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ECONOMIC SURVEY OF LATIN AMERICA FOR 1950

RECENT FACTS AND TRENDS IN THE ECONOMY OF CHILE

INDEX

INTRODUCTION

Changed trends in 1950

It is not easy, at a time when economic conditions are constantly changing, to decide which phase or point in the cycle has been reached by Chile. At the end of 1949 and the beginning of 1950, prospects were rather gloomy, as the drop in the price of copper, a product which is still of great importance to Chilean economy from the point of view of foreign trade, curtailed exports and made it necessary to tighten restrictions on the granting of exchange permits for imports. That reduction affected in the first place the formation of capital, which is based to a large extent on the import of the corresponding goods. It was thus to be expected that the progress of industrialization, the means which Chile, like other Latin American countries, had chosen to compensate for the decline in her capacity to import, would be halted.

In the second half of 1950, the position was completely reversed in a very short time. International rearmament created new incentives in the demand for raw materials, particularly copper, and prices returned to the level of two years before. This improved the situation as regards the availability of foreign currency (as from April, and with the exception of the month of July, the trade balance showed favourable statistical balances, just the opposite of what had been happening since the middle of 1949), which made it possible to prepare an import budget for 1951 41 per cent greater than that for the preceding year and to allow a more liberal regime on the foreign exchange market, one-third of the imports no longer requiring foreign exchange permits. At the same time, an effort was made to stimulate exports by authorizing negotiations on the free exchange market of foreign currency derived from some of them.

It is still too early to pass judgment on the results of these measures, but there can be no doubt that developments in 1951 are in contrast with those of the previous two years, in which it appeared that a peak had been reached, as the rate of production increase was gradually slackening.

The recovery, largely based on chance happenings abroad, is, however, rather uncertain and it is understandable that the Chilean Government should be

/anxious to

anxious to carry on its development plans in order to provide the country with a more solid structure that would enable it to meet possible reactions abroad.

As regards industrial production, 1950 is distinguished by the opening of the iron and steel works at Huachipato. Chile is thus the third country in Latin America to have set up a basic iron and steel industry which, in addition to meeting consumer needs, produces a fairly large exportable surplus. This enterprise, which has absorbed 60 per cent of the foreign credits received by Chile between 1940 and 1950, not only means that the country has a heavy industry to produce capital goods, but also one which will give rise to other derived or related activities. Before the blast furnace had even started work, other industries were being set up in the neighbourhood. New factories are in course of construction: wire, iron alloy, and cement works, not to mention the branches of the chemical industry based on coal distillation and the recovery of iron and steel products. The San Vicente-Concepcion industrial area, where the new factory is located, will probably one day become chief industrial centre of Chile. As regards power, the outstanding facts of the post-war period are: the progressive execution of the plan to electrify the country, under the auspices of the Corporacion de Fomento de la Produccion, and the exploitation of petroleum in the far south. Plant with a generating capacity of 720,000 kilowatts was installed in 1950 as against 449,000 kilowatts in 1945, i.e. an increase of 24 per cent. At the end of the war 42 per cent of the power in the country was hydraulic in origin, and the proportion is now 51 per cent. For the first time in 1950, the proportion of hydro-electric power was greater than that of thermal origin.

It was also in 1950 that Chile started exporting crude petroleum, and the initial stage of an enterprise which has taken several years of study and prospecting without positive results was thus completed. In 1945 petroleum was found for the first time in Chile, as a result of boring in Tierra del Fuego. Since then, also under the direction of Corporacion de Fomento, successful borings have been made and about 100,000 cubic metres of

/crude petroleum

crude petroleum were extracted in 1950 and sold to Uruguay, since there are as yet no refineries in Chile. It is hoped that the new deposits found will be sufficient to meet domestic needs within ten years and that the proposed refinery will start operation within about two years.

The outlook in agriculture is less hopeful, not only by contrast with that in industry, but as a result of its slow progress, which has not kept pace with the increase in population. The Government is trying to make up for this relative backwardness in agriculture by means of irrigation plans, the introduction of new crops such as sugar beet, the speeding up of mechanization and the opening up of new arable land in the south, which has not yet been integrated in the economy of the country. The principal means which the Government is hoping to use in carrying out its plans for agricultural development are the technical assistance which has been requested from the Food and Agriculture Organization and the Inter-American Co-operative Institute, together with credits in foreign currency and immigration.

The question with which the Government is principally concerned is inflation. It has been impossible to check this, not so much on account of technical difficulties as of political ones. Several bills have been drafted in an effort to stabilize the purchasing power of the currency, and some of them have been laid before Congress. In the meanwhile, the inflationary forces, particularly the classic wage-price spiral, continue to exercise the same strong influence. The improved position expected in foreign trade, as a result of the rise due to international rearmament, may produce a new inflationary factor, that of a surplus in the balance of payments, which had disappeared in the post-war period.

Problems caused by recent developments

As stated in the previous economic survey, the fundamental problem facing Chile is that of capital formation. As the country possesses only a small volume of savings, capital formation raises difficulties which, in the absence of inflation and the contribution of foreign credit, would have been insuperable. It is true that inflation causes disturbances, particularly in the social field, but it must be admitted that it has had a certain influence on the development of the country. For that reason the

/authorities,

authorities, who are desirous of putting an end to evil, are trying to find measures which, while discouraging inflation, will not diminish capital formation. The Government's desire to obtain the assistance of foreign capital as a means of supplementing domestic savings is understandable.

In some circles the opinion appears to be held that the effort towards capital formation has exceeded the country's powers and that too heavy a stress has been laid on industrialization. As was reported in the previous economic survey, industry must grow rapidly in order to take the place of imports and allow the consumer market to recover from the depression of the thirties. Industry and agriculture must grow together, since otherwise there will be no reciprocal demand. It is no longer a matter of transfer of investment from industry to agriculture, because that would destroy the balance and would entail a danger of losing the results of the previous effort. The very growth of industry, with its multiplication of activities in the heavy branch, makes it necessary to continue investment at an increasing rate. Agriculture must certainly be improved to increase productivity and diversify production. It may help in solving the problem of replacing imports, or at least in meeting the steadily growing demand of the consumer market, as it is now trying to do with sugar beet.

It is true that industry has developed to a greater extent than agriculture, and has taken a larger supply of capital to do so. As regards labour, if the available figures are accurate, it does not appear that industry has deprived the rural population of necessary workers, as it has confined itself to absorbing workers engaged on work of low productivity, still very numerous in the country as may be seen both from the high percentage of domestic workers and the large number of persons engaged in agriculture in relation to area under cultivation and the volume of goods produced. (Chart 2).

On the other hand, it may be hoped that the introduction of technical improvements in agriculture will create surplus labour which only industry, in its later stages of development, will be able to absorb to a sufficient degree.

To sum up, the problem is not to increase one productive activity at the expense of the other, but to make both develop together. The wish to compensate for the comparative backwardness of agriculture is praiseworthy, always provided that it does not affect the growth of industry, since disorderly or unco-ordinated progress would result in confusion, with the inevitable waste of effort.

/It is

It is not possible to state from the information available how much of an effort at capital formation has been made inside Chile or to what extent consumption, which is not very large, has been sacrificed. It seems that they might perhaps be reduced in favour of a better use of resources. Certain selective standards might well be introduced in capital investment itself, to direct it to ends which would render possible a rapid increase in productivity, thus providing an opportunity for the formation of new and genuine savings. The fact that investments in housing have decreased is a sign in the direction indicated, even allowing for the existence of a chronic shortage of popular housing.

As will be seen later, the statistical information available does not make it possible to determine how much investment comes from genuine savings and how much has been obtained by means of inflation. As regards the question which section of the population has made the heaviest sacrifices in its power of consumption, it is only possible to put forward certain hypotheses based on the fragmentary data available.

The only fact which emerges fairly clearly from the inquiries carried out is that the wage-earners, whose position had notably improved in relation to other sections in 1940-45, have been losing their advantage in the subsequent five years 1945-50. The changes in the distribution of income are apparently small, and the lack of statistical material may give rise to error, not only in calculations but also in appreciation.

One of the most effective instruments in the progress already made and still to be made is the Corporacion de Fomento de la Produccion, which by direct and indirect investment supplements or assists private enterprise.

The Corporacion de Fomento has not yet been able to make a complete plan of the requirements of Chilean economy, but has prepared an interim investment plan for the period 1951-60. This plan is based on the need to obtain up to 140 million dollars in foreign credit and the investment of 5,684 million pesos by the Corporacion de Fomento, 7,068 million by the State or official bodies and 2,074 million by private individuals, a total of 19,000 million pesos (converting foreign currency at the rate of 31 pesos to the dollar). An idea of the true significance of these figures can be obtained by comparing them with the 60,000 million pesos which, according to the most accurate calculations, were probably invested in Chile in the period 1940-50.

/The investments

The investments planned by the Corporacion de Fomento represent only a part of the effort of capital formation which must be made by the whole country in order to maintain the rate of increase of production both in agriculture and industry.

As regards the latter, to keep pace with the trend of the 1940-50 period, production in 1960 would have to reach a value of 8,900 million pesos (at 1940 prices). A brief calculation of the values represented by the investments envisaged by the Corporacion de Fomento gives a production increase of about 4,200 million pesos in 1960, i.e. 50 per cent of the total increase to be obtained over 1950 production, in order to maintain the rate of growth of the preceding ten years. This gives an idea of the volume of investment which must be made by private capital unless industrial production is to decline.

Something along the same lines must be achieved in farming. If the tendency hitherto observed continues, 1960 production will be about 4,700 million pesos at 1940 prices, i.e. it will have increased by 1.4 per cent per annum. The production increase to be achieved under the Corporacion's plans would be about 260 million pesos, out of a total increase of 590, i.e. about 280 million would still be needed, and would have to be found by means of private or State investment.

Chapter I

INCOME, AVAILABLE GOODS AND CAPITAL FORMATION

Goods and services

The figures calculated by the Corporacion de Fomento in order to determine the national income provide an indication of the purchasing power of the population. Allowing for the rise in prices, as shown by the cost of living index, this purchasing power, which had increased per capita during the 1940-45 period, has tended to decrease since that time, but the variations have been small. Between 1947 and 1950 there was a slight improvement, but no return to the 1945 level, as may be seen from the following table:

Table 1 Chile: Total and per capita income.

Years	Income in money	Cost of living index	Real income	Population	Real income per capita
	(millions of pesos)	(1940=100)	(millions of pesos at 1940 value)	(thousands of inhabitants)	(in pesos at 1940 value)
1940	16,414	100.0	16,414	5,024	3,267
1941	21,259	115.2	18,454	5,094	3,623
1942	26,238	144.7	18,133	5,130	3,535
1943	32,035	168.3	19,034	5,237	3,635
1944	36,975	188.0	19,667	5,273	3,730
1945	42,470	204.6	20,757	5,349	3,881
1946	48,947	237.1	20,644	5,430	3,802
1947	62,605	316.7	19,768	5,525	3,578
1948	76,014	373.7	20,333	5,620	3,618
1949	93,000	443.8	20,955	5,709	3,671
1950 a/	107,000	501.8 b/	21,323	5,800	3,676

Sources: Corporacion de Fomento de la Produccion, General Department of Statistics.

Notes: a/provisional

b/average calculated on basis of figures from January to October.

/The composition

The composition of this income needs to be analyzed. First, the national income in Chile is derived to a large extent from services: 51 per cent in 1949 as against 49.3 per cent in 1940. The Economic Survey for 1949 has already drawn attention to this fact, pointing out that in some under-developed countries such as Chile, the increasing proportion of people employed in services is not the result of an increase of productivity and growth of demand owing to a higher income amongst the population, as happens in developed countries, but conceals surplus population employed in very low paid work. 1/

This fact is very important and helps to explain the lack of balance between the goods offered and the demand. The gainfully occupied population engaged in production properly speaking is in competition in the purchase of goods with that part of the population which is employed in services. Without expressing an opinion as to the utility of the latter or their benefit to the population, it may be suggested that that is a form of inflationary pressure. The increase of services in Chile has been greater than that of goods: in 1948 (the last year for which data are available) the former show an increase of 30.6 per cent in relation to 1940, while the latter increased by 25.9 per cent.

The increased quantity of goods available should be contrasted with the increase in income. As was explained in the previous Economic Survey, the figure for the former is arrived at by adding imports to production and subtracting exports, which means that it is affected by the terms of trade, an external factor additional to the internal factors affecting production.

Table 2 Chile: Available goods and their composition
(in millions of Chilean pesos at 1940 prices)

Years	Production	Imports	Exports	Available Goods
1940	10,183	2,639	3,545	9,277
1945	11,403	2,423	3,967	9,859
1946	11,837	2,871	3,566	11,142
1947	12,296	3,209	3,598	11,907
1948	12,936	3,140	4,017	12,059
1949	13,151	3,370	3,492	13,029
1950 a/	12,557	2,383	3,111	11,829

Source: For original sources and methods followed in these calculations, see the Economic Survey for 1949.

a/ Provisional calculation on the basis of 9 and 11 months.

1/ Document E/CN.12/164, Chapter IX, page 10.

/Until

Until 1949, the increase in available goods was constant and was maintained above the increase of the population. Figures for 1950, which must be taken as provisional, show a drop in the volume of goods: lower production, resulting from a bad cereal harvest, coincided with a sharper drop in imports. It does not appear that this signifies a change of trend: adverse weather conditions, an accidental factor, exercised a strong influence. As regards imports, restrictions applied as a result of the fall in copper prices in the second half of 1949 and the first half of 1950, have been gradually lifted as the trend in prices and copper exports altered.

The above figures do not imply availability of goods to the population in the strictest sense of the term, as they include a certain amount of capital goods. The volume of consumer goods obtained by subtracting capital goods, both imported and locally produced from the total, followed the course shown in the following table.

Table 3. Chile: Composition of available goods
(values at 1940 prices)

Years	Consumer Goods	Capital Goods	Consumer Goods per capita
	(millions of pesos)		(pesos)
1940	8,210	1,067	1,634
1941	8,416	1,015	1,652
1942	8,110	810	1,581
1943	8,387	742	1,601
1944	8,598	872	1,631
1945	8,839	1,020	1,652
1946	9,792	1,350	1,803
1947	10,279	1,628	1,860
1948	10,457	1,602	1,861
1949	11,241	1,788	1,969
1950 a/	10,332	1,497	1,783

Sources: For original sources and methods used in these calculations, see the Economic Survey for 1949.

a/ Provisional Calculation

/During

During the war, the volume of consumer goods was reduced less than the total amount of goods, since the formation of capital declined, and imports contributed very little to it. From 1945 onwards, capital formation largely recovered, but the domestic production of consumer goods was also developing. Since in 1950 both production and imports were cut, affecting both consumer and capital goods, chiefly the latter, the increase in the availability of goods was maintained only until 1949.

Distribution of Income by Origin.

Another point deserving further elucidation is that of the proportion of goods available to each section of the gainfully occupied population. For the sake of simplicity it will be assumed that the latter consists only of wage earners (workers and employees) and non-wage earners (company owners, individual producers, and rentiers). The first fact which becomes clear from the calculation of the national income is that in Chile, the total proportion of that income attributable in real terms to the wage-earning section of the population has increased: in 1940 it was 43.9 per cent; in 1945, 44.8 per cent; and in 1948, the last year for which data are available, it was 47.2 per cent.

Table 4: Chile: Distribution of total real income
(in millions of pesos at 1940 prices)

Years	Wage-earning section	Non-wage-earning section
1940	7,204	9,210
1941	8,048	10,406
1942	7,766	10,367
1943	8,018	11,017
1944	8,578	11,089
1945	9,304	11,454
1946	9,645	10,999
1947	9,333	10,435
1948	9,619	10,714

Source: Corporacion de Fomento de la Produccion.

Comparison between the progress of income in each section reveals that the wage-earning section increased its income by 29 per cent between 1940 and 1945, while that of the other section increased by 24 per cent. Between 1945 and 1948, the position changes: the wage-earning section increases its earnings by 3 per cent, while the non-wage-earning section faces a decrease in income of 6.5 per cent. Chart 7 makes it possible to follow these movements.

/The larger

The larger proportion received by wage-earners does not mean that the position of the individual wage-earner was improved during this period. Assuming that the relation existing at the time of the 1940 census between the gainfully occupied population and the wage-earners (74.6 per cent) was maintained, the number of workers and employees may be calculated at 1,636,000 in 1948 as against 1,488,000 in 1945 and 1,289,000 in 1940. Hence the average income of wage-earners reached its peak in 1945, when it was 12.7 per cent more than in 1940. Since 1945, the average income per wage-earner has been decreasing, and in 1948 it was only 5.9 per cent above the 1940 level.

The next step is to see whether this phenomenon is borne out by the indices of real wages.

Real and Money Wages.

The question to be decided here is whether the wage-earning section, the direct investments of which are small and channelled chiefly towards home-building, has been sufficiently affected by inflation to force a reduction in consumption, resulting in the compulsory transfer of part of its real income to another section of the population.

The absence of reliable figures on nominal wages, and of a cost of living index which takes into account the prices actually paid and the changes in the structure of expense budgets, makes it very difficult to determine real wages. It would be worth while making a survey to remedy these deficiencies, and it might thus be possible to dispel some doubts arising from the calculations of the national income.

In order to form an idea of what has happened to wage earners in general and each group in particular, we have tried to prepare an index of mean real wages, formed by a weighted average of the wages earned in agriculture, industry, building, mining, commerce and certain personal services, together with the salaries of public and private employees, thus covering practically all wage earners registered with the social welfare funds.

The variations in our index show the same movement as the total per capita real income of wage earners calculated by the Corporación de Fomento, as appears from Chart 8, in which the two graphs are compared.

/With the

With the object of throwing the changes which have occurred into sharper relief, and also of explaining briefly the distribution of income as against available goods, the graphs of consumer goods per capita and capital goods are also shown on the same chart.

The following is a brief summary of the conclusions brought out by these charts and by the evidence which we have been analysing:

1. Real wages declined between 1945 and 1949, in contrast to the trend revealed in the preceding five-year period.

2. The number of wage earners has increased, causing an increase in the proportion of the total income received by wage earners, from 44.8 per cent in 1945 to 47.3 per cent in 1948 as already stated. (It is regrettable that more recent figures are not available to widen the scope of these observations). Thus the two facts, the decrease of average real wages and the increase of total wages, are not incompatible.

3. During the same period, goods available per capita increased, but the increase did not result in higher wages, but rather in the payment of lower wages to a larger number of wage earners.

4. Despite the fact that the proportion of national income applicable to the non-wage earning section has decreased, the availability of capital goods has increased, which suggests that the incomes of entrepreneurs, and also perhaps of the high income groups which contribute substantially to capital formation, have also increased. It is not very probable that this increase in capital formation has been brought about by greater savings on the part of entrepreneurs at the expense of consumption.[1]

5. It would consequently appear that among the non-wage earning groups, entrepreneurs have increased their income and their contribution to capital formation at the expense of other groups in this section, such as landlords and rentiers, the real income of whom has decreased as a consequence of rent control and inflation. This is borne out by the figures given by the Corporación de Fomento for income from rents, which fell from 6.8 per cent of the national income in 1945 to 5.4 per cent in 1948.

1/ The fact that part of investments have been financed with foreign credits might have weakened this chain of argument, but as is shown by the curve of capital formation excluding imports of capital goods paid for by foreign credits, given in Chart 13, the movement and scale of that phenomenon have not changed.

6. The phenomena observed in the 1945-49 period are in contrast with events in the preceding five-year period. Between 1940 and 1945, available goods as a whole decreased slightly, while consumer goods did not; in other words, consumption was maintained at the expense of capital formation and allowed wage earners to obtain a larger proportion of consumer goods, as is shown by the increase in real wages during that period. Entrepreneurs on the other hand had to restrict their consumption in proportion as the decrease in capital formation was inadequate to keep up with their real expenditure.

7. In 1950, the process appeared to be interrupted, although it does not necessarily follow that its course will change: capital formation decreases, but the quantum of consumer goods also decreases, so that it may be assumed that real wages have also declined to a certain extent.

Table 5. Chile: Availability of goods and real remuneration

(at 1940 values)

Years	Average real remuneration		Available consumer goods per capita		Available capital goods per capita	
	in pesos	index	in pesos	index	in pesos	index
1940	4,175	100.0	1,634	100.0	212	100.0
1941	4,342	104.0	1,652	101.1	199	93.9
1942	4,119	98.7	1,581	96.8	158	74.5
1943	4,076	97.6	1,601	98.0	142	67.0
1944	4,183	100.2	1,631	99.8	165	77.8
1945	4,644	111.3	1,652	101.1	191	90.1
1946	4,653	111.5	1,803	110.3	249	117.5
1947	4,535	108.6	1,860	113.8	295	139.1
1948	4,629	110.9	1,861	113.9	285	134.4
1949	4,593	110.0	1,969	120.5	313	147.6
1950	..	..	1,783	109.1	258	121.7

Source: Basic data from the General Department of Statistics and from the Caja de Seguro Obligatorio.

/The changes

The changes in the distribution of income, as reflected in real remuneration, have been moderate on the whole, but in reality fairly sharp changes seem to have taken place within the wage earning sector. In the first place, the trend and fluctuations between real wages (day wages) and salaries have been different. While the former have decreased in certain years (up to 12 per cent in 1943), the salaries of employees have made almost constant progress since 1945; they have lost a little ground since then, but they are still 10 per cent above the 1940 level, which is not the case with real wages.[1/]

The differences are even clearer as regards wages; only the industrial wage group is more or less maintaining the advantages, in real terms, of the rises obtained generally by pressure from trade unions or other methods. In agriculture and mining, real wages have sensibly decreased since 1945, and are now below the 1940 level.

Disparities are also noticeable in real salaries and wages; the group of private employees showed a very pronounced improvement up to 1944, but almost entirely lost these benefits by 1949. Public employees, on the other hand, whose advances in terms of purchasing power were less marked, are now in a better situation than the first-named group although their relative position is not quite so good.

Table 6. Chile: Real wage and salary indices

Years	Real wages[a/]			Real salaries[b/]	
	Industry	Agriculture	Mining	Public Employees	Private Employees
	1940 = 100				
1941	106.0	107.2	98.4	102.0	122.2
1942	103.2	97.6	99.3	100.2	118.1
1943	101.8	90.8	99.7	102.1	131.3
1944	110.5	103.2	95.5	102.5	126.7
1945	118.1	106.4	103.4	114.3	119.2
1946	123.2	101.7	98.3	111.8	114.8
1947	110.7	91.0	91.6	117.6	106.8
1948	119.2	98.4	92.9	111.2	107.4
1949	121.7	95.4	92.9	112.4	105.8
1950	..	..	..	..	..

Source: Caja de Seguro Obligatorio, General Department of Statistics, Comptroller-General's Office.

a/ On the basis of mean weekly wages.

b/ On the basis of mean annual salaries.

1/ It is worth noting that wages, which in 1940 represented 55.7% of total remuneration, have fallen to 48.8%.

/An explanation

An explanation is thus provided of the fact that the improvements reflected in real remuneration were obtained only in respect of a rather small group of the gainfully occupied population, in this case that employed in industry (and even there, as may be seen from other partial data, not in all cases). The wage-price spiral exists in Chile, in fact there are several such spirals on different levels.

Capital formation

The other aspect to be considered is that of the amount and source of capital formation. Chile's fundamental problem is the maintenance of a rate of investment which will make it possible to increase domestic production in order to replace imports and to keep pace with the growth of the population.

The figures analysed above show that the quantity of consumer goods *per capita* since 1945 increased very little up to 1949 and decreased in 1950. This was partly a result of the tendency to employ a larger proportion of population in services, which creates purchasing power without increasing goods. Capital formation also has of necessity had the effect of reducing the volume of consumer goods. This fact might be illustrated by saying that beside the producer of goods there have appeared a consumer who does not produce any goods and an *entrepreneur* who is investing.

The domestic capital formation effort might have been increased by sacrificing certain sections of consumption like that on luxuries which is in Chile still somewhat out of proportion to the producing capacity of the country.

The degree of capital formation achieved in Chile in recent years may now be considered. In the previous Economic Survey, certain data were given concerning the volume of capital goods for which separate statistics were available: domestic production of iron, steel and cement, and concerning the importation of capital goods. These data are complete up to 1950.

/Table 7.

Table 7. Chile: Relation between available goods and capital goods

Years	Available goods	Capital goods a/	Ratio
	(millions of pesos at 1940 prices)		(per cent)
1940	9,277	1,067	11.5
1941	9,431	1,015	10.8
1942	8,920	810	9.1
1943	9,129	742	8.1
1944	9,470	872	9.2
1945	9,859	1,020	10.3
1946	11,142	1,350	12.1
1947	11,907	1,628	13.7
1948	12,059	1,602	13.3
1949	13,029	1,788	13.7
1950 b/	11,829	1,497	12.6

Source: Basic data from the General Department of Statistics. For sources and notes on calculation see Economic Survey 1949.

a/ Import of capital goods plus domestic production of iron and steel and cement.

b/ Provisional

It is clear that in 1950 capital formation, as estimated in this manner, decreased both in absolute and in relative value. The increase in the production of iron and steel, thanks to the opening of the Huachipato works, did not offset the decrease in the production of cement and the drop in imports of capital goods.

The data given above refer to capital formation in certain basic goods, either imported or produced in the country. But these figures do not properly reflect the effort which the country must make in investment or the form which those investments should take. For example, imports of capital goods at c.i.f. prices take no account of additional costs, ranging from customs duties to the installation of plant.

In order to have an idea of the proportion of income which is invested, and is thus subtracted from consumption, the data on capital

/formation

formation must be supplemented. There are several estimates of Chilean annual investments, which differ among themselves because the standard for the inclusion of items or the estimate of their value followed is different in each case. They are given below as an illustration.

Table 8. Chile: Estimates of annual investments

Year	Corporación de Fomento a/	International Monetary Fund b/	Corrected estimates c/
	(in millions of pesos)		
1940	3,262	1,900	2,079
1941	3,710	3,000	2,516
1942	4,829	2,900	2,458
1943	5,164	4,100	3,847
1944	4,788	4,700	3,655
1945	6,402	4,800	3,963
1946	8,468	5,600	6,432
1947	10,639	6,500	7,450
1948	14,657	9,200	8,636
1949	16,848	10,800	11,416

Sources: Corporación de Fomento de la Produccion, International Monetary Fund, General Department of Statistics.

a/ A preliminary study made by the Corporación de Fomento includes the following items: import of capital goods, local production of plant and equipment, construction and public works, variations in stocks and investment in capital goods by consumers.

b/ Includes imports of capital goods, domestic production of capital goods and State investments.

c/ Includes only the import of capital goods, local production of equipment and plant and construction of public works.

