet outstanding commercial debts it was therefore necessary to raise short-term bank loans.

It may be considered, however, that these difficulties have been eliminated. The favourable development of foreign trade, from the second half of 1949 has made it possible to repay the commercial dollar debt, and the temporary shortage of other currencies is not a serious problem. On the contrary, Brazil holds reserves of convertible currencies.

Though the balance of payments, briefly analysed above, do not reflect the present position, they nevertheless point to a number of factors of importance both for the present and for the immediate future.

At the present stage of its economy, its technical development and its standard of living, Brazil requires an active trade balance with an annual credit of some 1.5 to 2 thousand million cruzeiros, to enable it to cover without difficulty the inevitable deficit in the balance of services. If this minimum credit balance cannot be achieved, foreign investments will be essential.

It is clear that large investments entering Brazil in the form of goods reduce the credit trade balance. Save in the case of loans which are purely financial, or intended solely for the payment of services, all investments of foreign capital are primarily reflected in imports, and even if such investments are of a highly productive nature it frequently takes many years before they have any effect on exports.