Two graphs are compared in the attached chart, the graph of the availability of capital goods, applying only to the imports of such goods and domestic production of iron, steel and cement, and the graph of annual investments which includes in addition to capital goods at market prices, investment in construction of public works. The similarity of movement between the two graphs will be noted, which supports the above interpretation of the relation between real wages and available goods.

The coefficient of capital formation obtained by relating the investments made to the national income, has varied slightly: in no year during the period has it been greater than 12 per cent of the gross income; the maximum was reached in 1943, when it was 11.6 per cent, and the minimum in 1945 when it was 9.2 per cent.

/Furthermore,

Furthermore, the range of these comparisons is very limited. On the one hand, figures for annual investments are only roughly approximate, because they do not take into account land improvements and changes in inventories. On the other hand, the estimates only refer to gross capital formation and have not been brought down to net figures by deduction of depreciation. The Corporación de Fomento has made an effort in this connexion, but the authors themselves admit that the results are not wholly satisfactory because insufficient evidence is available. All that can be said is that, as gross capital formation in Chile is low in comparison with that in other countries, the deduction of that part which must be devoted to replacements is bound to leave a balance of net investment which will also be very low. It must not be forgotten that, as in other Latin American countries, equipment for production and transport was intensively used during the war without replacement. The increase in investments in subsequent periods presumably included a large proportion of replacements.

It is also difficult to determine the influence of capital formation in the last ten years on the volume of goods production. This is due, in the first place, to the reason already given -- the need to replace worn out equipment. In the second place, it is due to the fact that some investments have been devoted to supplying services, such as transport material. It would be worth while to make an analysis, bearing in mind the specific composition of capital formation, but this would require a thorough investigation.

There can, however, be no doubt that capital formation has made it possible to increase production above pre-war levels, and that its influence will be still more strongly felt in future years, as there has been a tendency lately to invest in highly productive equipment such as the iron and steel plant at Huachipato. The fact that that part of investment devoted to housing has decreased (21 per cent in 1949 as against 37 per cent in 1946) is also an indication of a better use of available resources for investment.

/Capital

Capital formation and import of capital goods

The chief form of capital formation in Chile is the import of capital goods. The fact that it is necessary to import to increase or simply to maintain the productive effort of the country causes serious problems, amongst which the influence of such imports on the balance of payment is of great importance. Underdeveloped countries, with no industries for the manufacture of production goods, can only find the means of capital formation by increasing exports, cutting down their imports of consumer goods or relying on foreign credits. That is to say, domestic savings are not enough: favourable balances or loans in foreign currency must still be obtained.

In the case of Chile, the most usual situation in past years has been the following. Capital goods are imported by three types of purchasers and each of them uses a different means for the external financing of purchases. First, the mining undertakings with foreign capital use their own resources abroad, which means that this group has no problem of financing in foreign currency. Secondly, the official development or industrial exploitation bodies import capital goods chiefly on the basis of credits obtained abroad. Finally, there are the ordinary importers who, except for short-term banking credits, are obliged to obtain foreign currency by application to the financial authorities, who in turn obtain it from exporters; other operations, under which production goods such as automotive vehicles or ploughs are obtained in exchange for Chilean products such as nitrate, belong to this group.

An effort has been made in the following table to show the changes which have taken place in these three methods of financing the import of capital goods in the last five years:

/Table 9.

Table 9. Chile: Imports of capital goods, classified under form of financing
(in millions of gold pesos[a])

	1945	1946	1947	1948	1949
By mining companies with their own funds[b]	20.8	28.1	43.8	49.9	111.9
By development agencies with foreign credits	29.7	42.3	53.2	92.8	181.1
By others, with foreign currency produced by exports	124.1	171.8	284.1	249.2	332.9
Total	174.6	242.2	381.1	391.9	625.9

Sources. Calculations based on data obtained from the General Department of Statistics and from the balances of payment of the Banco Central de Chile.

a/ The gold peso is a unit of account with a gold content of 6d, used in Chile's foreign trade statistics.

b/ In calculating the imports of capital goods by mining companies, the consignments of those goods passed by the Customs north of Coquimbo have been used as a basis, assuming that those used for other activities are offset by imports by the mining undertakings through ports farther south.

It is noticeable that, while, in 1945, 71 per cent of the imports of capital goods were financed by current exports, 17 per cent by means of foreign credit and 12 per cent by the assets of foreign companies, in 1949 the proportions for the same items were 53 per cent, 29 per cent and 18 per cent. The part played by foreign credit has been considerably extended as regards both absolute and relative value.

Source of capital formation.

Another interesting aspect which may be considered is the determination of the sources of capital formation, i.e. whether governmental or private. We shall thus ascertain whether the trend which has now become very general in the world, i.e. the attribution of greater importance to investment by the State, is also observable in Chile.

The Chilean State invests in two ways: directly through public works and indirectly through development agencies. Available statistics reveal the fact that despite the considerable increase in public investment in the post-war period, government participation in capital formation as a whole has diminished, as it was only 29 per cent in 1949 as against 49 per cent in 1945 and 41 per cent in 1940.

/Table 10.

Table 10. Chile: Investments by the State and by development agencies

Years	Public works	Educational establishments	Development agencies[a]	Total	Percentage of total investments
1940	359.2	27.1	467.3	853.6	41.1
1945	690.1	34.0	1,219.0	1,943.1	49.0
1946	742.3	27.0	619.1	1,388.4	21.6
1947	941.2	61.4	1,237.7	2,240.3	30.1
1948	912.2	51.5	1,387.6	2,351.3	27.2
1949	1,357.2	46.4	1,913.3	3,317.2	29.1

Sources: Corporación de Fomento de la Producción, reports of the Comptroller-General's office.

a/ Investments by development agencies include funds drawn from their own resources, State contributions and foreign credits.

Part played by the Corporación de Fomento in capital formation.

Chile's most important instrument for investment is the Corporación de Fomento de la Producción. This body has three types of resources at its disposal: Government contributions, its own income and foreign loans. In its 12 years of activity, that is to say from 1939 to 1950, its total resources have been 9,422 million pesos, distributed as follows:

	Millions of pesos	Percentage of total
Government contributions	4,036	42.8
Other contributions	6	0.1
Own income	2,130	22.6
Foreign credits[a]	3,250	34.5
	9,422	100.0

a/ At the rate of exchange of 31 pesos to the dollar.

Investments, properly speaking, that is to say, with proper deductions made for the service of foreign credits and administration costs, have totalled 7,671 million pesos and were applied to the following purposes:

/Millions of

	Millions of pesos	Percentage of total
Energy	3,140	40.9
Electricity	2,150	28.0
Petroleum	860	11.2
Other sources	130	1.7
Industries	2,760	36.0
Steel	2,020	26.3
Other industries	740	9.7
Agriculture	1,005	13.1
Trade	369	4.8
Mining	222	2.9
Housing	175	2.3
Total	7,671	100.0

This figure, which covers 12 years of investments, represents scarcely 1.3 per cent of the national income during that period. It is true that investments by the Corporación de Fomento have only acquired importance since the war, when foreign credit and imported capital goods became available.

Foreign investments

Until recently, the information available concerning the amount of foreign investments in Chile was very fragmentary. The sums invested in the large mining undertakings were known approximately and the value of the Chilean securities quoted on the London Stock Exchange was also ascertainable. Now, as a result of research by the Banco Central, figures are available covering almost all foreign investments in Chile, classified by their nature or the type of investment, country of origin of the capital and the branch of activity in which they are invested.

The inquiry, which covered nearly 200 undertakings and bodies, revealed that at 31 December 1948, a total of 966,800,000 dollars from abroad were invested in Chile, distributed as follows according to country of origin:

/Table 11

Table 11. Chile: Foreign investments in 1948
(in millions of dollars)

Country of origin	Direct	Portfolio	Total	Percentage
United States	496.3	175.7	672.0	69.5
Great Britain	123.9	102.2	226.1	23.4
Argentina	5.0	24.4	29.5	3.0
Switzerland	-	25.1	25.1	2.6
Brazil	-	3.0	3.0	0.3
Belgium	1.8	0.3	2.1	0.2
Others	6.6	2.5	9.1	1.0
Total	633.6	333.2	966.8	100.0

Source: Inversiones extranjeras en Chile en 1948, Banco Central de Chile -- published by Editorial Universitaria, 1950

It will be noted that 93 per cent of the total investments are made by two countries, the United States and Great Britain. The amounts invested by Argentina and Brazil should perhaps be deducted from the total since, in the first case, they refer almost exclusively to short-term debit balances on the sale of olive oil and wheat, and in the second case to a compensation account.

Investments have been classified under two headings: direct and portfolio, the first accounting for 633.6 million dollars and the second for 333.2 million dollars. Direct investments, excluding consolidated and non-consolidated debts, amount to 545 million dollars and are distributed as follows:

Table 12. Chile: Direct investments classified by major economic activities

Activity	Millions of pesos	Percentage
Mining	376.0	69.0
Services	98.6	18.1
Commerce	34.7	6.4
Industry	29.0	5.3
Finance	4.8	0.9
Agriculture and stockbreeding	1.7	0.3
Total	544.8	100.0

Source: Banco Central de Chile.

/This table

This table clearly shows the preference of industrial countries for investing abroad in branches of economic activity connected with the production of raw materials for export. The United States put 80 per cent of the capital it invested in Chile into mining and the United Kingdom 36 per cent; the latter country has shown a greater interest in public utilities, putting 45 per cent of its capital invested in Chile into this branch, as against the United States with 11 per cent. The above table shows how little foreign capital has been attracted to agriculture; industry has received very little external stimulus, hardly more than 5 per cent of the total. The capital of other countries (that is to say, other than the United States and Great Britain) has been put by preference into industry, which accounts for 50 per cent of the funds invested.

It is very probable that in previous years the proportion of foreign capital invested in other activities was greater, but information on the subject is incomplete Estimates of the United States Department of Commerce support this contention in respect of United States capital; unfortunately they are not comparable with the Banco Central estimates.

Table 13. Chile: Direct United States investments
(in millions of dollars)

	1929	1936	1940
Total	422	483	414
Mining	331	383	277
Mining as a percentage of total	80.8	79.1	66.9

Source: United States Department of Commerce, as quoted by the Banco Central de Chile.

Portfolio investments of an official character chiefly consist of the foreign debt of the State, loans received by the Corporación de Fomento and the State Railways; commercial debts incurred for the purchase of wheat and olive oil in Argentina and the debit balance of the clearing agreement with Brazil, distributed in accordance with the following table:

/Table 14.

Table 14. Chile: Official portfolio investments
(in millions of dollars)

A. Foreign debt	255.3
In pounds	99.8
In dollars	130.4
In Swiss francs	25.1
B. Debts of government agencies	39.3
Corporación de Fomento and subsidiaries, in dollars	30.4
State Railways, in dollars	8.9
C. Commercial debts	24.8
Purchase of wheat, in Argentine pesos	11.9
Purchase of olive oil, in Argentine pesos	9.9
Balance on agreement with Brazil	3.0
Total	319.4

Source: Banco Central de Chile.

All these items, except the balance on the agreement with Brazil, are underwritten by the State but from the strictly investment point of view, it would be necessary to subtract commercial debts and also the short or medium term debts owed by the Corporación de Fomento to suppliers or commercial banks, which total 4.2 million dollars. Official foreign investments would thus total about 290 million dollars.

The credits obtained by the Corporación de Fomento and its subsidiaries totalled 82.6 million dollars by the end of 1948, 47.3 million of which had been utilized; 21.1 million had been amortized, and the balance outstanding was 26.1 million.

Credits from the Export-Import Bank and the International Bank have changed the structure of foreign investment in Chile, and above all have introduced a new method: the loans are made to government agencies which retain full ownership of their assets and of profits realized. These agencies are under obligation solely to make payments of interest and amortization. Thus the role of foreign capital

/is limited

is limited to the economic contribution it makes to the acquisition of capital goods which become the property of the government agencies concerned; this role, moreover, ends as the loans are repaid.

Private portfolio investments, as revealed by the inquiry of the Banco Central, are small in amount as they reach a total of only 14 million dollars distributed over 80 Chilean undertakings. It is probable that, despite the effort made, some of these investments have been overlooked, because of the difficulty of identifying foreign participation in Chilean companies or real property. Such investments have been directed chiefly to agriculture and stockbreeding (one-third) and industry (another third).

The Banco Central's inquiries made no reference to the matter of the service of foreign investments, but it is interesting to determine, on the basis of figures available from the balances of payments, how much was due in 1948 for interest and amortization of foreign capital. The results are given in the following table:

Table 15. Chile: Foreign investments in 1948

	Total investment	Amortization	Interest or profits	Annual service	Service on investment
	(in millions of dollars)				(percentage)
1. Foreign debt of the State a/	254.7	3.1	3.9	6.9	2.7
2. Credits to the Corporación de Fomento, State Railways, etc.	64.2	21.6	5.0	26.6	41.4
3. Mining undertakings	376.0	6.1	56.3	62.5	16.6
4. Other undertakings	272.0	-	2.2	2.2	8.1

Sources: Balance of payments, Banco Central de Chile; Inversiones extranjeras en Chile en 1948, Banco Central de Chile.

a/ A new Act (No. 8962) of 22 July 1948 authorized the President of the Republic to convert foreign long-term direct obligations or indirect debts of the State into new direct obligations. This refunding operation extends the maturity of the foreign debt to 46 years.

This Act fixed the rate of interest for 1948 at 1 1/2 per cent and regular amortization instalments of 2,531,000 dollars. Owing to the promulgation of this new Act and to the changes introduced in the payments on service account, the interest due in 1948 was not paid until 1949, so that it was included in the balance of payments for the latter year instead of 1948. The above table, however, includes such interest payments in 1948.

/Thus the

Thus the contrast between the foreign debt of the State, which owing to the long period set for amortization, costs less than 31 per cent *per annum*, and loans from foreign banks to development agencies, the period of repayment of which is short and raises the annual service to more than 40 per cent, is clearly brought out.

/ CHAPTER II

CHILE

CHAPTER II

INDUSTRIAL PRODUCTION

New Advances in Industrialization

The previous "Economic Survey" in the chapter on economic development in Chile from 1925-49, discussed the case of a country with limited capital and little industrial experience which had succeeded in establishing relatively large industries. Attention was also drawn to the efforts of the Corporación de Fomento de la Producción to concentrate its plans for the industrialization of the country on certain fundamental objectives such as the construction of a steel plant, the electrification of the country, the exploitation and refining of petroleum and the establishment of certain essential industries.

During the period 1945-50 Chilean industry has continued to develop along the same lines, attempting to improve the supply of goods for the country by producing those items which it cannot acquire abroad in the necessary amounts owing to its decreasing capacity to import.

Among the foremost of its recent achievements is the entry into operation of the steel plant at Huachipato. On 3 June 1950 it produced its first pig iron. 1/

The Corporación de Fomento de la Producción considers that the year 1950 marks the end of the first stage of its work, and that it should now prepare to assume new tasks within the framework of that programme. Thus, for example, a "blueprint of undertakings planned for 1951-60" has been drawn up which like the previous plan, depends largely on the obtaining of foreign credits.

As evidence and justification of its participation in the drafting of this plan, the Corporation has made an estimate of the savings in foreign exchange which have been made possible by the projects already in progress, and which will amount in 1951 to 34.4 million dollars, approximately half being attributable to the steel works.

1/ True, the rolling unit had been in operation since November 1949 but it was still using raw materials imported from abroad.

/Of this

Of this total 23.5 million dollars or 68 per cent are due to savings resulting from investments made with foreign credits. At the end of 1950 foreign credits amounted to 115.6 million dollars used as follows:

Table 16 Chile. Distribution of foreign credits obtained by the Corporación de Fomento

Purpose	Amount Millions of dollars	Percentage
Steel works	51.1	44.2
Electricity	28.5	24.6
Miscellaneous industries	21.7	18.8
Agricultural machinery	14.3	12.4
Total	115.6	100.0

Source: Corporación de Fomento de la Producción

As 9 million dollars will be required in 1951 to service those credits, the net savings on that portion of the investments made with foreign credits will be 14 million dollars. Savings of 11 million dollars will accrue from investments made with local funds, making a total net saving of 25 million dollars against imports which vary between 300 and 330 million dollars.

This saving should not, of course, be interpreted merely as a means of reducing imports which would be little more than a relative improvement, for the only result would be to substitute goods produced locally for imported commodities, leaving the volume of available goods unchanged. In reality, the purpose of savings in foreign exchange through the process of industrialization in the under-developed countries is to make it possible to continue diversifying imports without being too closely bound by the fluctuations in the import capacity, which generally show a downward trend.

The long-term objective of the Corporation's policy is to break the vicious circle to which reference was made in the previous Survey in the following passage: "It is impossible to increase the production of consumer goods to the extent required because sufficient capital goods are not imported, and imports of capital goods cannot be increased because the country must import consumer goods." 1/ At the same time it was stated that only foreign investments could break this vicious circle but of course only to the extent

1/ Economic Survey of Latin America, 1949 (E/CN.12/164)

/that such

that such investments would result in a net saving of foreign exchange which would release the exchange used for importing consumer goods and allow it to be utilized for acquiring capital goods abroad. In other words, when domestic savings are insufficient, recourse must be had to foreign capital, and the adequate use of such capital constitutes a means whereby domestic capital formation can be progressively expanded.

Plans for the next ten years

The desire of the Corporación de Fomento to pursue with vigour development programmes which involve the use of foreign capital is therefore understandable. The principal projects which have already been studied and which constitute the goals for the ten-year period 1951-60 will require approximately 140 million dollars in credits from abroad. The principal projects will be distributed as follows according to the branch of the economy which they are designed to help:

Table 17 Chile: Distribution of foreign credits by branches

	Millions of dollars	Percentage of the total
Industry	37.8	27.1
Mining	11.8	8.5
Agriculture	26.2	18.8
Electricity	27.7	19.8
Transport and communications	36.0	25.8
TOTAL:	139.5	100.0

Source: Corporación de Fomento de la Producción

/As will be

As will be seen, industry will receive 27 per cent of the total new credits, or approximately $38 million. The following industrial projects listed according to the amount of credits required will make up the programme for the next decade:

Table 18 Chile: Foreign credits for industrial investment proposed by the Corporación de Fomento for the ten-year period 1951-60

Project	Year[a/]	Amount in millions of dollars
Cellulose for paper and rayon, and paper factory	1951	10.0
Beet-sugar factories	1951	6.0
Saw mill and related industries	1953	6.0
Compania de Acero del Pacifico (extension)	1951	5.0
Soda ash plant	1952	4.0
Copper refinery	1952	2.5
Fishing industry	1951	2.0
Iron alloys factory	1951	1.5
Zinc refinery	1951	0.8
		37.8

Source: Corporación de Fomento de la Producción.

Note: a/ First year credit will be required.

Most of these projects were mentioned in the previous Survey since the preliminary studies to support the applications for credit were already well advanced. Nevertheless it is worth considering them again more closely from the viewpoint of investment and of the savings in foreign exchange which are expected to result.

The cellulose plant, which will also be used to manufacture rayon and paper, and the new paper factory, are to be established for the purpose of doing away almost entirely with imports of cellulose and paper including newsprint. This would enable the country to improve the balance of payments position by approximately $6 million ($4 million for cellulose and $2 million for paper). The portion of the investment to be financed with foreign capital would amount to $10 million; private Chilean capital would contribute 320 million pesos, making a total investment of $15 million. The Corporación de Fomento de la Producción has estimated allowing for a moderate regular growth in the consumption of cellulose and paper that the savings in foreign exchange would amount to seven and a half million dollars in 1960. The raw materials would be taken entirely from Chilean forests, the systematic exploitation of which is also visualized in the plan.

/The cellulose

The cellulose plan is linked to the timber plan for which a North American mission, at the request of the Corporación de Fomento de la Producción has made a complete survey of the forest resources of the country. The exploitation of those resources includes: (a) sawmills with completely mechanized equipment and transport facilities; (b) a pressboard factory as an adjunct to one of the sawmills with a productive capacity of 2½ million square metres of hard and insulating boards; (c) the modernization of the existing timber industry with a view to intensifying production and lowering costs.

In all, these projects will require $6 million in foreign credits of which $3 million will be used for the sawmill plants; $2 million for the pressboard factory and $1 million for modernizing existing installations. In addition, an investment is envisaged of 240 million pesos, or $4 million, to come from the privately-owned timber industry.

Sales of Chilean timber abroad will be increased by approximately $2 million as a result of these additions. Lowered costs will also make it possible to meet under more favourable conditions the competition of other supplier countries, for example, in the neighbouring market of Argentina.

As regards the iron and steel industry, which is the one that up to this time has received the greatest attention, the plan has two objectives: (a) the expansion of the various sections of the Huachipato factory and (b) the installation of an iron alloys factory.

It may seem surprising that the metallurgical unit of the Compania de Acero del Pacífico should hardly have been put into operation before it was considered advisable to expand the plant, particularly when it is borne in mind that at the outset fears were expressed that the plant would be too large for the resources of the country. Actually further investment at Huachipato has been made necessary by a combination of factors. In the first place domestic demand and the opportunity to place export surpluses have exceeded the estimates; secondly, blast furnace output has also been greater than anticipated and accordingly a larger supply of pig iron also makes it necessary to increase the capacity of the other processes of production, the steel mill and the rolling mill, if the rate of processing in the later stages is to be maintained without bottlenecks; lastly, due to the shortage of foreign exchange, it has not always been possible to carry out the installation on the most desirable scale, and it is therefore necessary to consider new investments to supply the deficiencies which have become apparent in the proposed installations.

/In the

In the opinion of the Corporación de Fomento investments in various sections such as supply of materials, a cokery, a blast furnace and a steel mill totalling 6 million dollars would be required to expand the iron and steel programme, of which 5 million dollars would be provided by foreign credits. That investment would produce an increase of 30 per cent in the volume of finished goods, which would result in an additional saving in foreign exchange of 5 million dollars, that is to say from the viewpoint of the balance of payments the investment would pay for itself in a single year.

The other project is also connected with the Huachipato works but it concerns a different enterprise in which private industry is participating. The objective is to supply the domestic demand for iron alloys which has increased owing to the establishment of the iron and steel works. The new factory would be set up near the Huachipato works and would have a productive capacity of 17,000 tons of ferro-manganese, 2,000 tons of ferro-silicon, 3,000 tons of silico-manganese and 5,000 tons of calcium carbide. The exportable surplus of the first three products would amount altogether to approximately 3 million dollars a year, a figure which when compared with an investment of 1.5 million dollars in foreign capital shows the advantages of this project. Investments in local currency to be made by private capital would amount to 70 million pesos or slightly more than a million dollars.

The non-ferrous metals industry will be further expanded by two other projects under the new plan of the Corporación de Fomento, namely, those for zinc and copper refineries. In the previous survey reference was made to the construction of a copper smelter, at Paipote by the Caja de Crédito Minero for the purpose of enabling small and medium-sized mines to smelt their metals instead of selling them abroad as concentrates which is much less advantageous to the country. The copper refinery planned by the Corporación de Fomento is viewed as the indispensable complement of the smelter at Paipote and is intended to be used to recover gold and silver from the smelted copper in addition to refining the copper itself. The new plant is designed to produce 20,000 tons of refined copper, 5,000 kilogrammes of gold and 10,000 kilogrammes of silver. The project will require an investment of 2½ million dollars in foreign credits and 50 million pesos in local capital or a total of 3.3 million dollars. The savings in foreign exchange have been estimated at one million dollars per annum.

/The zinc

The zinc refinery is due to the initiative of private industry, and the Corporación de Fomento has decided to support it in view of the advantages it will bring to the country. The plan is to install a plant capable of producing 2,000 tons of electrolytic zinc and 3,600 tons of sulphuric acid annually. Hitherto electrolytic zinc has not been produced in Chile and its production within the country would make possible a saving of half a million dollars annually. As regards sulphuric acid, although it has been produced from domestic sulphur, the plan is to manufacture it from iron pyrites, since the production of this commodity although still in the initial stages and costly is essential to the development of this chemical industry. The investment will amount to 700,000 dollars in foreign credits and 50 million pesos in local capital.

Another interesting proposal is the establishment of a plant for the production of soda ash and caustic soda. The objective is gradually to satisfy total domestic demand which by 1960 would amount to 40,000 tons of soda ash and 12,000 tons of caustic soda. All the raw materials are to be found in the country (salt, lime and coal), and in that way the nation would avoid the employment of nitrate which is now used as a raw material with the attendant waste and high cost of production. With an investment of 4 million dollars in foreign capital and 2 million dollars from local sources, 36,000 tons of soda ash and caustic soda could be produced with a yearly saving of 3 million dollars in foreign exchange.

Even though the setting up of the beet sugar industry is of concern to agriculture because of its effect on crop rotation and cattle feeding, some mention should be made here of the projects of the Corporación de Fomento in this field.[1/]

The Corporación's projects for the period 1951-60 are based on the construction of three factories each having a productive capacity of 12,000 tons per annum. The total investment would amount to six million dollars for the importation of machinery and equipment and 432 million pesos for local expenditures including credits to farmers for the purchase of livestock, the construction

1/ The previous Economic Survey described the economic basis of the project to satisfy part of the demand for sugar, even if the plan only succeeded in taking care of the normal increase which, it is estimated, develops cumulatively at the rate of 10 per cent every three years.

of silos and stables etc. The savings in foreign exchange may be estimated at five million a year from 1960 onwards without taking into account the increase in agricultural production which is essential, in view of the limited quantity of protective foodstuffs consumed in the country.

The investments which the Corporación de Fomento plans to make in regard to the fisheries and the utilization of fish products are not limited to the industrial field. The plan for the fisheries includes the import of equipment for the fishing fleet, the construction of canning factories, the modernization of existing factories, the installation of freezing plants, and the construction of factories for by-products such as oils, fish meal, glue and raw materials for the paint and varnish industry. The investment would amount to 2 million dollars in foreign credits and 2.2 million dollars in local funds and would make possible a saving of almost 4 million dollars in foreign exchange annually.

These projects in the aggregate would increase the Chilean industrial potential to an extent which can be appreciated by comparing the total amount of the investment required with the savings in foreign exchange which it is hoped to realize. Adding together the 40 million dollars in foreign currency and the 1,500 millions in local currency which are to be spent, converted at the rate of 60 pesos to the dollar, a total of 65 million dollars is obtained. The anticipated savings in foreign exchange have been estimated by the Corporación de Fomento at approximately 22 million dollars in 1955 and 31 million dollars in 1960

Table 19 Chile: Estimate of savings in foreign exchange in 1960

Projects	Millions of dollars
Cellulose and paper factory	7.5
Sugar industry	5.0
Expansion of the Huachipato steel works	5.0
Fishing industry	3.7
Iron alloys factory	3.0
Soda ash factory	3.0
Saw mills and related industries	2.0
Copper refinery	1.0
Zinc refinery	0.5
	30.7

Source: Corporación de Fomento de la Producción.

/Evolution and

Evolution and Trend of Industrial Production

The purpose of the examination which contrary to chronological order has just been made of the future of Chilean industry has been to show the length to which a nation is prepared to go when it has decided that its future development depends on industrialization, the mechanization of agriculture and the harnessing of its sources of power. Such a survey allows of a better estimate being made of the present state of Chilean industry and its recent evolution.

The value of industrial production at constant prices together with the corresponding index are the first elements required to form a judgment of the progress which has been made in this economic sector during the post-war period.

Table 20 Chile: Volume of industrial production

Year	Value at 1940 prices, in millions of pesos	Index of production 1937 = 100	Index of employment (man-days worked) 1937 = 100
1940	4,428	113.6	116.1
1945	5,256	135.0	123.8
1946	5,682	145.9	128.0
1947	6,071	155.9	122.4
1948	6,350	163.0	119.5
1949	6,594	169.2	122.0
1950	6,449 a/	165.5 a/	113.1

Source: General Department of Statistics and Corporacion de Fomento.

a/ Estimate based on nine months.

These figures show an increase of 45.6 per cent in the volume of production over 1940 and a rise of 22.7 per cent over 1945 which may be considered a relatively high rate of increase. It is also gratifying that productivity as expressed by the ratio between the indices of production and employment should have increased; with 8.6 per cent less man-days than in 1945 a 22.7 per cent greater volume has been obtained. As these figures, however, only include a limited number of enterprises and in particular do not take into account the new industries, their representative value can only be approximate and they are probably below the reality. Furthermore, as indices do not include the same groups of industries they are not strictly comparable.

This is illustrated by industrial consumption of electric energy which has been increasing at an average rate of 13 per cent per annum in the last decade

/Table 21

Table 21. Chile: Industrial consumption of electric energy

(Millions of kilowatt hours)

Year	Industries listed by the General Department of Statistics	Estimate for all industries	Index
1940	232	290.0	100
1941	260	325.0	112.1
1942	314	392.5	135.3
1943	338	422.5	145.7
1944	383	478.7	165.1
1945	433	541.2	186.6
1946	508	635.0	219.0
1947	542	677.5	233.6
1948	613	766.2	264.2
1949	626 a/	782.5	269.8
1950	671 a/	838.7	289.2

Source: General Department of Statistics.

Note: a/ Estimate arrived at by extrapolation.

The only available figures on the consumption of electric energy by industry are those appearing in the Statistical Yearbooks. As these statistics refer to a group of approximately 5,000 enterprises, there are some industries on which no information is available. Nevertheless it may be assumed that the balance not covered consists of smaller enterprises and that accordingly their consumption of electric energy is small. It may therefore be assumed that the consumption by industries covered by the statistics represents about 80 per cent of total industrial consumption in the nation.

Iron and Steel Industry

As we have seen, this branch of industry is that which has received the greatest stimulus owing to the investment of about 90 million dollars, representing the total cost of the Huachipato plant which was officially inaugurated on 25 November 1950.

An idea of the importance of the new plant may be obtained from a comparison of Chilean iron and steel production before and after the first coke blast furnace went into operation.

/Table 22.

Table 22. Chile: Iron and Steel Production

Year	Tons
1940	23,000
1945	27,700
1946	32,600
1947	36,000
1948	39,600
1949	36,900
1950 (x)	108,500

Source: Producing firms.

(x) Provisional

Of the 108,500 tons produced in 1950, 70,900 tons were accounted for by Huachipato. In six months during which the plant was not in full-scale operation, and without reckoning steel in the process of manufacture the enterprise has produced 46,000 tons of pig iron for the market, 12,500 tons of steel bars and 12,500 tons of sheet steel including tin plate.[1] The old charcoal blast furnace which is operating in the southern part of the country only produced 7,600 tons of pig iron and 6,000 tons of steel bars, and the existing rolling mills only manufactured 23,000 tons of steel bars. In future the old charcoal blast furnace (which in part will use foundry coke from Huachipato) will only produce high-grade pig iron, and of the existing rolling mills, one has been dismantled and moved to Huachipato to complete the installation there.

[1] October was really the first month of normal full production. The blast furnace produced an average of 616 tons of pig iron daily whereas estimates had been conservatively placed at 550 tons a day. This fundamentally favourable situation has given rise to some concern as the capacity of Siemens-Martin and Bessemer converters does not permit them to keep up with the blast furnace's production. This maladjustment, characteristic of any plant in its early stages, is due chiefly to the fact that the blast furnace discharges five times a day and that the pig iron is kept at the proper temperature only to permit of three loadings of the Bessemer after each pouring. The Siemens-Martin, which uses only 55 per cent of freshly produced pig iron, requires material which has already passed through the Bessemer, and the latter does not work at full capacity for the reasons explained. At the rate of production the blast furnace reached in October, about 175 tons daily would be left unrefined. With the installation of a mixer to maintain the temperature of the pig iron at the proper level, this difficulty would be overcome.

/According

According to the technical experts, if some of the alterations provided for in the expansion plan were carried out, blast furnaces production could be increased to 700 tons and even to 900 tons daily, thus giving an annual production of 270,000 to 300,000 tons.

This figure exceeds domestic consumption by a wide margin. It is not surprising, therefore, that pig iron should have been exported in 1950: 32,000 tons were sold to the United States, taking advantgae of the high prices paid by this market, which had been affected by the economic emergency caused by the re-armament programme.

Other more elaborate products (sheets, bars, wire, strips and sections) have been exported to the neighbouring markets of Argentina, Peru and Ecuador. Chile has signed an agreement with Argentina which provides that exports of iron and steel shall be applied to pay off part of the debt contracted earlier for the purchase of wheat and olive oil. Uruguay has also manifested interest in Chilean steel.

The production schedule for 1951 will be as follows:

Commodities	Tons
Iron and/or steel ingots	52,000
Bars and sections	62,000
Strips	6,000
Wire	20,000
Thin sheets (up to 3.2 millimetres)	22,500
Thick sheets (from 3.2 to 12 millimetres)	20,000
Tin plate and black iron plates	16,500
Pipes	4,800
Total	203,800

For most of the commodities, estimated production exceeds consumption even taking into account that the latter is tending to increase. The consumption pattern in 1950 is indicative of the new position which Chile has attained. Total production reached 108,000 tons, a figure more or less equal to the amount of imports. Deducting exports (12,000 tons) and orders accepted but not shipped (25,000 tons) we obtain a figure of 180,000 tons for apparent consumption, which is 6 per cent higher than the 1949 figure. It is still far from the record consumption of 220,000 tons reached before the world economic crisis.

/Cement

Cement Industry

Cement holds second place among capital goods produced in Chile. It held the first place before the Huachipato plant went into operation. In the last three years cement consumption has been declining after having reached its peak in 1947 as is shown in the following table:

Table 23. Chile: Production, import and consumption of cement

(in thousands of tons)

Year	Production	Imports	Apparent Consumption
1940	385.1	13.7	398.7
1945	411.1	44.5	458.5
1946	579.9	8.7	584.6
1947	602.3	0.7	600.1
1948	539.8	2.2	539.7
1949	495.2	1.6	495.5
1950 a/	486.1	1.6	477.6 a/

Source: General Department of Statistics

a/ Estimates based on data for nine months.

In 1950 with the establishment of a third factory the theoretical production capacity in cement was raised to 900,000 tons to cover demand which would normally have amounted to some 600,000 tons or more if the rate of growth between 1940 and 1947 had been maintained. It is proposed to set up another factory near Huachipato and this will use the blast furnace slag as well as semi-processed cement from one of the existing factories which devotes its excess capacity to the manufacture of superphosphates.

Chile thus has a virtual exportable surplus available for which it is seeking markets. In 1950 it exported small quantities amounting to about 10,000 tons and it has been negotiating the sale of cement to Argentina. The slackening of domestic consumption of cement is connected with the decline in construction and public works from 1946 onwards.

/Table 24.

Table 24 Chile: Construction and expenditure on public works

Year	Planned construction in 13 communes		Expenditure on public works	
	In thousands of square metres	Index	In millions of pesos	Volume a/ Index
1940	709.0	100.0	360.8	100.0
1945	763.6	107.7	763.8	88.8
1946	1,118.7	157.8	1,056.3	113.0
1947	917.3	129.4	1,344.6	122.9
1948	798.9	112.7	1,246.3	98.5
1949	806.7	113.8	1,567.5	107.9
1950	874.3 b/	123.3 b/	1,800.0 c/	108.0 c/

Sources: Auditor-General's Office of Chile
General Department of Statistics
Corporación de Fomento de la Producción

a/ Figure obtained by deflating the value on the basis of the cement price index.

b/ Estimate based on figures for the first ten months.

c/ Provisional

The rise in cement prices does not seem to have been the obstacle which discouraged investment in construction; cement prices have actually increased by only 362 per cent since 1940 whereas the rise in wholesale prices or in the cost of living has been greater. The decline in building after the peak of 1945-47 is rather attributable to the difficulty in obtaining capital for such purposes and to the laws fixing rent ceilings which have made investment in housing for rental purposes less productive than other investments.

Although public works which use large quantities of cement, have slackened off less than private construction, they have not maintained the volume of activity reached in 1946-47 even though a trend towards recovery has been noted in the last two years.

/Chemical

Chemical Industry

The chemical industry ranks among the basic industries and the progress which attends the establishment and expansion of that industry is one of the best indices of a country's economic development. In general, the first stage is characterized by the manufacture of commodities in great demand from finished or semi-finished imported materials, and these activities usually require strong protection to enable them to become established and to survive. The second stage consists in the processing of raw materials for industries manufacturing consumer goods. In some instances, these raw materials are required for a particular industry and the consumer industries themselves undertake their production. In other cases, they are produced for a variety of purposes. In the third stage, the chemical industry is devoted to the production of materials which are basic to other industries, and it has then become a heavy industry. It is possible to consider a fourth stage when a chemical industry for the export market arises in countries possessing abundant natural resources.

Chile has partially entered the third stage already and has the necessary qualifications one day to reach the fourth in some fields at least. The variety and abundance of basic raw materials in Chile such as nitrate, sulphur, coal, wood, iodine, salt, lime and metals such as copper and iron, are well known. Another decisive factor is the existence of cheap electric power, a goal toward which Chile is striving through its hydro-electric development schemes.

In reality, the problem lies in Chile's own consumption of most chemical products, which is too small to make it worth while to install plants of the minimum size necessary for economic operation. Fortunately, the same industrialization which has benefited the country in other fields is changing the terms of this problem. On the one hand, new branches of industry are being developed that require the chemical products which existing industries used to import, and on the other hand, the output of some of the recently established industries, such as the iron and steel industries, includes a variety of by-products for which the question of cost does not arise.

/In Chile,

In Chile, the chemical industry exists in the first three stages mentioned above, for after a new stage has been reached, the earlier stage does not disappear although it becomes relatively less important. The most significant example is the pharmaceutical products industry which is among the light or terminal industries. In 1948, out of a total volume of 2,800 million pesos which statistics show for the production of the chemical industry as a whole, the manufacture of pharmaceutical products amounted to 500 million pesos or 18 per cent of the total, whereas in 1940 the corresponding figure was approximately 25 per cent.

Another branch of the chemical consumer industry, the manufacture of perfumes and tiolet articles, has increased its share from 1.3 per cent of the total volume in 1940 to 12 per cent in 1948. That is due, however, to the fact that this industry has been making inroads into the domestic market until, practically speaking, it supplies the entire demand.

The manufacture of matches has also satisfied the whole demand for the last thirty years. Per capita consumption has increased 18 per cent over the pre-war period.

The heavy chemical industry in Chile already possesses some of the primary prerequisites, sulphuric, hydrochloric and nitric acids which are the indispensable basis for a series of other manufactures.

It will be seen from the following table in which the production figures refer only to acid used for commercial purposes, (excluding acid which some mining industries and establishments produce for their own consumption), that between 1939 and 1948 there has been an increase of 48 per cent in the production of sulphuric acid, of 42 per cent in that of nitric acid and of 127 per cent in that of hydrochloric acid. Practically speaking, the demand is satisfied and in the case of sulphuric acid, there is a small surplus which is disposed of in Bolivia.

Table 25 Chile: Production and net exports and imports of the principal acids
(In metric tons)

Year	Sulphuric Acid		Nitric Acid		Hydrochloric Acid	
	Production	Net Export	Production	Net Import	Production	Net Import
1939	3,470	191	126	25	481	18
1940	2,216	299	143	15	456	5
1941	4,626	254	133	21	560	12
1942	3,808	325	118	24	580	13
1943	3,775	384	125	6	826	8
1944	4,283	299	107	12	893	10
1945	4,843	212	137	11	1,080	2
1946	4,008	341	129	3	845	7
1947	5,551	369	154	19	1,090	7
1948	5,076	423	180	11	1,094	15
1949	..	453	..	13	..	12
1950	..	416 a/	..	..	..	..

Source: Industrial Yearbooks, General Department of Statistics.
a/ First eleven months.

/The most

The most important of these acids is sulphuric acid which heretofore has been produced only from domestic sulphur. Some figures are given on the extraction of sulphur in the chapter on mining where it is pointed out that the plans of the Corporación de Fomento include provision for the installation of an electrolytic zinc refinery at Huachipato which would produce as a by-product some 3,600 tons of sulphuric acid annually or about 70 per cent of present output. This tonnage however would not be available in its entirety for commercial markets because the steel industry itself is a consumer of acid, and with that consideration in mind it has installed a small plant of its own which has been producing at that rate annually ever since June 1950. Although it sells small quantities to the public, it has not been included in the table because it began operations in 1950.

Another advantage which would be derived from the production of cheap sulphuric acid in the vicinity of Santiago would be the fact that pyrites from the El Teniente copper mine could be utilized[1].

Of these three chemicals, hydrochloric acid has shown the largest increase in consumption. This is due to the advances made in certain metallurgical industries, particularly wire-drawing. One of the by-products of the manufacture of hydrochloric acid is sodium bisulphate of which 3,000 tons are being produced annually. In turn, this acid salt may at times be substituted for sulphuric acid as a deoxydizer of metals, for example, in the manufacture of galvanized iron. In this way the production of hydrochloric acid is helping to satisfy some of Chile's requirements in sulphuric acid.

The growth of the textile industry has considerably increased the consumption of acetic acid and some of its salts. These products are obtained by the distillation of wood; in general charcoal, which is consumed in large quantities for domestic purposes in central Chile and to a lesser extent in the north in the manufacture of blasting powder, is produced locally in improvised kilns in which the by-products are lost.

1/ This project was studied a few years ago by the Corporación de Fomento but was not proceeded with, probably owing to the complications raised by the special rate of exchange applicable to this mine for its expenses in Chile.

/Since the

Since the beginning of this century, a plant which uses woods native to the region has operated intermittently at the port of Quellón on the island of Chiloé. In 1941 with the help of the Corporación de Fomento a plant was set up to produce charcoal from wood from the eucalyptus forests near the port of San Antonio. This establishment was in operation up to and including 1943 when it burnt down; it was not rebuilt because of the demand for the unprocessed wood. In the last few years two new small scale plants of this type have been established and to these the increases in production noted from 1946 onward are to be attributed.

The projects of the Corporación de Fomento for the development of the lumber industry envisage certain credits for the construction of new plants to aid in the full exploitation of the forests.

Before the modern systems for extracting boron and its derivatives were perfected, Chile was one of the largest exporters of calcium borate. The exploitation of the deposits was halted completely at the beginning of this century. The British firm which exploited them retained ownership of the deposits, however, and at the beginning of the war it put into operation a factory to supply Chile's requirements of boron and its derivatives. These are chiefly boric acid, sodium borate and sodium tetraborate.

The consumption of boric acid in Chile rose fivefold between the years 1939 and 1948, probably owing to the increase in the manufacture of sodium silicates (soluble glass). In the first half of 1950 there was for the first time an export of sodium borate of more than 150 tons which is almost double the annual Chilean consumption.

As regards sodium tetraborate, the production and consumption of this substance has increased considerably since 1948 owing perhaps to the initiation of the manufacture of glass utensils capable of withstanding high temperatures (Pyrex type). In an emergency which might cause a shortage of boron products in Latin America, it would be relatively easy for this factory to increase its output. It is nevertheless likely that owing to the higher wages paid in Chile, it may not be in a position to compete with a similar enterprise which the same company has at Cebollar in southern Peru.

/The consumption

The consumption of oleic acid and glycerine has increased owing to the progress made in the textile and cosmetics industries and particularly to the need to improve the different types of soap.

While the output of glycerine has remained more or less stable, due to the limitations imposed by the shortage of fats and oils, the production of oleic acid although still small has increased considerably. Imports of both these products are now of little importance.

The sodium alkalis are the most important group of basic elements used by the chemical industry. This group includes caustic soda, sodium carbonate (also called soda or soda ash) and sodium bicarbonate. The latter was produced for the first time in Chile in 1950, the output totalling 453 tons. Small quantities of caustic soda have been manufactured for sale by electrolysis of salt (sodium chloride). They consist almost entirely of the by-products of the factory which manufactures cellulose from wheat straw.

The following table shows the manufacture, import and apparent consumption of caustic soda and sodium bicarbonate.

Table 26 Chile: Production, import and apparent consumption of caustic soda and sodium bicarbonate

(in metric tons)

Year	Caustic Soda			Sodium Bicarbonate		
	Production	Import a/	Apparent consumption	Production	Import	Apparent consumption
1939	2,173	2,364	4,537	. .	443	443
1940	2,054	1,806	3,860	. .	603	603
1941	3,017	2,974	5,991	. .	758	758
1942	2,043	4,625	6,668	. .	940	940
1943	2,850	2,356	5,206	. .	466	466
1944	2,607	1,334	3,941	. .	528	528
1945	3,137	4,735	7,910	. .	734	734
1946	1,547	2,726	4,273	. .	409	409
1947	3,700	2,619	6,319	. .	358	358
1948	4,123	4,337	8,460	. .	1,040	1,040
1949	4,344	4,003	8,347	. .	1,231	1,231
1950	4,553	5,378	9,931	453	618	1,071

Sources: Industrial and Foreign Trade Yearbooks of General Department of Public Works and Corporación de Fomento de la Producción.

Note: a/ Small amounts of pure sodium hydroxide are not included.

/An increase

An increase is to be noted of about one hundred per cent in the production, imports and apparent consumption of caustic soda during this period. The consumption of sodium bicarbonate has increased slightly less, national production in 1950 accounting for 42 per cent of the total.

The supplies of these two alkalis reflect the war time limitation of imports and the world shortage of sodium alkalis which prevailed in 1946 and 1947.

Table 27 Chile: Production, import and apparent consumption of sodium carbonate

(in tons)

Year	Production (Estimated)	Import	Apparent consumption (Estimated)
1939	550	2,373	2,923
1940	770	4,708	5,478
1941	680	4,515	5,195
1942	5,360	6,363	11,723
1943	7,505	4,302	11,907
1944	3,250	3,277	6,527
1945	2,325	4,741	7,066
1946	4,550	3,532	8,082
1947	8,115	1,041	9,156
1948	8,655	2,674	11,329
1949	8,960	1,562	10,522
1950	9,820	1,011	10,831

Source: Industrial and Foreign Trade Yearbooks of the Department of Statistics and data supplied by the Corporación de Fomento de la Producción.

a/ Based on statistics of nitrate used as a raw material and on enquiries among the principal consumers.

b/ Estimated without the figures for the saltpetre used.

In the post-war period a growing recovery of consumption has been noted since 1948.

Soda ash and its substitutes included in this table are produced in Chile by the wasteful method of burning saltpetre (sodium nitrate) and allowing the nitrogen to escape.

/On an

On an average one ton of soda ash is obtained from two tons of saltpetre. The Corporación de Fomento has begun by studying the uses made of saltpetre sold in Chile for industrial purposes. The carbonate which could have been obtained from this source is less than the total estimated by the Corporación de Fomento, as may be seen from the following table on the use of saltpetre between 1943 and 1950.

Table 28. Chile: Use of industrial saltpetre sold annually[a/]

(in tons)

Year	In the manufacture of soda ash	For explosives and prepared fertilizers	Total	Manufactured from industrial saltpetre	Difference (Excess)
1943	7,801	4,000	11,801	3,900	3,605
1944	4,000	1,239	5,239	2,000	1,250
1945	1,239	2,492	3,731	620	1,706
1946	2,492	4,810	9,302	1,246	3,304
1947	4,810	8,377	13,187	2,405	5,710
1948	8,377	5,671	14,048	4,188	4,467
1949	5,671	8,733	14,404	2,835	6,125
1950	8,733	7,050	15,783	4,367	5,453

Source: Calculated from information supplied by the Corporacion de Fomento de la Produccion.

Note: a/ The difference which varies greatly from one year to the other has been obtained by deducting the demand estimated by the Corporación de Fomento on the basis of the figures for the consumption of a significant proportion of the consumers. Hence if there is any error, the figures will be lower than the reality and in no case higher. The surplus carbonate was no doubt produced clandestinely from saltpetre intended for agricultural purposes. In the interests of economic development, the agricultural consumer pays a much lower price than that charged for nitrate for industrial purposes, and accordingly the business of diverting agricultural saltpetre to the production of carbonate becomes very lucrative.

In attempting to evaluate the total production of sodium alkalis it should e borne in mind that owing to the chronic shortage of foreign exchange consumption s rather low, since various substitutes are found in the country which are at east tolerable substitutes for these alkalis in some of their uses. One such

/substitute

substitute is sodium sulphate of which the country has vast natural deposits. Another, as we have seen, is saltpetre or its derivatives. During the depression, glass factories frequently used saltpetre directly in the furnaces in place of carbonate. The glass which is obtained is more fragile but the shortage of foreign exchange for the import of sodium alkalis has made it necessary to follow this procedure.

Apparent consumption of alkalis in 1950 was therefore as follows:

Caustic soda	10,000 tons
Sodium bicarbonate	1,100 tons
Sodium carbonate	10,900 tons
Total	22,000 tons

The Corporación de Fomento had estimated that clandestine production not recorded by it amounts to an additional 3,000 tons making a total consumption of 25,000 tons. In 1943 consumption amounted to 18,000 tons, thus indicating an increase of about 22 per cent in seven years.

In view of these facts the Corporación has planned a plant with a capacity of 36,000 tons which will require an investment of 120 million pesos plus 4 million dollars for which a loan has been requested from an international credit institution. At current prices the production would be valued at about 5.4 million dollars annually, of which 3 million dollars would represent savings in foreign exchange.

Chile's raw materials, particularly sodium chloride, are unusually pure and are located on the coast, for which reasons it is likely that any surplus production could profitably be exported to other Latin American countries.

The urgency of carrying out this plan is also shown by the fact that the manufacture of cellulose from wheat straw, which at the present time provides most of the output of caustic soda, will be paralysed as soon as the projected factory for manufacturing cellulose from pine wood has been put into operation.

/National

National production of potassium carbonate has eliminated imports entirely despite the fact that consumption has tripled since 1939. This industry uses as its raw material potash A saltpetre, a mixture of sodium nitrate and potassium nitrate from which the latter is removed by leaching and then burned, just as soda is prepared from sodium saltpetre. As the industry uses very primitive materials, it would be a simple matter to expand production to supply the other Latin American countries if necessary.

Imports of anhydrous ammonia have increased about 50 per cent since 1939, but despite this fact they accounted in 1948 for less than 20 per cent of the national consumption, which increased eightfold between 1939 and 1948. Ammonia is obtained as a by-product of the gas manufacturing works at Santiago and Valparaiso, and current production uses all the raw material available there. The cokery of the Huachipato iron and steel plant will be able to furnish a slightly larger quantity which in turn may be supplemented by the successive rises in output that will apparently be necessary in the iron and steel industry. The contribution from this new source will, however, be halted by the cessation of manufactured gas production at Santiago and Valparaiso as soon as the petroleum refinery to be installed at Valparaiso comes into operation in about four years time. The present distribution network for manufactured gas in the cities mentioned will be used only to distribute surplus petroleum gas from this refinery.

It is possible to surmise from the unusually high rate of increase in the consumption of ammonia that the trend will continue, although possibly on a smaller scale. In that case domestic supplies could be increased by expanding the ammonia production capacity of the corresponding unit which is to be included in the proposed Solvay soda factory.

Chlorine is obtained from the synthesis of salt in the manufacture of cellulose. Imports have been almost entirely replaced by Chilean products, and consumption has increased almost threefold from 1939 to 1948. This product is of great importance for sanitation purposes, as it is used to purify water in the urban distribution systems; production will be halted when the present plant making cellulose from wheat straw ceases operations. Consumption should continue to rise at an accelerated pace, and as this product is also used in other chemical industries it will be necessary to find a new source of production for the country.

/In regard

In regard to compressed yeast, which is obtained from the fermentation of beer, and grain or "industrial" alcohol, imports have varied little but national production has increased tenfold between 1939 and 1948, when imports amounted to about one per cent of Chilean production.

In a country as poor in protein foods as Chile, there is no limit to the potential consumption of this product, and various Chilean biochemical establishments propose to utilize possible increases in production for this purpose.

Chilean production of sodium silicate in 1939 amounted to 18 per cent of apparent consumption, and in 1948 it had risen to 74 per cent. On the other hand, consumption has not increased greatly, except in 1947, so that in this case there has been a substitution of national products for imports, as a consequence of the domestic production of boron derivatives.

Tartaric acid and acid tartrate of potassium are obtained from the lees of wine and tartrates deposited in the casks in which the wine is fermented and aged. Tartrates have traditionally been exported to countries with more highly developed chemical industries but since the establishment of that industry in Chile, such exports are made in accordance with the market situation -- in some cases as a raw material -- tartrate -- and in other cases as specific products: tartaric acid and acid tartrate of potassium.

The dislocation of trade caused by the last war led to the creation of a series of industries producing raw materials which could not be imported, both to supply the country's own needs and to a lesser extent for export to certain neighbouring countries. With certain exceptions this industry worked with improvised installations and the quality of the products was irregular. Some of these firms disappeared as the difficulties which occasioned their establishment were solved. Others curtailed their production after having reorganized their plants.

Thus from 1940 onwards, the manufacture of sodium bisulphite has satisfied domestic needs, production, the capacity of which far exceeds consumption, having adjusted itself to demand. An upward trend has been noted although the figures are somewhat sporadic. As bisulphite has many uses, it is difficult to determine the cause of these fluctuations except in the case of the 1946 increase which was due to a larger output of acid tartrate of potassium (cream of tartar), a process in which bisulphite is used.

/According to

According to statistics sodium bisulphite, which has many uses in the metallurgical, textile and other industries, has been manufactured in sizeable quantities only since 1944. It is likely that in previous years a part of the production was not recorded as imports have always been very small and as it is obtained as a by-product of the manufacture of hydrochloric acid which has been produced in Chile for many years.

The production of sodium hyposulphite reached a maximum of 688,000 tons in 1942 but has since declined. In some of its uses, for example, in the bleaching of textiles, it has been replaced by the bisulphite mentioned in the preceding paragraph.

Chile has produced varying quantities of potassium nitrate which exceed domestic consumption. The surplus is disposed of in foreign markets but demand abroad has been irregular.

Sodium sulphate is extracted from large deposits in the north of Chile, which are 85.5 per cent pure. Here is another industry which can be set up with very little outlay, especially if production is limited to crystallized sulphate.

Mine production amounted to 114,142 tons in 1947, 55,500 in 1948 and 5,740 in 1949. It is likely that some industrialized production is not reflected in the statistics.

Exports in 1947 were due to the world shortage of sodium alkalis, since sulphate can be substituted for carbonate in some processes. At the present time sodium sulphate is being used in Chile to replace carbonate in several of its uses. It is clear that, should a new shortage of sodium carbonate occur in Latin America, the possibility of partially substituting Chilean sodium sulphate for this product could be considered since, judging from the figures given the potential development of the industry is considerable.

From 1927 to 1930, consumption of calcium carbide in Chile exceeded an average of 6,000 tons per annum. The substitution of electricity for calcium carbide in many cases (soldering, illumination of mines and homes) has reduced the figure to about 4,000 tons after it had dropped to a low of 1,600 tons in 1933.

/Due to

Due to the impetus which Chilean industrialization received from the shortage of foreign exchange during the depression various attempts to produce calcium carbide culminated in the establishment of a small factory near Santiago. This enterprise has its own hydro-electric plant with an installed capacity of 5,000 kilowatts and a productive capacity far exceeding national consumption. The high price of sheet steel and the distances over which the raw materials -- coal, calcium carbonate -- have to be transported do not permit of production at prices which can compete with the large international exporters. The following table shows production, import, export and apparent consumption of calcium carbide:

Table 29. Chile: Production, import, export and apparent consumption of calcium carbide

(In metric tons)

Year	Production	Import	Export	Apparent consumption
1939	2,209	1,238	--	3,447
1940	2,458	3,065	2	5,523
1941	2,353	914	219	3,048
1942	2,655	572	253	2,974
1943	4,659	318	772	4,205
1944	4,760	42	275	3,527
1945	4,096	23	..	4,119
1946	3,063	2	..	3,065
1947	4,191	138	..	4,329
1948	3,274	41	..	3,315
1949	..	610	..	..

Source: Industrial and Foreign trade yearbook of Chile.

As the table shows, imports disappeared almost completely during the war and not only was the entire domestic demand satisfied but in 1944 it was possible to export 1,300 tons. These exports were still limited by a shortage of thin sheet steel for the manufacture of watertight containers. The imports which have reappeared in the last few years are due to purchases by industries which are subject to the special exchange regime applicable to large mining concerns, that is to say, which are compelled to pay for their expenditures in local currency with dollars converted at the rate of 19.37 pesos to the dollar. Once the neighbouring countries were able to obtain carbide from the customary large producers this factory, as we have seen, was not in a position to offer competitive prices.

The excess productive capacity of the electric furnaces not required by the market has been used for the manufacture of certain iron alloys, principally ferro-manganese and silico-manganese. Chile has consumed relatively little of

/these alloys

these alloys but there has been no difficulty in exporting the surplus, Europe being the chief purchaser.

In 1947 and 1948, an aggregate of 1,427 tons of silico-manganese were produced, of which 985 tons were exported between 1947 and 1949, the rest being consumed in the country. The manufacture of this alloy was subsequently abandoned and production was concentrated exclusively on the manufacture of ferro-manganese despite the fact that normally from 120 to 150 tons were consumed annually before work at the Huachipato factory was begun. Hitherto this alloy had been used almost exclusively in the production of replacement parts for mineral grinding, as these parts are manufactured in Chile, and their output has therefore paralleled the fluctuations in mining production. The iron and steel industry will use larger quantities of manganese, but in 1950 when the steel mill was operated at less than capacity for some months, the increased consumption of manganese was in the form of mineral which was used directly. In future years this situation should change and the use of ferro-manganese should increase

For this reason and because, as we have seen, there is an immediate possibility of increasing the production of manganese minerals slightly it is proposed to expand the factory and move it to the vicinity of Huachipato.

The new industry will be able to produce:

	For domestic consumption	For export
Ferro-manganese	3,000 tons	14,000 tons
Ferro-silicon	1,000 tons	1,000 tons
Silico-manganese	300 tons	2,700 tons
Carbide	5,000 tons	..

Grand total: 27,000 tons.

This figure should be compared with a total current capacity of 10,000 to 11,000 tons. The amounts of each alloy to be produced are given only as an indication, as the industry can easily adjust its relative production of the different items. This project offers many advantages to Chile, the chief of which is that the manufacture of ferro-manganese from materials more than 99 per cent of which are Chilean would greatly increase the value of the manganese contained in the minerals.[1/]

1/ In a normal year, 1948 for example, the manganese exported in the form of iron alloy was price f.o.b. Chilean port five times higher than the manganese contained in minerals (more precisely, 4.92 times). Some 12,000 tons of minerals exported this year fetched $288,000 f.o.b. Chilean port whereas if they had been fully converted into iron alloys they would have been worth more than $1,400,000. In view of current higher prices, the earnings in foreign exchange on this score would make it possible to amortize the dollar loan in a little over a year.

/Moreover, this

Moreover, this industry is a stabilizing factor in mining production. When the United States Government suspended its purchases which had given manganese production such a stimulus -- in 1943 they amounted to 52,044 tons -- extraction fell in 1946 to 10,192 tons, of which this factory consumed 40.5 per cent. In the following year production dropped even further (9,319 tons) and the manufacture of iron alloys consumed 63 per cent of the manganese content, all the surplus after the small domestic consumption had been supplied being exported without difficulty.

In addition it should be pointed out that Chile's manganese deposits are not large. There are abundant surface outcroppings, but these are low-grade deposits and probably not very extensive. The existence of a large factory in this country would make it possible slightly to lower the standard of purity for this mineral and thus increase the number of small mines which could be worked economically.

Lastly, as in the future there will be no difficulty in supplying black sheet steel for carbide containers owing to the production at Huachipato, the expanded factory could be helpful in supplying the calcium carbide requirements of the other Latin American countries.

Cellulose and Paper Industry

The paper industry is a typical example of a branch of activity which prepares its own raw material, cellulose and mechanical pulp; in addition, it obtains as a surplus over its consumption needs or as a by-product certain substances such as chlorine, caustic soda etc. which it places on the market.

/The following

The following table shows the production and import of paper, cardboard and some of its manufactures as recorded in the official statistics.

Table 30 Chile: Production and import of paper and cardboard

(in tons)

Year	Production				Import			Apparent Consumption
	Writing and Printing Paper a/	Wrapping Paper	Cardboard	Total Production	Newsprint	Other Types b/	Total Import	
1935	10,262	8,970	2,960	22,192	12,720	1,663	14,383	36,575
1936	9,516	9,526	2,447	21,489	11,042	2,025	13,067	34,556
1937	10,575	9,277	2,567	22,419	14,796	2,478	17,274	39,693
1938	14,581	11,487	3,179	29,247	11,732	3,095	14,827	44,074
1939	13,251	11,762	3,249	28,262	10,244	2,633	12,877	41,139
1940	18,542	13,298	3,146	34,986	10,344	2,395	12,739	47,725
1941	21,336	12,951	3,252	37,539	9,520	2,693	12,213	49,752
1942	18,874	12,789	3,144	34,807	5,453	2,782	8,235	43,042
1943	18,383	12,754	2,194	33,331	4,888	2,318	7,208	40,537
1944	15,558	12,736	2,480	30,774	11,041	2,401	13,442	44,416
1945	17,020	13,355	2,364	32,739	17,766	3,204	20,970	53,709
1946	16,393	15,377	2,448	34,218	19,136	3,347	22,483	56,701
1947	16,403	16,312	2,662	35,377	14,464	2,965	17,429	52,806
1948	19,067	18,119	2,553	39,739	14,675	3,533	18,208	57,947
1949	20,962	16,541	3,114	40,617	14,047	3,208	17,255	57,872

Source: Industrial and Foreign Trade Yearbooks of Chile.

a/ Domestic factories with surplus capacity and sufficient cellulose available produce some newsprint which is included in this column.

b/ Includes: cardboard or paste-board for construction, books, printing and publications (an average of 530 tons in 1935-38 and of 1,400 tons in 1946-48), unspecified paper, cigarette paper and various other types.

This table includes data since 1935, as this makes it possible to observe additional stages in the development of national production which has grown by stages from a total of approximately 22,000 tons in 1933/37 to approximately 29,000 in 1938, 35,000 in 1940, 37,500 in 1941 and 40,000 tons in 1948/49.

Apparent consumption has risen from 39,400 tons in 1936/38 to 56,200 in 1947/49, or a little more than 40 per cent, or in other words at an accumulative rate of 3.4 per cent per annum over a period of eleven years. The proportion of paper supplies provided from national resources has been maintained almost constant. For more precise terms, it fell from 62 per cent in the years 1936/38 to 60 per cent in 1947/49. As regards newsprint, which is imported, although it has increased slightly in volume (from 12,300 to 14,400 tons), it has dropped relatively from 32 per cent to 25 per cent of the total supplies.

/The following

The following table shows the consumption and the origin of the cellulose and mechanical pulp utilized:

Table 31 Chile: Production of cellulose and mechanical pulp and import of cellulose

(in metric tons)

Year	Cellulose Production	Cellulose Imports	Total Cellulose	Per cent Domestic	Mechanical pulp Production	Grand Total
1939	5,175	14,633	19,808	28.6	7,200	27,008
1940	6,031	17,476	23,507	25.6	8,644	32,151
1941	5,509	20,686	26,195	21.2	10,400	36,595
1942	5,076	19,322	24,398	20.6	13,581	37,979
1943	4,649	5,073	9,752	48.0	12,665	22,387
1944	5,423	12,165	17,588	31.0	12,558	30,146
1945	4,749	13,924	18,673	25.3	12,446	31,119
1946	5,036	17,908	22,944	21.9	11,781	34,725
1947	4,953	24,748	29,701	16.7	11,813	41,514
1948	5,732	22,788	28,520	20.1	11,927	40,447
1949						

Source: Industrial and Foreign Trade Yearbook of the General Department of Statistics.

It should be noted that national production of cellulose has remained constant; the factory maintains the same capacity, and the variations from one year to another are due to many factors, among which may be mentioned the greater or lesser abundance of wheat straw, which is the raw material used. On the other hand, imports have risen more than 60 per cent in the period under review. Nevertheless the percentage of domestic cellulose used in industry has declined except during the war, when it was impossible to import cellulose and domestic supplies accounted for almost one-half of industrial consumption.

On the other hand, the manufacture of mechanical pulp which is a simple operation -- the process consists in grinding the wood very fine -- has been increasing in relation to demand.

The cause of the stagnation of the cellulose industry lies in the high cost of production if it is manufactured from wheat straw, beginning with the cost of transport, since the yield of cellulose per hectare of land sown with cereals is very low and much haulage is required. Then, the chemical process is not cheap and the first difficulty in the way of further development is the disposal of the surplus chlorine which is extremely toxic; its uses are very limited and it cannot be stored.

/Chile

Chile has abundant natural forests and ever since the end of the last century much interest has been shown in producing domestically at least the cellulose needed for local consumption and as far as possible some surplus for export. The surveys did not lead to major results. The natural forests of conifers are few and widely separated. The soft-wood forests in the temperate zone are generally composed of a variety of many species of trees with a very low density per hectare, and the resulting cellulose has a very short fibre. To these technical complications must be added the shortage of capital with which to set up a large industry.

The principal paper factory has been amongst the most active in investigating the possibility of producing cellulose from wood in Chile. Finally a solution was found through the utilization of the pino insignis forests which have been planted intensively since the beginning of the 1930's in the south-central region near Huachipato; cheap hydro-electric energy from the Laja system is also available there. The technical research was concluded in 1948-1949 and this company has drawn up a scheme to erect a plant with a daily capacity of 100 tons of cellulose or approximately 30,000 tons a year. It is intended to discontinue operations at the present small plant producing [illegible],000 tons of cellulose from straw as soon as the new industry is in operation. In addition to the manufacture of chemical pulp, the company would build a factory to produce 20,000 tons of newsprint annually. The Corporación de Fomento has agreed to apply for a loan of 10 million dollars from the International Bank for Reconstruction and Development to obtain the necessary foreign exchange. For its part, the company will supply the 320,000,000 pesos this project will cost, according to estimates made at the end of 1950.

The Economic Survey of Latin America 1949, (Chapter 9, Table 17), analyses the influence of the manufacture of paper from imported cellulose on Chile's movement of foreign exchange. At the present time imports of cellulose cost the country approximately 4 million dollars a year and newsprint imports approximately 2 million dollars. From every point of view it would therefore be desirable to invest 10 million dollars in order to save 6 million dollars annually. As we have seen, this need should continue to grow since paper consumption has increased by slightly more than 10 per cent every three years, and in Chile there is a clear under-consumption of paper, particularly wrapping paper

/But this

But this is not the only reason for establishing the industry. It should be borne in mind that world production of cellulose and paper is becoming more and more inadequate to supply the requirements of the western countries, and in latter years newspaper articles have appeared pointing to the shortage of newsprint, and discussing rationing and other measures. As a result of this situation if the country were forced to depend upon imports, future supplies would be endangered for there has been a rapid increase in the price of paper pulp and of paper itself.

The possible savings in foreign exchange and the risk of deterioration in the terms of trade together with the need for ensuring supplies of paper are not the only reasons for the rapid establishment of this industry. There is another reason although it is of lesser importance and completely national in character. The pino insignis grows in the region of Concepcion in Chile with extraordinary rapidity. The trees are ready for cutting in about twenty years and reafforestation is being carried out on a very large scale by private individuals, so that it is likely that in a short while production will outstrip demand which is exclusively for sawn timber for building. Moreover, as the softness of this wood makes it difficult to find export markets, new uses must be found for it such as the manufacture of cellulose. The alternative of reducing new plantings does not seem advisable because the saplings are planted in a small area of the country on flat, sandy soil which has no other possible use, and most of the plantings are to be found on the hills of the coastal range protecting them from erosion.

The fact that the pine tree grows so rapidly and that cheap hydro-electric power and good railroad connexions are to be found in the same area has suggested the view that cellulose could be produced in Chile at a factory cost much lower than in Finland and Sweden, for example. The international markets which could be served from Chile would in that case be determined by a comparison of the freight charges and the distance from the various producing centres. Before deciding to establish a large industry for export purposes it would be essential to repeat the survey of existing plantings which was carried out in 1945-1946 by the North American Forestry Mission engaged for that purpose by the Corporación de Fomento de la Producción. In that way accurate information could be had on the amount of timber available.

/Textile

Textile Industry

The textile industry may be taken as an example of the situation in the consumer goods industries. Most of the programmes for expansion and renewals projected by the industries in this field were completed during 1950. It would seem that a period of relative stability might now be expected, since any further expansion would entail the risk of not finding an equivalent broadening of the market. In some fields there has already been observed a tendency towards accumulation of stocks, whereas until recently the rate of absorption through demand was very rapid. It is quite conceivable that the seller's market will change into a buyer's market. This may be already happening in the rayon industry where there has been a pronounced increase in production not accompanied by a drop in prices, which has discouraged consumption.

In varying degrees of intensity according to the branch concerned, the industry finds itself confronted with two interrelated problems, that of obtaining supplies of raw materials and that of finance. The reduced supplies of foreign exchange due to the drop in copper prices during the second quarter of 1949 made it necessary to restrict imports of raw materials. The restrictions were relaxed only towards the end of 1950 when the requirement of an import licence was rescinded in view of the improvement in the copper position. The Government itself also became interested in the problem and requested the Corporación de Fomento to import a number of commodities with a view to building up emergency stockpiles. Cotton was one of the first commodities stockpiled. Unfortunately, the world situation changed as a result of the conflict in Korea and the threat of war. The prices of all raw materials have increased and the supplier markets have become less accessible[1].

The rising prices and the less rapid turnover of stocks give rise to a financial problem which can only be solved through the expansion of credit; but here again the situation is not favourable, since there is a tendency as a general measure to restrict banking credits within the framework of the Government's anti-inflation programme.

[1] For example, rayon fibre has doubled in price, rising from 1.5 dollars a kilogramme to 3 dollars a kilogramme in the space of one year. Wool has gone up in price in about the same proportion.

/The fact

The fact that there is at present a lull does not imply that the Chilean textile industry has lost the impetus which brought it to its present heights; portions of the consumer market are still not being satisfied by domestic production which seems to be striving for better quality, and attempting to create new varieties and to find fresh bases for future programmes in increased productivity.

The quantitative progress of the cotton textile industry is indicated by the increase in the consumption of raw material, all of which is imported.

Table 32. Chile: Imports of raw Cotton

Year	Thousands of Tons
1940	10.7
1945	14.7
1946	12.9
1947	10.2
1948	15.6
1949	18.9
1950	17.3 a/

Source: General Department of Statistics.

a/ Estimated from imports for nine months.

Production capacity has increased. The number of spindles rose from the pre-war figure of 48,300 to 73,500 in 1946, and it is estimated that at the present time there are approximately 154,000 in use. The number of looms increased from 2,700 in 1948 to 5,100 in 1950, and the number of automatic machines increased during the same period at an even greater rate, namely from 1,200 to 3,600.

In the process mentioned in the previous Economic Survey of substituting domestic for imported yarn, such progress has been made that more than 90 per cent of the yarn is produced locally, and only very fine grades and special yarns such as mercerized yarns etc., for which no suitable equipment is yet available, are imported. Progress has been made, however, in the production of fine yarns, as grade 60 thread is being manufactured.

The same trend towards better quality and a larger proportion of coloured or printed fabrics instead of unbleached cloth and the development of new types of cloth is to be noted in the textile manufacturing which at the present time supplies more than 80 per cent of the total demand.

The woolen textile industry has continued to develop along the two lines mentioned in the previous Economic Survey: increased volume of production and improvement of the type of product, particularly through a higher percentage of combed fabrics. The raw material, which is almost exclusively of domestic origin, amounts to approximately 10,000 tons a year.

/The following

The following table shows the production of those enterprises which send periodic reports to the General Department of Statistics:

Table 33. Chile: Production of Woollen Spinning and Weaving Mills

Year	Cloth (in thousands of metres)	Yarn (for own consumption)	Yarn for sale	Knitting yarn	Total yarn
			(in tons)		
1943	5,242.0	108.2	857.0	402.8	1,368.0
1944	5,773.2	125.7	652.7	614.2	1,392.6
1945	6,224.3	271.7	709.0	620.8	1,601.5
1946	6,664.6	281.3	590.2	1,250.6	2,122.1
1947	7,375.6	461.0	1,417.0	582.3	2,460.3
1948	7,892.9	705.0	1,645.2	1,302.4	3,652.6

Source: General Department of Statistics.

The rayon industry has developed very rapidly and has succeeded in a few years in supplying almost all of the demand. In 1945 there were 1,000 looms and it is estimated that at present there are approximately 3,000 in operation. This growth may have been excessive, since some hesitation in the market has been noted, but this is due also to the level of current prices.

In 1950 this branch of the textile industry had difficulty in obtaining supplies of raw materials, which must all be imported. Although the carrying out of the Corporación's plans for the institution of a cellulose plant offers some hope, it is believed that at the outset preference would be given to cellulose for the manufacture of paper, which is also much in demand and easier to manufacture.

The newest of the Chilean textile industries, the nylon industry, has been experiencing greater difficulties. Firstly, it faces a machinery problem, since the equipment it possesses is not completely adequate, being the same as that used for rayon. Secondly, there is a supply problem, inasmuch as the foreign suppliers have restricted their deliveries at a time when imports were being facilitated after a period of restrictions.

The outlay necessary to renovate the machinery is estimated at approximately one million dollars.

/Food Industry

Food Industry

The only important change in the manufacture of foodstuffs is to be found in the edible oils industry.

In this branch it is to be noted that the effort put forth during the war to supply demand and replace imports has not been fully maintained.

Table 34. Chile: Production, import and apparent consumption of edible oils

Year	Import	Production	Apparent Consumption	Per Capita Consumption	National Production
	(in metric tons)			(in kilog.)	(percentage)
1939	1,947	7,898	9,845	2.01	80.0
1940	665	9,685	10,350	2.08	93.4
1941	853	14,160	15,013	2.96	94.1
1942	510	13,995	14,505	2.83	96.5
1943	230	13,425	13,655	2.62	98.6
1944	560	15,068	15,628	2.96	96.5
1945	202	22,470	22,672	4.24	99.0
1946	277	10,671	10,948	2.02	97.7
1947	6,807	17,953	24,760	4.48	72.5
1948	8,500	21,855	30,355	5.40	72.4
1949	13,545	-	-	-	-

Source: Industrial and Foreign Trade Yearbooks, General Department of Statistics.

Domestic consumption of edible oils was extremely low in the 30's according to the nutrition studies made by the League of Nations in 1935, at the Chilean Government's request, but rose from 2 kilog. per capita in 1939 to 5.38 kilog., or an increase of 170 per cent. This rise was obtained through increased extraction of oil in Chile. Between 1939 and 1945 the capacity of the plant has been tripled and oil seeds have been imported instead of the finished product. In addition, acreage sown in Chile, especially with sunflower seeds, has been increased. This programme was greatly assisted by the Corporación de Fomento which, in collaboration with the large producers, instituted a system of crop advances and credits to the farmers concerned and guaranteed them fair prices for their products.

Output reached a maximum in 1946 and 1948, but even in the latter year the industry was not working at 100 per cent of capacity as sufficient raw materials were not available. The only possible foreign source of supply, the Argentine Republic, preferred to process the seeds itself and export the oil.

/At the

At the beginning of 1950 there was still a shortage of foreign exchange, owing to the drop in copper in the second quarter of 1949, and as a result of this, the supplies of oil in Chile declined. Efforts have been redoubled to increase domestic production of seeds, but the results of this policy are not yet known.

The general shortage of fats and oil from which the country suffers has been remedied by imports, principally from Uruguay, but with interruptions due to the rise in prices on world markets and the shortage of foreign exchange. As a partial solution for this difficulty, private enterprises have organized whaling expeditions and have established plants for the hydrogenation of the oil to deodorize it and adapt it for soap manufacture.

CHILE: CHAPTER III

Agriculture and Livestock Production

1st Part: Recent Development

Production Trends Since 1925

During the last 26 years agricultural and livestock production in Chile has increased at a somewhat slower rate than that of the population.[1/] Yearly fluctuations in production were especially large until 1935, after which year these fluctuations diminished and the slow rate of increasing production in comparison with population became more pronounced. Since 1935 the production curve, even with all its fluctuations, has fallen below the curve of population growth. The following graphs illustrate the fact that this trend has been apparent since 1925, becoming more obvious after 1935.

A new study has been made to include milk, and calculations have had to be revised. The production of fruits, vegetables, flax fibre, goats and poultry have not been included however.

1/ In the Economic Survey of 1949 a reservation was made on the validity of the agricultural production indices for Chile, because these indices were incomplete: The production of milk, fruits and vegetables, all of which seemed to have increased considerably during the period studied, were not included owing to the lack of data. It was thought that if these products had been included, the increase in agricultural and livestock production would have been about the same as the increase in population.

/Table 35.

Table 35. Chile: Agricultural and Livestock Production
(in millions of pesos at 1937 prices)

Year	Livestock Production a/	Agricultural Production	Total a/
1925	1,093.9	1,234.9	2,328.8
1926	1,002.0	1,375.5	2,375.7
1927	1,006.4	1,336.2	2,342.2
1928	1,088.1	1,742.1	2,830.2
1929	1,096.4	1,712.8	2,809.2
1930	1,099.7	1,815.7	2,915.4
1931	1,060.1	1,349.1	2,409.2
1932	1,164.0	1,306.6	2,470.6
1933	1,187.3	1,800.1	2,987.4
1934	1,196.6	2,003.3	3,199.9
1935	1,191.7	1,677.9	2,869.6
1936	1,195.5	1,767.5	2,963.0
1937	1,180.8	1,803.8	2,984.6
1938	1,116.0	1,776.0	2,892.0
1939	1,222.7	1,965.7	3,188.4
1940	1,250.2	1,797.4	3,047.6
1941	1,289.4	1,691.4	2,980.8
1942	1,246.5	1,740.6	2,987.1
1943	1,192.0	1,924.6	3,116.6
1944	1,258.2	2,141.7	3,379.9
1945	1,253.2	1,984.6	3,237.8
1946	1,342.1	1,921.1	3,263.2
1947	1,280.8	1,931.2	3,212.0
1948	1,280.1	2,191.1	3,399.2
1949	1,471.5	2,190.2	3,661.7
1950	1,542.9	1,838.4	3,381.3

Source: Basic data supplied by the General Department of Statistics.

a/ This series differs from that published in the Economic Survey of 1949 because milk has now been included.

/Recent

Recent Trends and Changes

If the comparative analysis is limited to the years 1945-1950, it can be observed that during these years there has been an 8.4 per cent increase in population and a 4.5 per cent increase in agricultural and livestock production. No absolute value can be given to these percentages because complete data are not available.[1]

Table 36. Chile: Indices of Agricultural and Livestock Production and Population Growth

Year	Agricultural Production	Livestock Production	Total	Population
1945	90.3	95.8	92.3	95.2
1946	88.5	103.4	93.9	96.8
1947	88.6	98.9	92.4	98.3
1948	100.0	100.0	100.0	100.0
1949	99.9	113.5	104.8	101.2
1950	84.0	118.4	96.5	103.2
Increase: 1945-1949	10.6%	18.4%	13.5%	6.3%
Increase: 1945-1950	7.0%	23.6%	4.5%	8.4%

Source: Basic data supplied by the General Department of Statistics.

It should be observed, however, that the results would have been different if the production trend 1945-1949 had been maintained. During the year 1950 there was a sharp drop in agricultural production owing to adverse weather conditions which damaged the wheat and oats crops. The weather is

1/ The index of agricultural production does not include fruit and vegetables, although partial information indicates that there has been a considerable increase especially in fruit production. Livestock production does not include horses, goats and poultry. Poultry production has increased considerably in the last few years and now contributes 500 million eggs and 15 million kilos of meat a year to the national economy, according to calculations made by Germán Greve, Agronomical Engineer and head of the Agricultural Department of "Corfo".

/undoubtedly

undoubtedly the most important factor responsible for the fluctuations, at times very violent, in Chilean agricultural production. This is only natural in view of the characteristics of Chilean agriculture. Wheat is the main agricultural product, and it is grown mainly without irrigation. Consequently wheat production is very dependent on the amount and distribution of the rainfall.

Table 37. Chile: Per Capita Agricultural and Livestock Production
In Chilean pesos at 1948 market prices

Year	Agriculture	Livestock	Total
1945	1,449	872	2,321
1946	1,398	925	2,323
1947	1,377	871	2,248
1948	1,528	866	2,394
1949	1,503	967	2,470
1950	1,244	994	2,238
Difference, 1950 & 1945-1949 Av.	-14.3%	10.4%	-4.8%

Source: Basic data supplied by the General Department of Statistics.

Total per capita agricultural and livestock production in 1950 was lower than the level for the last seven years in spite of the increase in livestock production during the years 1949 and 1950.

Productivity per Active Person

The agricultural and livestock index per active person does not show any appreciable change during the period 1945-1949, in spite of variations. On the contrary, it could be said that the coefficient of productivity per active man shows a trend towards stagnation.

/Table 38.

Table 38. Chile: Agricultural and Livestock Production Per Active Person

Year	Active Population in Agriculture (in thousands)	Agricultural and Livestock Production (1000's of pesos)	Productivity per Active Man: In Pesos	Index
1945	686.2	12,416.8	18,095	99.6
1946	700.6	12,637.2	18,038	99.3
1947	715.3	12,419.6	17,363	95.5
1948	730.4	13,454.8	18,172	100.0
1949	745.7	14,101.3	18,918	104.1
1950	761.4	12,981.3	17,049	93.8
Difference between 1950 and 1945-1949 Av.		-0.002%	-5.9%	

Note: The calculation of agricultural and livestock production has been made with 1948 constant prices. The base year 1948 equals 100.

Source: Basic data on production supplied by the General Department of Statistics; population data by "Corfo".

The sharp decline in the index in 1950 does not reflect a decline in labour efficiency. The lower production of 1950 is explained almost entirely by adverse weather conditions which hindered normal production in the dry-farming areas.

Agricultural mechanization has been considerably increased in Chile during the last few years. This increase can be attributed partly to the fact that the active agricultural population has increased at a slower rate than agricultural activity.

In any case, the stagnation of productivity per active man, together with an increase in mechanization, might be taken to indicate that there has been an increase in temporary unemployment. Because Chilean agriculture is largely subject to weather conditions, there are many agricultural labourers who do not have full-time jobs. This situation may have been intensified during the last 15 years by the increasing predominance of agriculture over livestock production and the immediate effect of agricultural mechanization.

/It is

It is important to stress that no absolute unemployment has occurred, nor has there been notable migration from one property to another, or from the rural centres to the mining and industrial centres or to the big urban areas as a result of agricultural mechanization. Perhaps the only sector of the population affected by the increase in mechanization is that of seasonal labourers. Most of the year these labourers work on road construction and other rural public works, moving to farm work during the cereal harvest. This type of labourer is less needed for farm work now because he has been replaced by mechanical harvesters. Dairy production, which could have absorbed labourers left unemployed by the decrease in some crops or by mechanization, has instead utilized the existing labour supply more intensively without hiring outside workers except for highly-specialized jobs.

Composition

The relation between agricultural and livestock production remained constant during the years 1945-1949. A relative increase in livestock production appeared in 1949, however, and continued to increase during 1950. This is less an absolute increase than a consequence of the sharp decline suffered by agriculture. It is probable, however, that the constant increase of dairy production may reinforce this trend in the next few years. Dairy production is also an important factor in the development of certain livestock lines such as the production of beef and pork.[1]

1/ The beginning of sugar beet production, which is now emerging from the experimental stage into industrial production, and the increased use of hybrid corn developed by the Department of Agricultural Investigation of the Ministry of Agriculture, will also contribute to this trend.

/Table 39.

Table 39. Chile: Agriculture and Livestock Production -- Composition by Groups

Year	Agriculture Millions of pesos	Agriculture Per cent	Livestock Millions of pesos	Livestock Per cent	Total Millions of pesos
1945	7,751.9	62.4	4,664.9	37.6	12,416.8
1946	7,602.7	60.2	5,034.5	39.8	12,637.2
1947	7,605.6	61.2	4,814.0	38.8	12,419.6
1948	8,587.1	63.8	4,867.7	36.2	13,454.8
1949	8,578.0	60.8	5,523.3	39.2	14,101.3
1950	7,216.0	55.6	5,765.3	44.4	12,981.3
Difference between 1950 and 1945-1949 Av.		-10.1%		15.7%	-0.002%

Note: Production is valued at 1948 constant prices.

Source: Basic data supplied by the General Department of Statistics.

During the five-year period 1940-1944, the proportion was 40.2 per cent in respect of agricultural production and 59.8 per cent in respect of livestock production. This shows that livestock production during the years 1945-1949 declined in relation to agriculture.[1/] This fact is not a good omen for general production; for if this trend should continue without an increase in the use of organic and other fertilizers, it is bound to result in soil exhaustion and erosion. At any rate, there exists a slight tendency for livestock production to regain the relative levels attained before 1940.

Domestic Consumption and Exports

The analysis of the composition of agricultural and livestock production from the point of view of its destination shows that, during the last few years, domestic consumption has absorbed not only the increments in production but also part of what was previously exported.

1/ In 1925, the value of production consisted of 52 per cent in respect of agricultural production and 48 per cent in respect of livestock production.

/Statistics

Statistics show that while production has increased 13.5 per cent, domestic consumption has increased 15.3 per cent. This has only been possible through a decrease of 7.6 per cent in exports.

The proportion of agricultural and livestock production absorbed by the domestic market during the years 1945-1949 amounted, on an average, to 92.2 per cent, the remaining 6.8 per cent being exported.

Table 40. Chile: Value of agricultural and livestock production for domestic consumption and for export

Year	Total (In millions of pesos)	Domestic Consumption			Exports		
		Value in millions of pesos	Index	Per cent of total	Value in millions of pesos	Index	Per cent of total
1945	12,416.8	11,445.3	91.7	92.2	971.5	100.4	7.8
1946	12,637.2	11,766.0	94.2	93.1	871.2	90.0	6.9
1947	12,419.6	11,733.5	94.0	94.5	686.1	70.9	5.5
1948	13,454.8	12,486.9	100.0	92.8	967.9	100.0	7.2
1949	14,101.3	13,203.2	105.7	93.6	989.1	92.8	6.4
Difference between 1949 and 1945:	13.5%		15.3%			-7.6%	

Note: The value of production is calculated at 1948 constant prices. The base year 1948 equals 100.

Source: Basic data supplied by the General Department of Statistics. Chilean agriculture thus tends increasingly toward the satisfaction of domestic consumption in the place of exports.

/Food

Food and non-food products

An analysis of the composition of agricultural and livestock production shows that during the last six years a change has been taking place in favour of food products. The production of non-food products during the years 1945-1950 shows a clear tendency towards an absolute decline.[1/]

Table 41. Chile: Agricultural and Livestock Production: Food and non-food products

(Base year 1948 = 100)

Year	Food products		Non-food products	
	Index	Percentage of total production	Index	Percentage of total production
1945	91.4	95.4	114.9	4.6
1946	93.4	95.8	106.3	4.2
1947	92.2	96.2	95.0	3.8
1948	100.0	96.3	100.0	3.7
1949	105.0	96.5	99.5	3.5
1950	96.2	96.0	104.8	4.0
Difference between 1950 and 1945-49 average:	5.3%		- 8.8%	

Note: Calculated at 1948 constant prices.

Source: Basic data supplied by the General Department of Statistics.

In spite of the variations of composition which occurred in the years included in the period under review, production of foodstuffs in 1950 was 5.3% higher than in 1945, while non-food products were 8.8% lower in 1950 than in 1945.

The year 1949 marks the high point of this trend. The decrease in food production in 1950 was due to adverse weather conditions which in general had no influence on non-food production. The non-food group represents a relatively small proportion of total agricultural and livestock production.

1/ Non-food products include tobacco, flax seed, hemp fibre and wool. All other products covered in this study, including wines, are comprised in the food products group.

/A study

A study of the various food products group, arranged according to their main chemical composition, indicates that between 1945 and 1950 the production of protein products has increased 20.8%, vegetable oil seeds 107.4%, and products used in the production of alcohol 11.2%. During this same period the production of carbohydrates decreased 12.4 per cent, a decline which was particularly obvious in 1950 when cereal crops, especially of dry-farming origin, suffered from unfavourable weather conditions. Protein foodstuffs, on the other hand, are less susceptible to climatic influences than foodstuffs showed a moderate tendency to increase during the other years of the period under review.

Table 42. Chile: Food Products: Indices of the quantum of production of various foodstuffs together with their percentage of total production

	Protein		Carbohydrates		Vegetable oil seeds		Alcohol	
Year	Percentage of total	Index of Production	Percentage of total	index	Percentage of total	Index	Percentage of total	Index
1945	41.4	92.2	48.7	90.8	1.6	90.4	8.3	88.2
1946	43.6	100.1	47.9	91.4	1.0	61.5	7.5	80.5
1947	43.7	98.9	47.4	89.1	1.5	90.4	7.4	80.1
1948	40.8	100.0	50.0	100.0	1.6	100.0	8.6	100.0
1949	42.9	110.4	47.0	100.8	2.2	144.3	7.9	96.1
1950	47.6	112.2	40.6	79.5	3.0	187.5	8.8	98.1
Dif. 1950 and 1945:		20.8%		- 12.4%		107.4%		11.2%

Note: Calculated on the basis of 1948 constant prices.

Source: Basic data supplied by the General Department of Statistics.

The above analysis reveals that until 1949 a slight change had been produced in favour of protein and oleaginous products as against carbohydrate products.

This change is even more obvious during 1950, not only because of the decrease in the production of carbohydrates, but also because of the increase of the other two groups, proteins and oils. The agricultural policy of the government, which is already beginning to take effect, favours the development of dairy and livestock production. Hence it is obvious that the above mentioned changes follow a trend which will increase during the coming years when proteins will represent an increasingly greater proportion of food production.

/The introduction

The introduction of sugar beet production will increase the output of hydrocarbons, but it will also cause a large increase in protein products through the utilization of by-products from sugar beet cultivation and processing, through the development of livestock production and through the improved yield of legumes and forage crops which will be grown in rotation with the sugar beet. A similar result is expected from the production of hybrid corn.

Relative position of the products

The principal agricultural and livestock products in 1950 maintained the relative position they occupied during the five-year period 1945-1949. Thus wheat, milk and cattle hold, in this order, the three first places in regard to the quantum of production. However, the quantitative importance of these products in relation to total agricultural and livestock production has changed somewhat. While milk improved its proportion of total production from 15.5% to 19.5% and cattle from 11.8% to 12.6%, wheat showed a decline from 28.2% to 23.9%.

The majority of those products which are partly exported, such as oats, rice, beans and peas, have declined in importance in relation to total agricultural and livestock production. Products for domestic consumption, such as the sunflower, corn, potatoes, milk and tobacco, on the contrary show an improved position. This improvement is not merely a consequence of the decline of the position of export crops, but it represents a net increase in the production of domestically consumed crops. (See table on page 77).

Cultivated area

The total area under cereals, legumes, potatoes and industrial crops showed no appreciable increase or decrease during the years 1945-1950. The fluctuations have never been more than 10% between the extreme positions marked by the years 1945-1946 and 1948-1949. In 1945-1946 there was a minimum area of 1,156.6 thousand hectares and 1948-1949 a maximum area of 1,298.2 thousand hectares.[1] During the agricultural year 1949-1950 practically the same area (actually 2,300 hectares less) as in 1944-1945 was used for the cultivation of the products mentioned above.

1/ An adequate index of productive agricultural areas of the country would be available if annual data for orchards, vegetable gardens and artificial pastures could be obtained. However it is still practically impossible to ascertain if there may have been movements from, towards or between artificial pastures, orchards and vegetable gardens and the possible interchange between these areas and the areas known to be utilized for other products.

/The preceding

The preceding data shows that crops, the areas of which are known, have not as a whole experienced significant changes or fluctuations, and that the few observable changes in areas cultivated have occurred within the maximum and minimum limits already stated. As it can also be observed, variations do not indicate a trend towards increase or decrease of cultivated area, just as if the country had reached its limit of incorporation of new areas into cultivation, which, as we shall see later is not the case.

/Table 43

Table 43 Chile: Quantum of Agricultural and Livestock Production and of each of its components

	Average 1945-49		1950		
	Value of Product in Millions of Pesos	Percentage of total agricultural and livestock production	Value of product in millions of pesos	Percentage of total agricultural and livestock production	Difference between 1950 and the 1945-1949 average
Agricultural production:					
Cereals:					
wheat	3,667.4	28.2	3,103.0	23.9	- 15.4
barley	298.9	22.3	268.4	2.1	- 10.2
oats	241.3	1.9	136.3	1.0	- 43.5
rye	12.1	0.1	14.0	0.1	- 17.4
rice	395.9	3.0	308.9	2.4	- 22.0
maize	198.1	1.5	241.0	1.8	+ 21.7
Total Cereals:	4,813.7	37.0	4,071.6	31.3	- 15.4
Legumes:					
beans	483.9	3.7	412.6	3.2	- 14.8
peas	60.7	0.5	57.2	0.4	- 5.8
lentils	93.9	0.7	52.1	0.4	- 44.5
chickpeas	31.8	0.2	24.0	0.2	- 24.6
Total Legumes:	670.3	5.1	545.9	4.2	- 18.6
Industrial Products:					
sunflower	161.4	1.2	358.0	2.7	+121.8
hemp seed	36.8	0.3	24.0	0.2	- 34.8
hemp fibre	85.4	0.7	56.7	0.4	- 33.6
flax seed	45.1	0.3	39.0	0.3	- 13.5
tobacco	34.5	0.3	41.4	0.3	+ 20.0
Total industrial:	363.2	2.8	499.1	3.9	+ 37.4
Potatoes	1,178.1	9.1	977.6	7.5	- 17.0
Wines and "chichas"	999.8	7.7	1,101.8	8.5	+ 10.2
Total agricultural Production:	8,025.1	61.7	7,216.0	55.6	- 10.1
Livestock Products:					
wool	345.9	2.7	384.9	3.0	+ 11.3
cattle	1,532.0	11.8	1,637.3	12.6	+ 6.9
sheep	575.3	4.4	637.5	4.9	+ 10.8
pigs	502.2	3.9	574.8	4.4	+ 14.4
milk	2,025.5	15.5	2,530.8	19.5	+ 24.9
Total livestock products:	4,980.9	38.3	5,765.3	44.4	+ 15.7
Total Livestock and Agricultural production:	13,006.0	100%	12,981.3	100%	-0.002

Note: The value of production is calculated at 1948 constant prices.

Source: Basic date supplied by the General Department of Statistics.

In this situation the number of people per cultivated hectare has increased from 4.16 in 1945 to 4.45 in 1950.1/

On the basis of the total cultivated area, including the products already mentioned plus vineyards, orchards, vegetable gardens and artificial pastures for which reliable data are available only for the year 1948-1949, the ratio of inhabitants per cultivated hectare is 2.16.2/

Table 44 Chile: Sown Areas (Principal Crops)
(thousands of hectares)

Year	Cereals: Wheat	Rice	Rye	Barley	Oats	Corn	Total cereals A
1944-45	801	44	10	53	104	48	1,060
1945-46	728	48	6	44	71	45	942
1946-47	745	32	7	53	75	47	959
1947-48	819	28	7	62	90	48	1,054
1948-49	867	24	8	55	99	47	1,100
1949-50	833	27	8	45	94	46	1.053
1950-51	803			51	101		

Year	Legumes: Beans	Peas	Chickpeas	Lentils	Total Legumes B	Potatoes C
1944-45	82	21	12	21	136	54
1945-46	82	15	9	27	133	57
1946-47	95	18	11	25	149	54
1947-48	79	21	11	31	142	53
1948-49	79	22	10	20	131	53
1949-50	68	20	7	19	114	50
1950-51						

Year	Industrial Crops: Hemp	Flax Linseed	Tobacco	Sunflower	Total Industrial D	Total annual crops G=A+B+C+D	Vineyards for Wine E	Grand Total G+E
1944-45	4.5	5.9	1.8	20.7	32.9	1,282.9	96.5	1,379.4
1945-46	5.3	4.9	2.2	12.2	24.6	1,156.6	94.5	1,251.1
1946-47	4.2	5.2	2.2	22.3	33.9	1,195.9	93.7	1,289.6
1947-48	5.0	5.1	3.0	25.9	39.0	1,288.0	95.6	1,383.6
1948-49	4.6	7.6	3.6	42.5	58.3	1,342.3	95.9	1,438.2
1949-50	3.2	5.2	3.0	49.8	61.2	1,278.2	95.9	1,374.1
1950-51								

Source: General Department of Statistics; General Department of Agriculture

1/ It is probable that the trend of this ratio might vary fundamentally if the annual cultivated areas for orchards, vegetable gardens and artificial pastures were known for the whole five-year period.

2/ For comparison it can be said that this ratio is 10.0 for Bolivia, 4.3 for Guatemala, 4.2 for El Salvador, 2.5 for Brazil and 1.0 for the United States.

/Agricultural

Agricultural Production

Agricultural production for the period 1945 - 1949 was 10.1 per cent higher than production for the five year period 1940 - 1944. Population increased 13.6 per cent during the same time. The higher rate of increase of population over that of production was intensified in 1950 when production sharply decreased. The latter was 7.5 per cent lower than in 1945 and 19 per cent lower than in 1948 - 1949, whereas the population maintained its rate of growth.

The sometimes violent fluctuations in production are brought about by climatic and economic factors which act jointly or separately. The most influential climatic factors are rain and frost. Lack of rains, for example, which affected the principal dry-farming areas of the country, were the main cause of the sharp decrease in production in the agricultural year 1949 - 1950. Spring frosts can also be detrimental to vegetable and truck farm products, orchards and vineyards.

The economic factors have as their basis the fact that, for the majority of agricultural products, there is no organised market which would give farmers the assurance of a stable demand for their products at prices they could ascertain before the sowing season. It is the usual practice in Chile that when a product has been profitable one year owing to unsatisfied demand the farmers decide to allot a larger proportion of their land to that product. Consequently the subsequent production is greater than the normal or exceptional demand, with the result that prices fall below production costs to the detriment of the farmer, who then withdraws this product from cultivation for one or more years. This factor influences production for both the domestic and export markets.

The production of wheat, rice, barley, oats, hemp, potatoes and all the leguminous products in 1949 - 1950 was below that of the preceeding years. Corn, tobacco and sunflower, on the other hand, showed a tendency to increase. Flax, rye, wines and "chichas", in spite of occasional violent fluctuations, showed no definite tendency.

Each product will now be analised separately.

Wheat

The annual average wheat production for the period 1945 to 1950 was 11.5 per cent greater than the average production for the five-year period 1940 - 1944, a development that was due more to the slight increase in the crop yield in the country in general than to an increase in the sown area.

/In 1950

In 1950 the wheat crop was 9.8 per cent smaller than in 1945 and 18 per cent smaller than the average production for the five-year period 1945 - 1949.

Table 45 Chile: Wheat Production

Year	Sown Area in thousands of hectares	Production in thousands of metric quintals	Yield in metric quintals per hectare
1945	801	9,213	11.5
1946	728	9,045	12.4
1947	745	8,990	12.1
1948	819	10,702	13.1
1949	867	11,135	12.8
1950	833	8,309	10.0
Difference between 1950 and the 1945-49 average	5.2%	15.4%	- 19.4%
Average 1945-49	792	9,817	12.4
Average 1940-44	777	8,551	11.0
Difference between 1945-49 and 1940-44	2.8%	11.5%	10%

Source: General Department of Statistics

The decline in production in 1950 was due entirely to adverse weather conditions, heavy and continuous rain during the sowing season in the provinces of Valdivia and Chiloe. The 47 thousand fewer hectares sown in these provinces was partly balanced by larger areas of spring sowing in the irrigated sections of the central provinces. This sowing was made possible through a well-timed policy of the Government that gave preference in the "Caja de Credito Agrario" to credit requested for wheat sowing and in the "Corporacion de Fomento" to requests for the use of ploughing equipment. In short, the sown area during 1950 was smaller by 34 thousand hectares than in 1949 and greater by 34 thousand hectares than the average for the five-year period 1945-49. From the middle to the end of winter, the rains ceased and a drought followed in the dry-farming region north of Cautin. Later on during the harvest in the region south of Cautin rains interfered with the harvesting. These conditions brought about a

/large

large decline in production in these areas.[1] Thus the average yield for the country as a whole fell from 14.5 metric quintals per hectare in 1945-49 to 10 metric quintals in 1950. The 1950 crop was 151.1 thousand tons less than the average for the previous five years. The result was a 112.3 thousand ton deficit in supply which had to be covered by imports.

Oats

Oats production during the last few years has been characterized by violent fluctuations from one harvest to another which have been due both to changes in the area sown with oats and to the fluctuations in yield. In these circumstances, the annual production has fluctuated between 66.2 thousand and 152.7 thousand tons.

The average production for the 1945-50 period was 72.3 thousand tons against 85.6 thousand for the period 1940-44 and 113.3 during the years 1935-1940. This fall in production has been due to the instability of exports, which several times declined to low levels exactly when production was at the highest peaks. The immediate reaction was for farmers to cut back on oats production and decrease the area sown. It must also be added that oats are grown in rotation with wheat, or as a first crop, in acid and humid soils which have recently been cleared of forests. Climatic conditions are also an important factor in the decision to sow and in the harvesting results.

The small oats crop of 1950, 48 per cent below that of the preceding year and 43.5 per cent below the five-year average for 1945-49, was due to weather conditions as in the case of wheat.

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[1] In the provinces of Valdivia, Osorno and Llanquihue the average yield from 1945 to 1949 was 17.3 metric quintals per hectare, but dropped to 12.1 metric quintals in 1950. Still more important was the decline in yield in Concepcion and Arauco from an average of 8.0 metric quintals per hectare to 4.2 metric quintals per hectare.

/Potatoes

Potatoes

Since 1930, potato production has increased together with consumption needs. This increase is due both to the extent of the area sown and to better yields.

Table 46. Chile: Production of Potatoes

Year	Sown Area in thousands of hectares	Production in thousands of tons	Yield in tons per hectare
1945	54	444.3	8.2
1946	57	634.6	11.1
1947	54	569.2	10.5
1948	53	557.0	10.5
1949	53	533.0	10.0
1950	50	454.5	9.0
Average 1945-49	54.2	547.6	10.1
Average 1940-44	53.4	463.9	8.7
Average 1935-39	49.1	425.9	8.6
Difference between 1950 and 1945-49 average	- 7.8%	- 20.5%	-10.9%

Source: General Department of Statistics

Within the 1945-50 period, the production of potatoes shows no trend. Harvests have been sufficient and in more than one year slightly superior to the domestic consumption requirements, with the exception of 1950. Production in this year fell 20.5% (or 93.2 thousand tons) below the average for the years 1945-49. This decrease is due to the fact that a smaller area was sown and that a decline from 10 to 9 tons in yield per hectare was experienced. The decrease in area is a consequence of the good harvests obtained during the preceding years, which caused the price of potatoes to be relatively lower than the price for other products; and this lower price possibly influenced farmers to reduce the area under potato. Added to this, there was a large increase in fertilizer prices which was not compensated by an equal rise in the price of potatoes; this seems to have been the determining cause influencing the farmers of the southern provinces to reduce their potato crops. Less fertilizers and untimely rains during harvest time produced a decline in yields and also the loss of part of the harvested product.

/A new

A new potato pest, the "tizon" (a phycomicetous fungus called phytophthora infestans), has appeared recently in Chile. It will heavily damage the 1951 crop of the provinces of Chiloe and Llanquihue, the most productive zones of the country. The Ministry of Agriculture through its technical services has taken measures to stop the development of the pest, which will cause the loss of half the 1950-51 potato crop in Llanquihue and Chiloe.[1/] The possibility of introducing pest-resistant varieties into the country is under study.

Beans

The largest bean crops of the last 25 years were obtained during the periods 1930-34 and 1935-39 with 79.2 thousand tons and 79.1 thousand tons a year respectively. Areas sown and yields obtained are practically equal in both five-year periods. During the following five-year period, 1940-44, the sown area of 86 thousand hectares was maintained almost the same as in the preceding periods, but production decreased to 72.7 thousand tons due to a decrease in yield.

During the years 1945-50 the yield of 8.5 metric quintals per hectare was equal to that of the five-year period 1940-44, but annual average production declined to 69 thousand tons due entirely to the smaller area sown. The downward production trend of the years 1945-1950 is particularly noticeable in 1949 and 1950. The primary reason for the decrease in sown area seems to be the substitution of the sunflower for beans. A secondary reason for the decrease of the sown area is the fact that the export price for beans fell from 1003 gold pesos at 6d per ton, in 1948 to 817 in 1949 and 627 in 1950. With lower prices exporters and storers have less interest in signing contracts with the farmers. These contracts, usually signed just before sowing time, fix a price for the product, and the buying agent advances the seed and sometimes the money for fertilizers and cultivation.

It would not be surprising if bean varieties for domestic consumption have also suffered a decrease in sown area as a result of popular preference for rice, which is cheaper.

Barley

During the last few years the annual production of barley has experienced considerable fluctuations. Production was maintained at high levels (over 100 thousand tons a year) until 1938-1939, but since the beginning of the

1/ Ministry of Agriculture statements appearing in "El Mercurio", 13 February 1951.

/last war

last war it decreased to an average of 75.2 thousand tons during the five-year period 1940-1944, rising again to 87.7 thousand tons a year during the 1945-1950 period.

Table 47. Chile: Barley Production

Year	Sown area in thousands of hectares	Production in thousands of tons	Yield in tons/hectare
1945	53	84	1.6
1946	44	69.1	1.6
1947	53	91.7	1.7
1948	62	107.3	1.7
1949	55	93.8	1.7
1950	45	80.1	1.8
Difference between 1950 and 1945-49 average	- 15.7%	- 10.0%	+ 6.0%
Average 1945-49	53.4	89.0	1.7
Average 1940-44	49.3	75.2	1.5
Average 1935-39	74.3	109.7	1.5
Average 1930-34	65.0	105.0	1.6

Source: General Department of Statistics

Prewar exports, though subject to large fluctuations, were generally maintained at between 50 and 100 thousand tons a year, but declined during the war years to levels that fluctuated between 16 and 20 thousand tons. Exports began to recover in 1944 and 1945 and reached 84.7 thousand tons in 1949. This explains why the 1945-1950 production was 12.5 thousand tons higher than that of the five-year period 1940-1944.

Barley production during the year 1950 was 10% lower than the average production for the years 1945-1949. This was due exclusively to a decrease in sown area in comparison with the average of the period under review. The decrease in area had its origin in the fall in export prices and the consequent slack market for the product. The immediate consequence of this situation was the lack of interest on the part of the farmers to sign contracts with the agents and exporters, while on the other hand they made use of the government facilities for sowing wheat. This was also possible because barley is a spring crop raised on irrigated lands.

/Legumes

Legumes

The decrease in production of lentils during the years 1949 and 1950 must be attributed more to climatic accidents than to a decrease in prices. Rains during the development of the lentils (it is a dry-farming product) or unexpected rains during the harvesting season can cause a decrease in yield from 8 to 5 metric quintals per hectare. These factors and the decrease in sown area have been responsible in these two years for a 50% smaller production than the 1945-1948 average.

The explanation given for the lentils also applies to the decrease in production of chickpeas and peas last year.

Sunflower

Among important crops the production of which has increased, the only outstanding increase is that of the sunflower. Between 1945 and 1950 it has increased from 87.2 to 215.5 thousand metric quintals, which represents an increase of 147.7% in the six years reviewed. This increase in production is due to government policy which aims at supplying the country with oil derived from domestic raw material. This policy is expressed through such measures as the fixing of prices, the organization of a raw material buying pool uniting all the oil manufacturers which provides farmers with seeds and credit; the granting of foreign exchange permits for the import of this crop only in cases where domestic demand is not satisfied by domestic production, and technical assistance from the services of the General Department of Agriculture to the farmer through experimentation with different varieties and the propagation of those varieties best adapted to each zone, the teaching of farming methods and the use of fertilizers, etc.

Thanks to this research and educational work of the agricultural services of the country, the sunflower has been introduced in those provinces from Talca to Aconcagua and later will be extended as far as the province of Bío-Bío.

/Livestock

Livestock production

Livestock production in Chile increased 23.6% between 1945 and 1949, while agricultural production between the same years decreased 7%. In 1950 all the products included in the livestock group except wool were being produced in larger quantities than in 1945.

Table 48. Chile: Index of the Quantum of Livestock Production

Base year 1948 = 100

Year	Cattle	Sheep	Hogs	Wool	Milk	Total
1945	98.6	94.3	95.3	123.5	89.6	95.8
1946	110.7	96.4	90.6	111.1	102.2	103.4
1947	100.1	88.0	88.5	101.3	103.9	98.9
1948	100.0	100.0	100.0	100.0	100.0	100.0
1949	107.6	68.4	117.9	96.7	134.9	113.5
1950	110.5	99.1	112.7	118.5	133.0	118.4
Difference between 1950 and 1949	12.1%	5.1%	18%	- 4%	48.4%	23.6%
Difference between 1950 and the 1945-1949 average	6.9%	10.8%	14.4%	11.3%	24.9%	

Source: Basic data supplied by the General Department of Statistics.

Note: Indices have been calculated at 1948 constant prices.

Cattle

The production of cattle in Chile between the years 1930 and 1949, except for slight fluctuations, remained practically stagnant. This stagnation is even more obvious if we consider only the last five years, that is to say, the 1945-1949 period during which the annual fluctuations were of very little importance in comparison with the total stock of cattle, as can be seen in the following table.

/Table 49.

Table 49. Chile: Stocks and Consumption of Cattle in Chile

Year	Stocks	Consumption of Chilean cattle	Relation between consumption and stocks
	(in thousands of head)		%
1930	2,388	463.6	19.4
1935	2,463	453.8	18.4
1940	2,421	427.1	20.5
1945	2,348	350.0	14.9
1946	2,397	393.0	16.3
1947	2,338	355.4	15.1
1948	2,310	354.9	15.3
1949	2,344	391.2	16.7
1950	2,331	401.9	17.2

Source: Basic data supplied by the General Department of Statistics.

The largest stocks of Chilean cattle were recorded between the years 1935-40 with approximately 2,450,000 head. During the following five-year period the number became stabilized at a little less than 2,350,000 head.

The proportion of cattle consumed to stocks was around 20% during the ten-year period 1930-40. It decreased to 14.9% in 1945 and rose again to 17.2% in 1950. The decrease of stocks during the years 1945-49, in comparison with 1935-40, might be due, among other things, to the fact that the 20% consumption ratio seems too high for the extensive type of cattle raising employed in Chile. The limits within which the equilibrium between consumption and stocks would be maintained is about 15%. A relative increase of consumption would lead to the disappearance of stocks, while a decrease in consumption of domestically produced cattle would cause a growing tendency toward a deficit in the supply of Chilean beef and would increase the stocks to levels which the forage capacity of the country could not sustain.

According to experts, the average type of cattle bred and, in general, the conditions under which they are raised (suffering lack of forage during the winter and summer and without shelter during cold weather) retard the development of the animal so that it is only possible to fatten it when it is from two to three years old. This means that the average age of cattle when they are brought to market is three to four years.[1/] This traditional system could be modified

1/ Plan Agrario, pp. 80 and 132.

/by improving

by improving the conditions under which cattle raising is carried on in the country. Younger animals could be slaughtered to make room for an increase in stocks. This process has already started as an indirect result of development of dairying.

The stagnation in the stocks of cattle during the last 20 years and the small decrease during the last five-year period in comparison with 1935-40, seem to indicate that an equilibrium has been reached between cattle stocks and the forage capacity of the country. It would be dangerous to try to disturb this equilibrium without previously ensuring the forage supply and healthful conditions needed to fix this balance at a higher level.

The forage capacity of the country has also stagnated as a result of the erosion process which is affecting large agricultural areas of the country, an effect which has hardly been compensated by the new lands brought under cultivation by means of irrigation projects and the clearing of forests.

The consumption of cattle produced in Chile during the five-year period 1945-50 was considerably below the consumption of the three preceding five-year periods. During the last six years the smallest consumption was 350,000 head in 1945 and the largest was 401,900 head in 1950. The following table shows a slight upward trend which falls short, however, of the level of the thirties.

The per capita consumption of cattle produced in Chile reached its lowest level in 1948. It started to increase in 1949 and continued through 1950, although per capita consumption was still far below the years 1930 to 1940 as can be observed in the following table.

Table 50. Chile: Consumption of cattle (slaughtered animals)

Year	Absolute Consumption a/			Per Capita Consumption b/	
	Chilean	Imported	Total	Chilean	Total
1930	463.6	84.5	548.1	108.1	127.8
1935	453.9	8.3	462.2	101.2	103.1
1940	427.1	70.7	497.8	85.0	99.1
1945	350.0	236.3	586.3	65.4	109.6
1946	393.0	200.0	593.1	72.4	109.2
1947	355.4	202.3	557.7	64.3	100.9
1948	354.9	216.0	570.9	63.1	101.6
1949	391.2	69.3	460.5	68.5	80.7
1950	401.9	56.2	458.1	69.3	79.0

Source: General Department of Statistics

a/ Expressed in thousands of head

b/ Number of animals per thousand inhabitants

/Total

Total per capita consumption of cattle -- both Chilean and imported -- had very few fluctuations between 1935 and 1948, the deficit in domestic production being covered by imports. The sharp decrease shown in 1949 and 1950 was due specifically to a decrease in cattle imports during these two years. As a consequence of restrictions and increased import prices, cattle imports went down to a third or less of the average for the four preceding years.

Table 51. Chile: Indices of Cattle Consumption

	Absolute Consumption			Per Capita Consumption	
Year	Chilean	Imported	Total	Chilean	Total
1930	130.6	39.1	96.0	171.3	125.8
1935	127.9	3.8	80.9	160.4	101.5
1940	120.3	32.7	87.2	134.7	97.5
1945	98.6	109.4	102.7	103.6	107.9
1946	110.7	92.0	103.9	114.7	107.5
1947	100.1	93.6	97.7	101.9	99.3
1948	100.0	100.0	100.0	100.0	100.0
1949	110.2	32.0	80.7	108.5	79.4
1950	113.2	26.0	80.2	109.6	77.7

Source: General Department of Statistics

Base year 1948 = 100

The sharp decline in imports during 1949 and 1950 produced an increase in the consumption of Chilean cattle, although it was not enough to maintain the total consumption levels of the preceding years. An increase in the consumption of Chilean cattle would certainly have the effect of reducing stocks which is not advisable for the economy of the country.

Perhaps the most important change of the last few years with reference to cattle is the government prohibition of the slaughtering of cows younger than four years, a rule which has been fulfilled intermittently since 1944.

/Sheep

Sheep

Sheep breeding in Chile, though showing a 5.1 per cent increase in 1950 over 1945, does not manifest any definite trend during the years 1945-50, as can be seen in the following table.

Table 52 Chile: Chilean Sheep production
(Slaughtered Animals)

Year	Total Production		Per Capita Production	
	Thousands of head	Index	Number of Sheep (per thousand inhabitants)	Index
1930	2,033.8	109.6	474.4	143.7
1935	2,226.5	120.0	496.4	150.4
1940	2,138.8	115.3	425.7	129.0
1945	1,748.6	94.2	326.9	99.0
1946	1,788.3	96.4	329.3	99.8
1947	1,633.1	88.0	295.6	89.5
1948	1,855.0	100.0	330.1	100.0
1949	1,269.8	68.4	222.4	67.4
1950	1,838.2 a/	99.1	317.0	96.0

a/ Provisional figure.

Source: General Department of Statistics

The table shows that the annual production in the thirties was over 2.1 million head, whereas from 1945 onwards production had an average level of 1.7 million head. In 1949 production was 500 thousand head lower than the average for the years 1945-1949, and took an upward turn again in 1950.

Unfortunately there are no data on the stock of sheep, so it is not possible to study its changes. However, taking into account the nature of sheep breeding, that is to say, the fact that all lambs ready for slaughter and a quota of old sheep have to be sent to market every year, it is not too much to assert that there must be a certain parallelism between consumption and production. If this conclusion is correct, it would be logical to conclude that the stock of sheep during the years 1945-1949 must have been about 20 per cent lower than during the 1925-1945 period. The cause of this can be attributed to the low average birth rate of Chilean sheep, a defect that in the majority of cases originates in undernourishment from lack of forage, bad quality forage or abundance of intestinal parasites.[1]

[1] Plan Agrario, page 83.

/These

These limitations, which seem to have increased during recent years, especially where forage supply is concerned, have not been studied sufficiently, and parasite diseases have not been controlled. The overstocking of sheep is one of the most active contributory causes of soil erosion.

In the provinces of Aysen and Magallanes soil erosion, originally caused by surplus herds, has diminished the forage capacity of the region. Moreover, a plague of hares and rabbits, which feed on the best type of grass eaten by sheep, has appeared in this area. Under these circumstances any regulation of the use of prairies is impracticable until the destructive animals are eliminated.

Chilean production of sheep is not enough to cover the domestic demand, and thus every year imports are necessary. On the other hand, Chile exports frozen lamb. All foreign shipments are made from Magallanes, where both domestic and imported herds are slaughtered. A part of the frozen lamb is consumed in the country. Though exact data, especially on the number of sheep exported, are not available, the following table on sheep production, consumption and trade has been drawn up.

Table 53 Chile: Sheep Imports, Exports and Total Domestic Consumption

(in thousands of head)

Year	Domestic production	Imports	Exports	Consumption Total	Consumption Per Capita a/
1945	1,748.6	851.3	171.2	2,428.8	454.0
1946	1,788.3	866.4	395.9	2,258.8	416.0
1947	1,633.1	596.7	257.0	1,972.8	357.1
1948	1,855.0	570.9	208.7	2,217.2	394.5
1949	1,269.2	306.3	300.0	1,276.0	223.5
1950	1,838.2				

a/Number of head per thousand inhabitants.

Source: General Department of Statistics

The total consumption of sheep has diminished considerably during the last few years as a consequence of a fall in imports and an increase in exports. This trend appeared to be particularly strong in 1949 owing to a sharp decrease in domestic production. Though no complete data are available for 1950, a return to the 1947-1948 level can be expected, although production will fall short of that of 1945 and preceeding years.

/A large

A large increase in both imports of sheep on the hoof and frozen lamb exports can be predicted for 1951 as a consequence of the abolition of import duties on sheep entering the country through Magallanes.

Wool

Sheep wool production which, with some fluctuations, had been increasing since 1925, reached a maximum of 18.9 thousand tons in 1945, and subsequently showed a continuous decline. In 1949 it decreased to 14.8 thousand tons. A very similar cycle occurred during the preceding five-year period, as is shown in the following table.

Table 54 Chile: Wool production and Exports.

Year	Production	Consumption a/	Exports	Percentage of total production exported
		(thousands of tons)		
1940	18.1	7.1	11.0	60.7
1941	18.3	6.7	11.6	63.3
1942	15.4	7.8	7.5	48.7
1943	17.3	7.3	10.0	57.8
1944	16.8	8.7	8.1	48.2
1945	18.9	8.9	10.6	56.1
1946	17.0	9.4	7.6	44.7
1947	15.5	9.5	6.0	38.7
1948	15.3	7.8	7.5	49.0
1949	14.8	9.0	5.8	39.2
1950	18.1 b/			

Source: General Department of Statistics

a/ Represents only consumption of domestic wool

b/ Estimate.

Domestic consumption of Chilean wool has increased, the major part being absorbed by the textile industry, while only the surplus not required by the industry has been exported. The average annual production was 14 thousand tons during the period 1937 - 41, of which an average of 10 thousand tons a year was exported the rest being utilized by domestic industry. Due to the excellent prices obtained for long, fine wool, there has been a tendency among farmers with adequate means to change the composition of their herds by replacing them with breeds which yield this kind of wool.

/Swine

Hogs

Hog production increased 18.2 per cent between 1945 and 1950. The average annual production during this five-year period (280,400 hogs) was slightly lower than that of the period 1940-44 (281,800 per year). Between 1925 and 1940 production increased from 154,000 to 263,000 animals annually.

Table 55. Chile: Hog Production (Thousands of Head)
(Slaughtered Animals)

Year	Number of Head	Index
1935	190.9	68.6
1940	262.7	94.4
1945	265.0	95.3
1946	251.9	90.6
1947	246.3	88.6
1948	278.1	100.0
1949	327.9	117.9
1950	313.4	112.7
Difference between 1950 and 1945-49 average	14.4%	

Source: Department of Statistics

In spite of the decrease in the years 1946 and 1947, production since 1948 has shown a tendency to increase which will probably continue.

Up to the present, hog production has not developed on an industrial scale in the country. Almost the whole of the scanty stock is in the hands of farmers who breed hogs of poor quality under deficient feeding and living conditions. Hogs produced under such conditions are hard to fatten and, on being slaughtered, yield a relatively low percentage of meat of good quality along with a very high percentage of lard.

According to experts, it will only be possible to produce swine on an industrial scale in Chile when certain basic resources become available, such as skimmed milk, whey, industrial by-products of slaughtering, and especially corn, at economically appropriate prices. Only the availability of such products will make possible the use of breeds of higher quality.[1]

[1] "Plan Agrario" pp.84 and 85.

/Milk

Milk production

Among livestock products milk has experienced an exceptionally large increase in the last few years. Production increased 78.1 per cent from 422,400,000 litres in 1943-44 to 752,500,000 in 1948-49. Per capita production likewise increased 64.7 per cent from 80.6 litres per person to 131.8 litres during the same period of time.

Table 56 Chile: Milk Production

Year	Total Production		Per Capita Production	
	Millions of litres	Index	Litres per inhabitant	Index
1936	362.4	64.9	80.0	80.6
1940	390.9	70.0	77.8	78.4
1941	398.2	71.4	78.2	78.8
1942	405.5	72.6	79.0	79.6
1943	412.5	73.9	78.7	79.3
1944	422.4	75.7	80.6	81.2
1945	500.1	89.6	93.5	94.2
1946	570.5	102.2	105.1	105.8
1947	580.0	103.9	105.0	105.7
1948	558.0	100.0	99.3	100.0
1949	752.6	134.9	131.8	132.7
1950	643.5	115.3	112.9	113.7
Difference between 1950 and 1945	28.7%		20.7%	

Source: General Department of Statistics

Production in 1950 did not continue to expand, the decline experienced being attributable to an epidemic of a mild form of smallpox (alastrim) which was transmitted to the cows by the milkers who had been vaccinated under the national vaccination program of that year.

Since other livestock products have either remained stagnant or increased very little, it might be asked what factor has been responsible for the large increase in milk production. Milk prices have not been responsible for this stimulus in recent times, for the price of milk has increased relatively less than prices of other livestock products, either taken together or separately, as is shown by the following table.

/Table 57

Table 57 Chile: Price Index of Livestock Products

Year	Livestock group	Cattle	Sheep	Swine	Wool	Milk a/
1945	54.7	53.3	51.1	41.4	61.2	60.5
1946	62.7	75.6	59.4	64.1	66.2	60.5
1947	79.9	80.4	73.4	87.9	69.2	84.5
1948	100.0	100.0	100.0	100.0	100.0	100.0
1949	112.0	123.7	125.4	88.8	126.4	105.3
% increase between 1945-1949	104.8	132.1	145.4	114.5	106.5	74.0

a/ This index is based on prices paid to the producer.

Source: General Department of Statistics, Instituto de Economia Agricola, Comisariato General de Subsistencias y Precios

The increase in dairy production is due to the operation of the Plan for Dairy Development initiated by the Government, which has been applied mainly to already existing enterprises. This Development Plan has improved conditions such as the quality of breeders and cows, sanitation, feeding, buildings and equipment, production controls, teaching of modern working techniques, establishment of industrialized dairy centres, etc., as will be explained below.

The Development Plan, which was not well defined at first, started with the Compulsory Pasteurization Law enacted in 1930 and put into operation in 1935, when State pasteurization plants were operating in the principal cities of the country. This law, which tended to improve the marketed product, influenced the producers to organize themselves in associations and co-operatives which in some regions established their own pasteurization plants, industrial processing of dairy products and factories for the production of concentrated cattle feed.

The "Caja de Credito Agrario" increased its loans for cattle and dairy equipment, and later the "Corporacion de Fomento" from the time it began in 1939 until 1947, granted loans to farmers for the construction of silos, stables, and forage barns, and for the purchase of bulls and milch cows, either bred in the country or imported by the Corporation itself. The Corporation also granted loans to co-operatives for the equipping of plants for the processing of milk, for concentrated feed factories, etc. The loans granted by the Corporacion reached the sum of 44 million pesos.

The Dairy Improvement Act was passed in 1945 and put into operation in 1948. Its objective was to encourage the development and organization

/of the

of the dairy industry on a co-operative basis and to give government assistance to those activities which cannot be carried out on a large scale by private enterprise, such as sanitary campaigns, investigations concerning forage, teaching of better techniques, etc.

Moreover, the Act provides for loans to farmers on convenient terms for the purchase of cattle, the construction of stables, silos, manure pits, etc.

From its enactment until 1950, the resources mobilized by the Dairy Improvement Act amounted to 174,800,000 pesos, 24 millions of which were administered by the Ministry of Agriculture, this Ministry having been responsible for the application of the law in the beginning. The remaining 150,800,000 were administered by the Instituto de Economia Agricola, which has continued to administer the Act since 1948. Out of the total amount, 151,600,000 were used in the form of loans to farmers and producers' co-operatives, and 23,200,000 were employed in various research and training programmes connected with milk production. These programmes included sanitary campaigns against foot and mouth disease and brucelosis, a quarantine station, milk control, laboratories for veterinary and forage research, etc. A good example of the beneficial results achieved by this policy can be found in the sanitary campaigns, for according to the Livestock and Animal Health Department of the Ministry of Agriculture, foot and mouth disease used to be responsible for losses in cattle to the value of 240 million pesos a year. Of this sum cattle mortality accounted for 99 millions and diseased cattle for 141 millions, without taking into consideration the losses in milk production.[1] Anti-aphthic vaccine has been produced in large quantities since 1947 and has reduced cattle losses almost entirely; moreover, it has given dairying a stability it never before possessed.

The effectiveness of the Plan for Dairy Development can be appreciated from the fact that in 1949 milk output attained and even slightly surpassed the goal established by the Consejo Nacional de Alimentacion of 126 litres per inhabitant per year. This goal, however, is still far from the recommendation made by the Hot Springs Conference on "Economic Diet" which lays down that consumption should be 504 grammes per man-day, or about 225 litres per person per year.[2]

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[1] Cited in "Memorandum of the Dairy Department of the Instituto de Economia Agricola", May 3, 1949, on the fulfilment of the Investment Plan of the Dairy Development Act.

[2] Plan Agrario, page 117.

CHILE

CHAPTER III

PART II

PROSPECTS

As we have seen, the progress of Chilean agriculture has in recent years been increasingly slow. The industry may overcome its relative backwardness; but the analysis of existing possibilities shows that in most cases copious investment will be a necessary condition of success.

As was pointed out in the Economic Survey of Latin America for 1949, Chile's agricultural development is hindered by various kinds of obstacles, which, if sufficient incentive existed, might be overcome by investing capital and improving the producers' technique. These obstacles, which have to do with the cultivable land and its effective utilization, methods of cultivation and agricultural research and mechanization, were analysed in the above-mentioned report; but we propose to touch again on those aspects in respect of which new or more extensive information has been obtained or noteworthy changes have occurred.

Utilization of agricultural land

The agricultural land to which the crop rotation system is applied amounts to 5.7 million hectares.[1/] Only 42.7 per cent of this is under cultivation, the remaining 57.3 per cent lying fallow or being put to minimum use as natural pasture for cattle. Even of the irrigated land, which amounts to 1.3 million hectares, some 16 per cent is uncultivated, being used only for natural pasture of small economic value.[2/] There can be no doubt that a better utilization of arable land on the basis of a rational crop rotation system, with more use being made than at present of artificial meadows, and with a reasonable application of fertilizers and improved methods of cultivation, would result in an increase in agricultural and livestock production.

1/ Excluding orchards and vineyards, which account for 169.9 thousand hectares.

2/ These new figures confirm the statement in the Report of the Economic Commission for Latin America for 1949 that there is room for agricultural expansion by the better utilization of cultivated lands.

/ The agricultural

The agricultural research carried out in the country in recent years has brought out a number of methods which might be effective in increasing production. Among them the following may be mentioned as either being already applied or about to be applied:

Hybrid maize[1]

Under plans for increasing the cultivation of hybrid maize, provision is made for supplying seed for 10,000 hectares in the 1951-1952 agricultural year and for supplying total requirements of seed in 1952-1953. The use of hybrid seeds by farmers in the last two years has produced yields of more than 50 quintals per hectare, whereas the country's average yield is from 15 to 17 quintals per hectare over a total area of 47,000 hectares sown with maize. Competent circles consider that the result of introducing hybrid varieties will be to double the present volume of production.

Sugar beet[2]

The Corporación de Fomento de la Producción has completed its researches and experimental work on the cultivation of sugar beet for the production of sugar. Its conclusions are fully favourable to the introduction of the industry into the country.

The project provides for the installation within ten years of three factories with a total annual producing capacity of 36,000 tons of sugar. The raw material requirements of these factories will necessitate the annual cultivation of 8,000 to 9,000 hectares of sugar beet, which will form part of the crop rotation system over an area of about 45,000 hectares. The crops constituting the rotation -- which would be in a four- or five-year cycle -- would be the following: wheat, clover, sunflowers, kidney beans, maize, potatoes, miscellaneous vegetables etc. They would be cultivated in the following order: first year, wheat, clover; second year, clover; third year, clover; fourth year, sunflowers, maize, kidney beans, potatoes and vegetables; and fifth year, sugar beet. The rotation cycle may be reduced to four years by eliminating clover in the third year.

The cultivation of sugar beet, which gives the farmer an excellent economic yield, requires thorough preparation of the soil and the use of large applications of phosphatic, nitrogenous and organic fertilizers which leave the

1/ Information supplied by the Maize Section of the Department of Agricultural Research of the Ministry of Agriculture.

2/ All the information about sugar beet is drawn from various reports prepared by the Corporación de Fomento de la Producción.

/ land in

land in such condition that the crops forming part of the rotation will all produce good yields. This in turn will enable the farmer to employ advanced techniques, including the use of fertilizers in sufficient quantities to obtain yields large enough to repay the cost of the fertilizers and improve the soil when sugar beet is grown. Moreover, the cultivation of sugar beet provides not only the raw material for the factories in quantities amounting to more than 30 tons per hectare, but also an equally large yield of leaves and tops, which are excellent fodder for cattle. If, in turn, the cattle are given proper shelter, and their diet is supplemented with the factory residues (pulp and molasses) and a number of concentrates, they will give an increased yield of milk and provide the organic manure necessary for the cultivation of sugar beet; while at the same time, owing to the increased fodder-producing capacity, the number of animals per hectare on farms growing sugar beet will be greater than elsewhere.

The introduction of sugar beet in the areas where it is planned to install the sugar factories will not displace any crop cultivated under the systems and rotations applied there. On the contrary, it is estimated that the production of maize, sunflowers, kidney beans, potatoes, vegetables and clover in those areas will exceed that which is usual in present conditions.

Local experiments and the results obtained in other countries indicate that the production increase in the 45,000 hectares included in the rotation system, in which sugar beet will take up from 8 to 9,000 hectares will be as follows:

Increased production

	Tons	Value in current pesos
Wheat	9,600	48.0 millions
Milk	74,400	299.1 "
Sugar a/	31,200	191.9 "
Total		539.0 millions

Source: Corporación de Fomento de la Producción.

a/ For the purposes of the calculation, the value of sugar is expressed in terms of the amount which farmers will receive for selling the sugar beet to the factory.

/ Reconstitution

Reconstitution of eroded soils

The Agricultural Research Department of the Ministry of Agriculture has continued its survey, study and classification of 2.7 million hectares of the country's soil, situated in seven provinces, of which Maule, Bío-Bío and Malleco are among those where the soil is most eroded. Taken together, these three provinces present a picture which not only confirms what was said in the Economic Survey for 1949 as to the gravity of the problem, but reveals it in an even more serious form in the light of the new figures. Of the more than 1.4 million hectares of soil surveyed in those provinces, only 12.6 per cent did not show erosion, while of the rest, 47.3 per cent showed slight or moderate surface erosion, with or without trenches, but could still be regarded as arable land, and 40.1 per cent was soil with severe or very severe surface erosion, with or without trenches, at all stages of formation.

The soil conservation work done at experimental stations in the area to which the above-mentioned survey refers and over areas of more than 700 hectares have produced an increase in the yield of wheat from 6.5 metric quintals per hectare in 1935-1939 to 21 metric quintals per hectare in 1949.

In addition, the use of the conservation method, which includes in the rotation forage plants grown on unwatered land, has enabled cattle to be kept throughout the year and has also made possible the seasonal fattening of such cattle. Thus not only has the soil been reconstituted and its yield increased, but a permanent forage-producing capacity has been established and costs have been considerably reduced in spite of the increased capital investment which the application of the programme has necessitated.

With regard to the forage plants growable on unwatered soil that are needed to carry out the erosion-control and soil-conservation plans, 225 hectares are being reserved for producing seeds of those species which experiments made in various years have shown to possess the qualities for the purpose in view.

Obviously a programme for the large-scale application of erosion-control and soil-conservation procedures may result in a large increase in production.

/ Use of

Use of fertilizers

One of the means by which substantial increases in the yield of agricultural production per unit of cultivated surface may be obtained is the rational use of fertilizers. To what was said in the Economic Survey for 1949 it may be added that in Chile the consumption of fertilizers has increased considerably in recent years, rising from 91 kilogrammes per cultivated hectare in 1945 to 193 kilogrammes in 1948-1949 and 1949-1950. Consumption has not increased in the last two years owing to the sharp rise in the prices of the most commonly used fertilizers, these rises in most cases -- especially those of phosphates and nitrates -- being greater than the increase in the prices of the corresponding agricultural products. At all events, there is a marked tendency on the part of farmers to use more fertilizers, as they are becoming increasingly convinced of their real economic advantages.

According to expert opinion, the composition of the soil indicates that its most important requirements are lime and phosphatic fertilizers. In the Economic Survery for 1949 it was stated that the national sources of phosphates seemed insufficient, and that statement has been confirmed by the Instituto de Economía Agrícola,[1] which has ascertained that they amount to rather more than 300,000 tons of apatite and 300,000 tons of red guano. There is also an annual supply of 10,000 tons of bone meal and between 2 and 3,000 tons of white guano. The annual consumption of phosphatic fertilizers rose from 89,400 tons in 1945 to 120,900 tons in 1948. The annual minimum requirements of phosphatic fertilizers have been estimated by the General Department of Agriculture at 192,800 tons, and maximum requirements, according to the Instituto de Economía Agrícola, would amount to 450,000 tons.

So far as the supply of calcareous fertilizers is concerned, the problem is not the volume of reserves -- which are more than sufficient for the country's requirements -- but their transport from the places where the lime is burnt to the land where the fertilizer is to be applied. The shortage and high cost of transport facilities has been the determining factor preventing the more widespread

1/ Instituto de Economía Agrícola: Estudio de producción, consumo y comercio de abonos fosfatados.

/ use of

use of fertilizers by the farmers. The Instituto de Economía Agrícola has a plan for distributing calcareous fertilizers based on the encouragement of producers, the establishment of distribution centres equipped with supply lorries, the provision of credits for farmers, etc. The development and credit institutions and the transport enterprises will participate in the plan, which has not yet been put into effect.

The national sources of supply for nitrogenous and potassic fertilizers are so abundant as compared with the requirements of consumption that they are not at present a subject of concern.

It will therefore be seen that the prospects of increasing production on the basis of a better use of fertilizers are considerable. If no new sources of phosphatic fertilizers are discovered, it will be necessary to import in increasingly large quantities. Imports on a considerable scale began in 1948.

Preparation of new land

The area under cultivation may be increased by cleaning and clearing woodland, irrigating land not at present watered, improving the irrigation of other land at present insufficiently watered, and draining and drying damp or marshy soil. The following table shows the area which may be added to the country's cultivable land in this way.

Table 58 Chile: Area adaptable for agriculture
(in hectares)

Irrigation:	
(a) Gravitational (improvements and new irrigation)	803,600
(b) Mechanical	200,000
Combination of drying and irrigation	34,600
Drying only	73,800
Drying and clearing	83,800
Cleaning and clearing between Maule and Llanquihue	800,000
Cleaning and clearing between Chiloé and Aysén	1,500,000
Total:	3,495,800

Sources: General Department of Agriculture; Irrigation Division of the General Department of Public Works; Corporación de Fomento de la Producción.

/ It is

It is probable that rather more than a third of the area thus adaptable for agriculture, including the land available in the provinces of Chiloé and Aysén, is only suitable for stock-farming, and hardly at all for cultivation. The other two-thirds would provide possibilities of rotational crop-farming of the most varied types, according to the nature of the soil and the characteristics of the area.

Irrigati n

The total irrigation works constructed by the State cover an area of 298,564 hectares,[1] of which 206,694 hectares represent freshly irrigated soil, and 91,870 hectares soil the irrigation of which has been improved. On the basis only of the 211,144 hectares supplied with irrigation by works completed and declared to be under exploitation in the last twenty-five years, the average area of land effectively incorporated in production every year as a result of irrigation works constructed by the State works out at about 7,300 hectares.

Private initiative, which was practically paralysed, is reviving, thanks to the credits granted by the Corporación de Fomento, and since 1939 has succeeded in placing about 3,000 hectares a year under irrigation. This, together with the 7,300 hectares brought annually under irrigation by State irrigation works, gives a total of 10,300 hectares, which constitute the annual addition to the irrigated area of the country.

Since in 1950 the country had a population of 5.8 million inhabitants and an area of irrigated land of 1.3 million hectares, the ratio is 4.46 inhabitants to every hectare of irrigated land. As the population is increasing at the rate of 90,000 a year, 20,200 fresh hectares will have to be added annually to the area of cultivated land if that ratio is to be maintained. Thus there is an annual deficit of 10,000 hectares, and if this is not rectified the ratio will constantly deteriorate.

1/ This figure comprises:

Works under exploitation	211,144 hectares
Works not declared to be under exploitation but actually in operation	37,420
Works which, though still under construction, are already in operation	50,000
Total:	298,564 hectares

/ Irrigation

Irrigation plans

The following table gives a summary of the irrigation plans now being carried out or projected by the Irrigation Division of the General Department of Public Works.

Table 59 Chile: Irrigation plans

Works	Area under irrigation		Total area controlled	Cost in millions of pesos
	Hectares added	Hectares improved		
Under construction	67,200	146,160	213,360	420
Shortly to be started	32,000	- -	32,000	330
Plan completed, but not financed	2,000	1,600	3,600	27
Final project under consideration	193,520	52,750	246,270	3,800
Preliminary project completed	94,250	12,000	106,250	
Preliminary survey and research completed	201,750	400	202,150	500
Total:	590,720	212,910	803,630	5,077

Source: Irrigation Division of the General Department of Public Works.

The Irrigation Division has reported that it has sufficient resources to develop its irrigation plan within a period of five years, and estimated in 1948 that the increased production obtained would be to the value of some 6,370 million pesos or almost 50 per cent above the present volume.

Since the resources ordinarily available are only sufficient to put rather more than 7,000 hectares a year under irrigation, the Government, through the Corporación de Fomento, has requested the financial assistance of the International Bank for Reconstruction and Development in order to carry out certain works included in the above-mentioned plan. Among them may be mentioned: (a) the Elqui River irrigation plan, which provides for the pumping-up of subterranean water to improve the irrigation of 20,500 hectares now under cultivation and irrigate 8,500 fresh hectares, the plan to be carried out in stages, and (b) the Nilahue project, which envisages the construction of a reservoir with channels providing for the irrigation of 20,300 hectares of land

/ at present

at present unwatered. A loan of 14 million dollars is being negotiated for these two projects, 2.8 million of which would be for the development of the first part of the Elqui River project and 11.2 millions for the whole of the Nilahue project. The land brought under irrigation by means of these two projects will be among the best soil in the country, being situated in areas of temperate climate without frosts, where it is possible to obtain an extremely varied production at all seasons of the year. It is estimated that the first stage of the Elqui River project would take from 18 to 20 months to complete and the Nilahue project from 3 to 4 years.

It has been estimated that the Nilahue and Elqui irrigation works alone will permit of an annual increase in production of all kinds equivalent to about 866,000 quintals of wheat.

The Corporación has studied various irrigation projects based on the artificial raising of surface water by means of pumps worked by electric energy derived from plants constructed by the Corporación itself. In 1951 work was begun on four projects for the irrigation of 11,250 hectares at a cost of 26 million pesos. The cost of the works and installations will be rather more than 2,300 pesos per hectare.

The Corporación has also studied the problem of irrigation by means of subterranean waters, and already has six borers at work on private estates. There is a strong demand for the construction of tubular wells or soundings; and for that reason, in conjunction with the good results obtained from the work already done, the Corporación is planning to import eight more borers which, together with the six already in the country, will, it is estimated, drill about 100 wells a year. These would provide water for the irrigation of 2,000 hectares, a figure which represents the possible annual increase of irrigated soil by this method. The Irrigation Division has two borers at work in the north of the country. Two private firms are also engaged in boring.

Improvement of irrigation systems 1/

It is a notorious fact that in Chile the water available for irrigation is badly and wastefully used. The results of this are, first, that less land is under cultivation than might reasonably be expected in view of the volume of water actually supplied by the existing channels; second, that the yield is less, and,

1/ Plan Agrario, op. cit. pages 216, 224 and 246.

/third

third, that erosion takes place, with removal and loss of soil and especially of its fertilizing elements, both natural and those added by the hand of man. If this problem is not so serious as it might be, it is because the greater part of the irrigated land is flat or only slightly sloping.

The bad practices in the use of water for irrigation have also been pointed out by the foreign technicians called in by the Corporación de Fomento, who have recommended the immediate adoption of measures to spread the use of better systems of irrigation.[1/] In their report the view is expressed that, by co-ordinating a system of this kind with the construction and operation of irrigation works, a decided increase would be obtained in the yield of the all too scanty water supplies, and erosion due to irrigation would be reduced. The result would be reflected in bigger harvests.

Adaptation of woodland

The Government's plans to make wooded areas suitable for agriculture relate to two different regions and also have different purposes.

Among the plans which the Corporación de Fomento intends to put into immediate effect is the import of 55 fully equipped forest clearing machines, by means of which it will be possible to clear 10,000 hectares a year and reclaim within six years a minimum area of 60,000 hectares for cultivation in the provinces of Maule and Llanquihue.

The land thus prepared will be suitable for the sowing of wheat, oats, flax for fibre, sugar beet and various forage crops. The increase in production which may be expected to result from the work of the clearing machines is estimated at the equivalent of 500,000 metric quintals of wheat a year.

The other plan for the adaption of woodland concerns the provinces of Aysen and Continental Chiloe, which together have an area of 11.7 million hectares, of which 850,000 are cultivated, there being still 1.5 million hectares of land suitable for the pasturage of cattle, sheep and pigs available for settlement. The plan provides for the complete development of the area by means of an autonomous corporation of the same kind as the Tennessee Valley Authority in the United States.

1/ Informe preliminar para un programa de mejoramiento de métodos de riego en Chile, presented to the Corporación de Fomento by the Fredrick Snare Corporation on 12 June 1950.

/ If the

If the area and boundaries of the properties occupied without title are fixed on a reasonable basis and the resulting surplus of land settled, together with the unoccupied State lands and lands at present leased, it is considered that the whole area would provide a margin for the formation of about 8,700 holdings, 850 of which would be small farms on land suitable for sheep-rearing; and the remaining 7,850 lots, at present overgrown with forest, might be used for stock and dairy-farming (cheese, butter) and the raising of pigs. As there are already 1,874 private estates in the area, there would be room to install more than 6,800 settlers' families quite apart from the possibility of providing work for many more persons in all the activities which settlement must necessarily bring with it, as well as in forestry, fishing, industry, trade and mining.[1]

The cost of this plan would amount to 5,000 million pesos, of which 3,500 million would be for the installing of the settlers and 1,500 million for public works. The cost to the State would therefore be about 737,000 pesos for each family of settlers. The cost per hectare would be about 3,300 pesos. It is believed that the whole of the 3,500 million to be invested in installation would be recoverable directly, and that the 1,500 million to be invested in public works would be recoverable indirectly through taxation.

The goal which it is desired to reach within a period not yet determined is to build up in the area a herd of 1.5 million head of cattle and 1 million sheep. This would make it possible to place each year on the market some 300,000 cattle, 400,000 sheep, 3,500 tons of wool, and also butter or milk on an industrial scale to satisfy the country's shortage of those products. The value of cattle and dairy produce would amount to about 2,000 million pesos a year.[2]

Among the additional branches of production that would necessarily have to be developed as a rational plan of settlement was put into effect would be that of timber. According to the North American Forestry Mission, the area of exploitable woods in the region amounts to 2,270,000 hectares, with an average of 24,000 feet of timber per hectare.

1/ Reports of the Economic Rationalization Research Commission for Aysen and Chiloe, Ministry of Land and Settlement (not yet published).

2/ Reports of the Economic Rationalization Research Commission for Aysen and Chiloe, Ministry of Land and Settlement (not yet published).

/Agricultural

Agricultural Mechanization

All that need be added to what was said in the Economic Survey for 1949 is that in the middle of 1950 the Government ordered a reduction from 60 to 50 pesos per dollar in the rate of exchange for the import of sacks, agricultural machinery and tractors. At the end of the same year, a new Act relating to the work of the Consejo Nacional de Comercio Exterior authorized the exemption from customs duty of imported agricultural machinery. The result of these measures has been a considerable fall in the price of such machinery, which in turn has increased the incentive to mechanized agriculture.

Agricultural Technique

With an eye to the possibility of increasing agricultural production by a substantial improvement in technique, the Chilean Government recently concluded an agreement with the United States Institute of Inter-American Affairs for the purpose of applying Point Four of the Truman Plan to Chile. Under that agreement, the country is to be visited by North American technicians who will co-operate with Chilean technicians in surveys and investigations of Chile's requirements in respect of agriculture and stock-farming and the resources available for satisfying those requirements. For that purpose programmes based on working projects will be established. They may take the form of "the introduction and development of better varities of plants and animals; improved nutrition; storage and sale of grains; soil and water conservation; irrigation; increase in cultivable area and introduction of modern implements and methods of cultivation".

The Government has also entered into an agreement with the United Nations Food and Agriculture Organization (FAO) whereby that Organization will render technical assistance, sending to Chile a missinn of experts among whom will be specialists on economic policy, agricultural statistics, markets, the administration of agricultural projects, plant physiology and agricultural chemistry. For six months these experts will assist Chilean technicians in developing their work programmes and will suggest the steps they consider advisable to secure a more satisfactory fulfilment of the purposes in view.

/The

The above-mentioned agreements show the importance that the country has attached to technical research and assistance which is a vital aspect of the drive to increase the production of agriculture and stock-farming: This is the more fortunate since until recently the belief was very widespread that all the problems of agricultural development could be solved by remunerative prices and abundant, cheap and indiscriminate credit combined with mechanization. There is no doubt that such factors, particularly the last two, are very important; but unfortunately the same degree of importance has not been attached to agricultural technique in all its aspects. One of the effects of applying that technique will be an intensification of research, which will provide -- and has in part already provided -- the information necessary for the rational planning of production and the appropriate direction of credit towards those activities which are of most value to the country.

IV. MINING PRODUCTION

Over-all development of mining production

The contribution of the mining industries to global production in Chile has been declining in relative and absolute value over the last few years, as is shown by the following table:

Table 60 Chile: Quantum of mining production

Years	In millions of pesos at 1940 prices	In percentage of total production
1940	1,702	16.7
1945	1,837	16.1
1946	1,646	13.9
1947	1,874	15.2
1948	1,974	15.3
1949	1,722	13.1
1950 a/	1,627	13.0

Source: Corporación de Fomento de la Producción y Dirección General de Estadística

a/ Provisional calculation.

Although mining is showing a decline internally, it has not ceased to be the basic factor in exports: mining products in 1949 and 1950 represented more than 80 per cent of the value of exports, as against an average of 71 per cent in 1945 and 1946.

The different importance attached to mining for the domestic market and mining for the export market is one of the characteristics of the country's economic growth. Mining, an activity that is traditionally directed towards the foreign market -- since the amount consumed locally is very small -- has improved its relative position in the export trade which has ceased to grow or is declining, while the rest of the country's productive activities and industry in particular have been developing in the direction of the home market, at least until 1948.

Mining has another peculiarity which explains its "outward" orientation, namely, the fact that it was for the most part created by foreign undertakings which supply the country in which their capital originates with raw materials. In this way, only part of the value of the minerals exported remains

/in the

in the country, in the form of wages, costs and local taxation, because the companies' imports are also financed out of their own assets and, for various reasons, they are generally interested in receiving their supplies as far as possible from outside the country.

In the last few years there has been very little new investment of this kind in Latin America, the oil fields of Venezuela being one of the few exceptions. This is one of the reasons for the decline in mineral exports in practically the whole region, for deposits which are exhausted or become marginal are not always replaced by the opening up of new deposits.

Mining activity can also be expressed in the form of the number of workers employed, which is about 65 thousand, about 50 thousand being employed in the major mining industries. In the latter there is a noticeable tendency in Chile and in general to employ fewer workers.

Table 61 Chile: Workers employed in the major mining industries

Years	Copper	Iron	Coal	Sodium Nitrate	Total
1940	18,390	417	14,616	21,383	54,806
1943	20,550	212	16,858	19,949	57,569
1945	17,385	261	15,662	18,511	51,819
1946	14,807	310	15,292	22,052	52,461
1947	15,524	376	15,500	21,754	53,154
1948	14,962	418	15,839	22,944	54,163
1949	12,996	450	14,755	23,544	51,745
1950 a/	11,011	522	15,196	22,940	49,669

Source: Dirección General de Estadística

a/ Average January to September

Maximum employment was reached in 1943, when the mining industry was engaged in co-operating in the war effort. Since that time, with some variations brought about by strikes and the discontinuation of work in certain exhausted or marginal mines, the number of workers has been decreasing, but the decrease has occurred almost entirely in copper-mining. The manpower employed in coal-mining is kept at an almost constant level and in nitrate extraction the number of workers employed is greater than before and immediately after the Second World War.

/The fall

The fall in the number of workers employed has been the result, in the majority of cases, of a rise in productivity, as the following table shows:

Table 62: Chile: Workers' productivity in the major mining industries

(in annual tons per worker)

Years	Copper	Iron	Coal	Sodium Nitrate
1940	19.8	4,192	140.9	69.4
1945	27.0	1,060	132.7	74.8
1946	24.4	3,797	128.6	74.8
1947	27.5	4,622	133.4	79.1
1948	29.7	6,486	141.0	77.9
1949	28.5	6,096	140.8	75.2
1950 a/	31.6	5,425	142.4	68.1

Source: Direccion General de Estadística

a/ Provisional estimate on the basis of the first nine months.

In the case of large-scale copper mining, as was shown in the previous Economic Survey, greater productivity has been achieved through the constant effort of the undertakings to reduce their costs, which were rising owing to the current state of inflation in Chile. Whereas on the one hand the rate at which the undertakings are forced to exchange currency has remained stable for almost 20 years, on the other hand the wages to be paid in local currency have been constantly rising. This situation has been an incentive to the undertakings to mechanize mining and other phases of their activities, and to reduce their employment of manpower, whose growing incidence on costs could not be compensated in terms of foreign currency.

In the copper-mining industry, productivity in 1949 and 1950 was influenced by the reduction in operations decided upon by the undertakings because of the fall in the price of the metal in April 1949. In that year, the labour force could not be cut down at the same rate as the actual mining. In 1950, however, the industry operated with a hand-picked labour force owing to the dismissals of the preceding year.

In coal-mining, productivity has been improving since 1946 and has now regained pre-war levels, chiefly through the settlement of workers' disputes and the abandonment of certain high-cost mines. However, mechanization in this branch of the mining industry has hardly been started yet in many mines.

/In the

In the case of iron, the productivity figures show great fluctuations, and production has only returned to its normal level during the last three years.

Copper mining

During the last two years, copper has suffered from periods of violent fluctuation, capable of wrecking the economy of countries which base an important part of their resources on copper production. From August 1948 to March 1949, the price of copper had been kept stable at 23.4 centavos a pound. A sudden drop brought it in three months to 16.7, because of the impression that copper consumption was below production capacity. Then came a phase of slow recovery, which was accelerated as the international situation grew more tense and the requirements of rearmament were added to civilian consumption. By the end of 1950, the price of copper had risen above the highest levels of 1948.

Production in Chile has not yet returned to the figures for wartime, when the ore extracted had a content of about 500,000 tons of fine metal, however it is being kept above the 1940 level.

Table 63: Chile: Copper Production
(in thousands of tons of fine metal)

Years	In bars b/	Concentrates c/	Ores c/	Total
1940	347	6	9	363
1945	462	3	5	470
1946	359	2	0.6	361
1947	408	11	7	426
1948	425	13	6	445
1949	351	17	3	371
1950 a/	331	1	2	334

Source: Dirección General de Estadística

a/ Provisional calculation on the basis of the first nine months.

b/ Corresponds only to large-scale mining.

c/ Corresponds to exports from the small-scale mining.

The maximum for the past-war period was achieved in 1948 with 445,000 tons, as 1945, when war-time factors were still operating, must be disregarded. In the two critical years 1949 and 1950, production was very similar, as the decline which started in the second quarter of 1949 was maintained until the beginning of the second quarter of 1950.

/In copper

In copper production circumstantial factors should be distinguished from long-term factors. First among the circumstantial factors is demand during wartime or emergency periods which gives a sharp impetus to mining activities. Mention should also be made of the strikes and stoppages of the plants for technical reasons, which have occurred on several occasions during the last few years. On the whole, the trend is the result of the relation between the natural growth of consumption and the gradual exhaustion of the mines. Chile is in an excellent position as regards its reserves, which have not been completely surveyed, but an increase in mining and refining requires investment.

As has been explained in another part of this Survey (Chapter on copper mining in Latin America), the production of certain Chilean mines belonging to foreign undertakings is tending to decrease, for reasons connected with the structure of the deposits. The surface layer of oxidized minerals is on the point of exhaustion, and it is necessary to mine the sulphurous ores which need completely different smelting plants. However, proper machinery is not immediately available. In the case of the largest mine in the country, the Chuquicamata mine, the reserves of oxidized ores will probably be exhausted by 1959, but if the new units planned for the processing of sulphurous ores, which will involve an investment of $170,000,000, are constructed, the mine may develop a production capacity very like its present one by 1953.

In other cases, the progressive impoverishment of the ore through reduction of the copper content has made certain mines or parts of mines marginal and only worth exploiting if prices reach a particular level or with official subsidies as was done during the last war. The absence of electric power in certain areas has also acted as a depressing factor.

For these reasons, no great increase in Chilean copper production can be expected during the next ten years. It is most probable that its relative position in providing supplies for world consumption will weaken, unless the present shortage of copper brings about heavy investment.

In small- and medium-scale mining, which the Chilean Government has sought to encourage through a high rate of exchange and investment in a refinery now being set up at Paipote, the position is better, but the part played by this sector in copper production as a whole is too small to influence exports.

/Moreover

Moreover, the cost of exploiting the majority of the national mines is much higher than in the case of the foreign companies, owing to the lack of machinery, although these deficiencies are not justified in view of the small dimensions of the deposit.

Nitrate

Chilean nitrate occupies the second place among minerals as a producer of foreign currency. Although it has experienced many ups and downs in its struggle with synthetic nitrogenized fertilizers, since 1946 it has been possible to sell all that could be produced. In the following table annual production is given in thousands of tons, including the extraction of iodine, a by-product.

Table 64: Chile: Production of nitrate and iodine

Years	Nitrate	Iodine
	(thousands of tons)	
1940	1,485	1,400
1945	1,383	741
1946	1,947	661
1947	1,631	1,262
1948	1,786	853
1949	1,769	75
1950	1,610	456

Source: Dirección General de Estadistica and Corporación de Ventas de Salitre

During the war, production was restricted owing to the shortage of shipping, but after the war, the destruction of the German synthetic industry, which had been the chief producer of nitrogen, together with the need for increasing food production, produced a new incentive which brought the entire production capacity into play. The visible deficit in the supply of nitrogen for world demand encouraged the speedy construction of plants producing

/various

various synthetic fertilizers, in most cases with assistance from the international lending agencies. To this policy was added the transfer to private hands, for exploitation, of the vast nitrogen plants constructed during the war for military purposes in the United States of America. 1/

The world consumption of nitrogen continued to increase all this time, but world production capacity increased faster and in 1949 - 1950 equilibrium was achieved between supply and demand. Owing to its special qualities, Chilean nitrate has always commanded a higher price, per unit of nitrogen, but the margin decreased as the market approached its present state of equilibrium. On the other hand, since 1934 Chilean nitrate has been subject to the same system of exchange as the large-scale mining industry, i.e. it has been forced to exchange the dollars which it needed to cover its production costs inside the country at a rate of 19.37 Chilean pesos to the dollar. Inflation, with the rise in wages and the increased cost of materials and services, brought about a persistent increase in costs which would have compelled all that part of the industry which uses the traditional system of production (Shanks process) and has the highest costs, to close down in 1949.

In view of this situation, in 1949 the Government altered the exchange rate at which the nitrate industry was obliged to operate and in 1950 it was altered again. In accordance with the most recent provisions to be applied during the nitrate year 1950-1951, only 800,000 dollars will be changed at the exchange rate of 19.37. The rest of the foreign exchange will be liquidated at the rate of 50 pesos to the dollar, which gives an average exchange rate of 49.23 pesos to the dollar, as against 41.23 in the year 1949-1950.

1/ During the war, the Government of the United States promised Chile that the nitrogen industry would not be carried on after the end of the war. The urgent need for food throughout the world, which has already been referred to, compelled the Government of the United States to revise its policy with regard to the industry. The plants were sold to private owners at an average price of 88 dollars per ton-year of production capacity, as against the 250 dollars it would cost to replace them under present conditions. The owners are thus at an advantage in their competition with Chilean nitrates, since their capital charges are much lower.

/In spite

In spite of these exchange facilities, production has been decreasing owing to the exhaustion of the land which was being worked by some of the Shanks plants, and if Chile is to retain its position in the world nitrogen market, it will be necessary to install new plants or to expand the capacity of existing ones. However, an installation on the Guggenheim system, which at present is producing at low cost, would mean a total investment of about 270 million dollars, which it is almost impossible to obtain.

For this reason, and in view of the possibility that the fall in nitrogen prices on the world market might continue, the Chilean nitrate industry has devoted considerable effort to the study of new extracting processes which will make it possible to produce the nitrate at lower cost and in plants requiring less investment. Two new processes which answer these requirements have been developed.

The first, known as solar evaporation, consists of treating minerals (caliches) already worked on by the Guggenheim process, with cold, fresh water in order to extract the rest of the nitrate, maintaining a certain equilibrium between the various compound salts which form the almost insoluble residue and subsequently precipitating them by solar evaporation in large tanks made of impermeable clay, in the ground itself.

This process will make it possible to produce at lower average cost and to recover more of the nitrate and potassium contained in the mineral. In addition, production capacity will be increased by means of a relatively small investment.

The companies have undertaken to have the first unit with a production capacity of 50,000 tons a year by this system in operation by 30 June 1951 and to obtain, with the Government's guarantee, funds for a considerable expansion of this new method of work.

The second system consists of treating the finely pulverized mineral directly with a counter-current of cold water in order to dissolve the salts

/entirely

entirely in very weak solutions. This extraction can be done in a few minutes, as compared with the present system which takes more than a day and therefore makes possible an appreciable reduction in the capital invested per productive unit.

The solution is later concentrated by one process or another, the chemical reactions being identical with those produced by the system of solar evaporation.

The advantages of this system over the earlier ones lie in the fact that it makes it possible to obtain nitrate from the refuse already treated, without incurring mining costs.

As in the case of solar evaporation, 96 to 98 per cent of the sodium nitrate contained in the minerals would be extracted and a larger proportion of potassium nitrate would be produced.

A pilot installation on a semi-industrial scale has been in operation for more than a year at the "Victoria" plant, and the splendid results achieved by this new method will make it possible to design a new unit on a commercial scale.

In 1951 the Chile nitrate industry intends to invest about 8 million dollars of its profits in constructing units which will make use of these two systems, and in mechanizing the port of Tocopilla, from where more than two-thirds of the total production is shipped.

The Government has sought to encourage these investments by the nitrate companies and in October 1950 it came to an agreement with them whereby the favourable rate of exchange accorded to them would be conditional upon the undertaking given by the companies to set up these new systems of exploitation.

/Iron ore

Iron ore

From a state of almost complete stoppage during the war, owing to the lack of means of transport, iron-mining has gradually recovered and has now gone beyond the levels of production achieved before the war.

Table 65. Chile: Production of Iron ore

Years	Weight of ore (in thousands of tons)	Metal Content (in thousands of tons)	Average Grade (in per cent)
1940	1,748	1,061	60.7
1945	277	173	62.4
1946	1,177	738	62.7
1947	1,737	1,084	62.4
1948	2,711	1,681	62.0
1949	2,743	1,663	60.6
1950 a/	2,800	1,700	60.7

Source: Direccion General de Estadística

a/ Provisional estimate on the basis of the first nine months.

The most important event in Chilean iron mining, which used to be exclusively for export, is its conversion, although still only to a small extent, to production for the domestic market, thanks to the steel works at Huachipato.

Table 66. Chile: Export and Consumption of Iron Ore

Years	Exports	Apparent consumption a/
	(in thousands of tons)	
1940	1,713	35
1945	218	--
1946	1,184	--
1947	1,747	--
1948	2,625	86
1949	2,675	68
1950	2,660	172

Source: Direccion General de Estadistica

a/ Obtained by deducting exports from production.

Since the expected exhaustion in a relatively short time of the deposits now being exploited (El Tofo) might affect supplies for the new steel plant, the

/Corporación

Corporación de Fomento has requested $2,750,000 from the Export-Import Bank in order to participate in the Bethlehem Steel Company's 8 million dollar investment designed to bring the new deposit of "El Romeral" into production. Planned annual production would be one million tons, i.e., still inferior to present production, once the deposits at El Tofo are completely exhausted.

Coal

Coal is the most important of the mining products which are based on local consumption. In spite of the fact that the increase in consumption has been small in the last twelve years, the demand for coking coal for the new steel industry, which is expected to grow rapidly, is causing anxiety for the future of this branch of mining.

Production has fluctuated between very narrow limits:

Table 67. Chile: Net Coal Production

Years	Thousands of Tons
1940	1,740
1945	1,850
1946	1,742
1947	1,850
1948	2,015
1949	1,882
1950 a/	1,900

Source: Mining Yearbooks, Dirección General de Estadistica.

a/ Provisional estimate based on the first nine months.

Up to and including 1947, production was not sufficient to supply the country; after 1939, imports did not exceed 50,000 tons in any year. Simultaneously with these imports, varying quantities of coals of inferior quality were exported to Argentina, particularly lignite from Magellan. Production capacit rose in 1948 owing to the activity of various small mines which the Corporación de Fomento had financed, and to the ending of social unrest in the mines.

At the end of 1948, a stock of more than 150,000 tons had been accumulated. This led to the closing-down of several high-cost establishments, with a consequent fall in production in the following years and a new increase in average productivity.

/During the

During the period covered by the table, the Empresa Nacional de Electricidad (Corporacion de Fomento) brought into operation several hydroelectric plants which replaced various thermal power plants using coal, both in public service, and private industry and in the coal mines themselves. This replacement makes it difficult to evaluate the natural increase in the power consumption of Chile.

However, irrespective of the rate at which general consumption is increasing, the new steel industry creates special problems. It can only use coking coal, which at present constitutes between 33 and 40 per cent of the coal produced, i.e. between 600 and 750,000 tons in 1950. However, the developmen plans prepared by Corporacion de Fomento estimate the consumption of coking coal for 1960 at 675,000 tons.

On the other hand, the great Chilean mines of Lota and Schwager, which produce all the coking coal, are undersea and must be worked from the coast by vertical shafts and horizontal galleries which reach the coal seams at distances of 4, 6 or more kilometres. As the coal face recedes and the seams become deeper, new galleries have to be constructed, each time at a lower level, in order to avoid an increase in the cost of production.

Both undertakings have prepared plans of investment for the future activities of their mines; unless these plans are carried out, the undertakings will have to close down their activities completely within a short time or else raise the price of the coal, which is already high in comparison with other parts of the world.

The Corporación de Fomento agreed to act as agent with the Internationa Bank for Reconstruction and Development for the negotiation of the necessary dollar loans. The Bank commissioned an American firm of consultants to review the plans and the Chilean companies have accepted the modifications suggested by the consultants.

The investment will amount to some nine million dollars in all, plus one thousand million pesos which the mining companies must find on the local capital market. 1/ This would make it possible to raise production capacity by some 500,000 tons per year, half of which would be coking coal. The average rate of productivity per man would be doubled, but no decrease in the price of coal

1/ According to press reports, the International Bank approved this loan in January 1951.

/is contemplated

is contemplated since the difference would be passed on to the workers, whose standard of living, according to the consultants, needs to be raised appreciably.

At the same time, there is a possibility that the Corporacion de Fomento may bring into production a completely new mine in the concession which it has negotiated to the south of the Lota coal fields. This alternative would mean an investment of about eighteen million dollars in order to produce from one to one and a half million tons a year, in addition to vast sums for the construction of living quarters, port installations and wages and other expenditure in local currency for the opening of the mine. Moreover, the programme could not be put into effect without awaiting the result of a complete survey of the coal field, which will take several years with the means now available.

When it is remembered that Argentina is always a potential market for Chilean coal, it is obvious that the two plans do not conflict, provided that the second is postponed for a few more years, until the survey of the Corporation's new concessions is completed.

Other mineral products

Chile is a country with great mineral wealth and this wealth is far from having been systematically explored and exploited. The production of various minerals of secondary importance has fluctuated as follows:

Table 68, Chile: Production of secondary minerals

Years	Gold (fine kilos)	Silver (fine kilos)	Manganese (tons)	Mercury (fine kilos)	Sulphu (tons
1940	10,433	46,853	20,517	47,845	35,518
1945	5,610	25,443	7,446	29,706	20,759
1946	7,181	17,355	21,885	28,497	9,254
1947	5,252	23,236	9,319	15,366	11,846
1948	5,109	26,810	22,119	16,107	13,214
1949	5,672	24,873	25,968	25,993	7,722

Source: Direccion General de Estadistica.

A small proportion of the gold is produced by mining and gold panning, but most of it is found mixed with copper and occasionally silver. The two precious metals are not separated from the copper in Chile, but are sent abroad mixed, both in blister bars from the major mining industry, and in concentrates from the small companies

/At the end

At the end of 1948 a law was enacted for the encouragement of gold mining which was languishing, owing to the fixing in 1934 of a price of $35 an ounce troy weight. The law permitted the free importation of a series of luxury goods, motor cars and spare parts, for example, prohibited under the exchange control regulations, as a counterpart for exported gold. With this system gold quotations were achieved equivalent to $87 an ounce troy weight. Unfortunately, the measure has not yielded all the results which would have been possible, because it only applies to metallic gold produced in the country, and the Caja de Credito Minero, the owner of most of the refining plants, did not obtain the means to increase their capacity at the proper time. Large quantities of gold-bearing minerals were accumulated at the plants on which the Caja granted advances, until most of its capital was frozen and its activities made even more difficult. A law of December 1950 increased the development agency's capital to 100 million pesos in order to enable it to expand several of the refining plants, and to extend credits to small producers.

The silver produced in Chile is almost all contained, as is part of the gold, in blister bars and concentrates mixed with copper.

Chilean manganese ore has an average metal content of 47 to 48 per cent and until 1947 it was almost all exported, either directly as ore, or in the form of ferro-alloys, such as ferro-manganese or silico-manganese. These are produced in a factory at Nos, near Santiago, mentioned in the chapter on "Industry".

In view of the importance of this metal in the armaments industry, the production capacity of the various mines is being expanded by private capital.

It is probable that during 1951, the national foundry at Paipote, the property of the Caja de Credito Minero, will come into operation. This foundry will be able to process some 120,000 tons of ores and mixed concentrates of copper, silver and gold annually, and to produce between 20 and 25,000 tons of unrefined ingots. It is rather unlikely that it will be able to work full capacity from the start, since there has not been sufficient investment to expand the nationally-owned mines to an adequate extent.

Present production will not supply it completely, and most of the ore is mined at great distances from Paipote, with the added disadvantage that the railway used is not sufficiently well equipped.

/The Corporación

The Corporación de Fomento plans to add at Paipote, or at some neighbouring port, a refinery for gold, silver and copper, which would cost some two and a half million dollars, and is negotiating an appropriate loan with the international banking agencies.

The Corporacion also plans to instal an electrolytic zinc refinery at Huachipato and a lead foundry in the North, with an investment of one million dollars, in addition to contributions in Chilean currency. These installations would make it possible to produce some 2,000 tons of zinc and 1,500 tons of lead a year, all for the domestic market. These sums do not include the money necessary to equip the mines, which would have to be expanded simultaneously.

In the meantime, private Chilean capital has developed a lead and zinc mine at Aysen, which will begin to produce on an appreciable scale in 1951. However, the entire production will be exported via Argentina, since it will be difficult for it to reach a Pacific port.

This private undertaking is planning to set up its own lead foundry, also designed to supply the Chilean market, independently of the plan by the Corporacion to which reference has just been made.

In view of the importance of sulphur as a raw material for sulphuric acid, the basis of the chemical industry, there follows a review of the problem of national sulphur production.

Production, exports and apparent consumption are given in the following table:

/Table 69.

Table 69. Chile: Sulphur production and consumption

Year	Production	Exports	Imports	Apparent Consumption
1927	12,500	473	106	12,133
1928	15,670	436	169	15,403
1929	16,300	322	82	16,060
1932	11,959	9,532	--	2,427
1936	25,934	10,941	--	14,995
1937	22,556	19,668	--	2,890
1938	27,975	11,405	--	16,573
1941	25,182	12,183	--	12,999
1945	20,759	10,877	--	9,882
1946	9,254	4,720	--	4,536
1947	11,846	5,148	--	6,703
1948	13,214	201	--	13,014
1949	7,722	--	--	7,722

Source: Mining and Foreign Trade Year Books, Direccion General de Estadistica.

Attention is drawn first to the disappearance of imports about 1930, secondly, to the drop in domestic consumption, which fell from an average of 14,500 tons during the three-year period 1927-1929, to 8,400 in 1945-1949, and lastly, to the irregularity of exports.

Domestic consumption is accounted for chiefly by the three following activities:

(a) The manufacture of gun powder, which was used on a large scale in the exploitation of the nitrate fields by the old hand processes, and also in iron mining and other branches. Apart from iron mining where it continues to be used, the rest of the mining industry has mostly changed to the use of explosives of the dynamite type, and with this the use of sulphur has appreciably declined;

(b) The vineyards continue to use as much sulphur as before, but the area under vines has decreased slightly and with it the consumption of this mineral;

(c) The chemical industry has grown over the last few years, but its consumption is still small.

With regard to the foreign trade in sulphur, since the cost of production in Chile is high owing to the type of deposit, exports at remunerative prices are only possible when the relation between the exchange rate and costs and wages is in favour of the product.

/The sulphur

The sulphur content of the ores treated in 1948 fluctuated between 50 and 75.4 per cent, with an average of 67.09. Only 69.4 per cent of the pure sulph contained in these ores was recovered, so that to obtain a ton of pure sulphur it is necessary to extract 2,150 kilos of the ore at altitudes of between four a five thousand metres above sea level.

Since the percentage recovered falls rapidly with the decline in the grade of the ore, mining has to be selective, while the difficulties caused by the altitude, means of transport and the inclement weather mean that it must be seasonal, all of which makes the operation more expensive. This is why in the thirties the Caja de Credito Minero carried out a careful survey of the sulphur industry, and installed a flotation plant for concentrating the ore, in order to make it possible to use lower grade ores efficiently and thus facilitate the mining of blocks of the ore without selection.

The system did not produce results, because although the concentration by flotation was perfect, it was not possible to separate the flotation chemicals in order to refine the sulphur. There is now some talk of extracting the sulphur by solution in carbon-disulphide instead of by thermic processes; however, these studies have not yet resulted in formulation of definite plans.

Some idea of the influence which these studies and the mechanization of mining to the extent permitted by the limited nature of the operation, the lack of capital, on the one hand, and the exhaustion and distance of the reserves on t other, have had on productivity may be obtained from the following figures: In 1927-1929, the 220 workers employed by the industry as an average produced 67.6 tons of refined sulphur per man-year. In 1948, 328 workers extracted 13,470 tons of refined sulphur, i.e. 41 tons per man-year or 166 kilos per man-da

The plan for a zinc refinery mentioned above includes the production of 3,600 tons of sulphuric acid a year, recovered as a by-product from the sulphurous ores.

CHILE

CHAPTER V

FOREIGN TRADE AND BALANCE OF PAYMENTS

General aspects of the problem

Chile's foreign trade problem is as clear as it is serious: not only have exports ceased to expand, but they are no longer sufficient to meet current import needs. The country, however, still continues to purchase abroad, over and above its import capacity, by resorting to credit. Fortunately, this credit is used almost exclusively for acquiring capital goods, in order to expand the country's productive capacity and to ease the pressure of the demand for foreign goods for consumption and use, by increasing and diversifying domestic production.

Hence the need to consider, when investing funds derived from foreign loans, what real economies in foreign exchange can be achieved. As stated in the previous report: "Those entrusted with negotiating the new loans, which differ greatly from previous foreign loans, have fully realized the problem, which consists in the necessity of adjusting the plans for productive investment to the sums which have to be transferred annually. It will be seen at once that Chile is doing its utmost to invest these loans in forms of production which, in a relatively short space of time, will enable savings to be made in foreign exchange expenditure or which, by adding their output to the volume of exports, will earn foreign currency receipts. The investments themselves would then provide their own means of repayment abroad." 1/

This has been attempted in the case of Huachipato's iron and steel, of petroleum at Magellan and of the hydro-electric plants which will economize imported fuel. The country is still at that stage where the contribution of those investments is just beginning to be felt in the general economy, although they are already leaving their mark on the balance of payments.

1/ See "Economic Survey of Latin America 1949", Chapter IX "The Economic Development of Chile", Page 51.

/The question

The question may be reduced to one of competition between production capacity and import capacity. In order to develop the former, it is necessary to increase the latter, to give preference to capital goods and to restrict imports of consumer goods. Few countries provide a better illustration than Chile of the thesis that the development of industry is a disequilibrium factor in the balance of payments over a short period, and an equilibrium factor over a long period.

Apparent and Real equilibrium in the trade balance

In 1949, for the first time since 1930, a deficit appeared in the trade balance; in actual fact, however, the deficits would already have appeared in 1946 and 1947 if the trade figures had been adjusted to include only the amounts of foreign exchange actually received from exports and disbursed in paymen of imports, excluding imports financed by the mining companies out of their own funds.

Table 70 Chile: Trade Balance
(in millions of dollars)

	Apparent trade balance			Adjusted trade balance		
Years	Exports	Imports	Balance	Foreign exchange received for exports	Foreign exchange required for imports b/	Real balanc
1945	204.1	155.7	48.4	167.7	142.6	25.1
1946	216.2	196.4	19.8	174.3	200.2	-25.9
1947	278.5	265.2	13.3	208.3	240.9	-32.6
1948	328.8	269.1	59.7	218.2	216.7	1.5
1949	296.1	303.8	-7.7	205.9	245.8	-39.9
1950 a/	244.9	210.3	34.6			

Source: General Department of Statistics and Banco Central de Chile, Annual Balances of payments.

Note: a/ Estimate based on data for the first eleven months

b/ Excluding imports made by the mining companies with their own foreign exchange, as well as imports which do not imply an outflow of exchange, travellers' effects, capital contributions and donations

/Since

Since part of the foreign exchange derived from exports should cover the service of the public debt and of recent foreign loans, it has only been possible to finance such heavy imports by means of credits obtained from abroad. Official and semi-official institutions, such as the Corporacion de Fomento, Empresa Nacional de Electricidad, Compania de Acero del Pacifico and the State Railways, have made large imports in the last few years, financing them with credits from institutions such as the Eximbank and the International Bank, or with credits from the suppliers themselves. That is to say, the exchange problem in respect of such imports has simply been deferred.

Imports made by these institutions have shown a marked upward trend, rising from 3.5 million dollars in 1945 to over 40 millions in 1949.

Variations in quantum

The process which was indicated in the previous report and which was characterized by a decrease in the volume of exports and an increase in imports, has continued, but in 1950 it was observed that imports declined to a greater extent than exports.

Table 71 Chile: Quantum of Trade

Years	Exports		Imports	
	1937 = 100	1948 = 100	1937 = 100	1948 = 100
1945	102.5	98.7	100.5	77.1
1946	92.2	88.8	119.1	91.4
1947	93.0	89.6	133.2	102.2
1948	103.8	100.0	130.3	100.0
1948	90.2	86.9	139.8	107.3
1950	80.4 a/	77.5 a/	98.9 b/	75.8 b/

Source: Calculations made by ECLA on the basis of official statistics.

Note: a/ Estimates based on data for the first 11 months
b/ Estimates based on data for the first 9 months

In relation to 1948, which may be considered the most representative year of the post-war period, the quantum exported in 1950 shows a decline of 22.5 per cent, while the decrease in imports reaches 24.2 per cent.

/Evolution

Evolution of prices and terms of trade

The movement of prices has also had a depressing effect on Chile's foreign trade. The disparity in trend between export and import prices, which has already been pointed out in the previous report, was more acute in 1949-1950. Taking the year 1948 as a base, the average prices for exports have increased by 8.4 per cent, while in the case of imports the rise has been 11.6 per cent.

Consequently, the deterioration in the terms of trade so frequently discussed in previous Economic Surveys was still more marked in 1949. However in 1950 the situation improved slightly, for copper prices recovered in the second half of the year, to an extent exceeding the rise in the prices of imports.

Table 72 Chile: Indices of Export and Import Prices and Terms of Trade

1948 = 100

Years	Export prices	Import prices	Terms of trade
1945	59.3	75.0	79.1
1946	69.3	79.8	86.8
1947	78.0	96.7	80.7
1948	100.0	100.0	100.0
1949	99.9	103.2	96.8
1950	108.4 a/	111.6 b/	97.1

Source: Calculations made on the basis of readjusted official statistics. In the case of exports, taking into account only the value of foreign exchange received for copper exported.

Note: a/ Estimates based on data for 11 months
b/ Estimates based on data for 9 months

The terms of trade obtained from the ratio between the price of copper and prices of imports were better in 1949 and 1950 than in the first post-war years, but they deteriorated in relation to 1948. On the other hand, the ratio between nitrate prices and those for imports shows an improvement, after having touched the lowest level in 1948, as may be seen from the attached chart.

/The purchasing

The purchasing power of exports had thus been doubly affected by the decline in volume, on the one hand, and the deterioration in the terms of trade, on the other. It would be useful to determine the extent to which the capacity to import has thus been reduced.

The quantum of imports has been considerably greater than the capacity to import throughout the period under review, except in 1945, in which the effect of the restrictions affecting the supplying countries as a result of the war was still felt. In 1949, the difference between the capacity to import and actual imports was 28 per cent, which is not very surprising when it is remembered that in that year the purchases effected on the basis of foreign credits were 40 million dollars, representing 16 per cent of total imports.

Table 73 Chile: Quantum of imports and capacity to import

Indices: 1948 = 100

Years	Indices of quantum of imports: Total	Excluding imports of the mining companies financed with own resources	Excluding imports with own resources and without using foreign exchange	Capacity to import
1945	77.1	81.4	82.6	102.5
1946	91.4	96.9	102.3	100.1
1947	102.2	105.9	110.8	98.8
1948	100.0	100.0	100.0	100.0
1949	107.7	110.8	111.4	91.9

Source: Basic data taken from Balances of Payments, Banco Central de Chile.

As a result, there is a tendency towards an equilibrium between exports and imports obtained less through the natural action of the factors governing trade, than by the effects of exchange control as a factor of contraction and of foreign credits as a factor of expansion.

Variations in the value of exports

From 1945 to 1948, the value of exports had followed a definite upward trend. In 1949, there was a decline which became more marked during 1950, taking values in gold pesos,[1] although the influence of the exchange rates caused the value in paper currency to rise once again.

1/ The gold peso is a unit of account, with a gold content of 6d., used in Chile's foreign trade statistics.

/Table 74

Table 74 Chile: Value of exports

Years	In millions of gold pesos 1/	In millions of current pesos
1945	991.0	6,259
1946	1,049.3	6,627
1947	1,351.7	6,801
1948	1,596.1	8,014
1949	1,437.4	7,290
1950 a/	1,297.6	7,644

Source: General Department of Statistics

Note: a/ Estimated on 11 months

1/ The gold peso is a unit of account, with a gold content of 6d., used in Chile's foreign trade statistics.

The 1949 decline was due to the lesser volume exported and to the drop in world copper prices. The decline was very pronounced in mining products (copper, iron and nitrate), but this was also the case with agricultural products, whereas industrial and forestry products maintained or increased their value. During 1950, this downward trend became even more generalized.

Variations in the prices of exports

By comparing the index of export prices in gold with their index in paper currency, an idea can be obtained of the influence of the exchange rates on the value of exports. While the former has only risen two points between 1948 and 1949, the rise in the latter has been 5 points. But if the situation prevailing at the end of the Second World War is taken as a basis of comparison, the disparity is in the opposite sense, that is, export prices have increased more in terms of foreign exchange than of local currency. Since 1948, world prices had become practically stationary, and it was necessary to resort to the exchange rate to encourage exports.

/Table 75

Table 75 Chile: Indices of export prices

1948 = 100

Years	In gold pesos a/	In current pesos
1945	59.3	79.1
1946	69.3	93.1
1947	78.0	94.8
1948	100.0	100.0
1949	99.9	104.7
1950 b/	108.4	109.8

Source: Foreign Trade Yearbooks

Note: a/ See footnote (a) to Table 74

b/ On the basis of data for the first 11 months

Except for the output of the large-scale mining industry, which is financed by foreign capital, and the exchange rate for which remained unchanged, the other export products have been obtaining increasingly higher exchange rates so that they can be marketed outside the country.

In July 1950, the list of products which could be exported at the rate of 60 pesos to the dollar was increased, and the number of those which had to hand over 20 per cent of the foreign exchange at the rate of 31 pesos to the dollar was reduced.

Table 76 Chile: Composition of exports

(Percentages)

	1945	1946	1947	1948	1949	1950 a/
Mining products	72.8	70.8	79.8	82.1	80.4	80.7
Agricultural products	10.2	12.7	7.4	8.5	8.2	6.3
Manufactured products	10.9	10.4	8.5	4.9	6.1	5.1
Others	6.1	6.1	4.3	4.5	5.3	7.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Foreign Trade Yearbooks

Bulletins of the General Department of Statistics

Note: a/ January to November

/The proportions

The proportions indicated are modified, however, if the actual receipts of foreign exchange derived from the different groups of exports is taken into account. Mining -- large, medium and small scale -- provided 72 per cent of the foreign exchange in 1949, as against 63 per cent in 1945.

Table 77 Chile: Classification of exports according to their contribution to the balance of payments

(Percentages)

	1945	1946	1947	1948	1949
I. Large-scale Mining	54.8	56.0	65.7	68.5	61.4
Copper	39.3	35.3	47.9	48.9	43.9
Iron	0.2	0.5	1.0	1.3	2.0
Nitrate and Iodine	15.3	20.2	16.8	18.3	22.5
II. Small and Medium-scale Mining	7.9	7.5	5.2	5.2	10.3
III. Agricultural and Industrial Products	37.3	36.5	29.1	26.3	28.3
Total	100.0	100.0	100.0	100.0	100.0

Source: Banco Central de Chile, Balance of Annual Payments

Copper exports exercise a decisive influence on the foreign trade figures and is the determining factor in the capacity to import. In 1947 it represented, in nominal values, as much as 62.5 per cent of the total value of exports and 78 per cent of the mining exports, these figures having dropped in the first 11 months of 1950 to 47.5 and 58.8 per cent respectively. Not only the drop in prices but the decrease in the quantum exported have contributed to this considerable decline.

More recently, in January 1951, it was decided that certain commodities which were difficult to place abroad, could be exported in exchange for currency negotiable on the free market (at that time, the free dollar was quoted at 20 per cent above the official basic dollar). The principal commodities included in this category are certain dried vegetables, such as peas; onions; fresh and dried fruit; fresh fish; malted barley, beeswax and honey; certain timbers; mineral concentrates of small-scale and medium mining; cement; woollen textiles; steel products; chemical products; glass and crystal ware; crude petroleum etc. The total exports which benefited from this new regime has been estimated by the Consejo Nacional de Comercio Exterior at 98 million dollars, that is, almost a third of total exports.

In reality, Chilean exports, apart from copper and nitrate, are made up of marginal products or those which can be sold sporadically, requiring the incentive of a direct or indirect premium in order to continue being placed on foreign markets.

/Variations

Variations in the composition of exports

Mining products still account for over three-quarters of the value of exports, and it may even be said that their role has tended to become more important in the last few years, reversing the diversification process which could be noted before the Second World War.

In the figures for the nominal value of exports, mining products accounted for over 80 per cent between 1949 and 1950, as against 72 per cent in 1945.

On the other hand, the other two products exported by the large-scale mining industry, nitrate and iron, have considerably increased their share in the last five years. The recovery of nitrate sales is worth stressing, in view of Chile's difficulties in placing this product on the world market since the appearance of synthetic nitrate. Its share of mining exports doubled between 1947 and 1950 (from 15.6 to 32.3 per cent), exceeding the figure for 1945. This has expressed itself in a considerably greater contribution to the balance of payments, which in 1949 amounted to half as much foreign exchange as that provided by large-scale copper mining, whereas in 1945 the proportion was barely a third.

This recovery is to be attributed almost exclusively to the rise in price, since the tonnage exported has remained on the whole stationary, as may be seen from the figures in the following table:

Table 78 Chile: Quantum of exports of copper and nitrate

1948 = 100

Years	Copper	Nitrate
1945	103.9	95.1
1946	90.1	83.0
1947	93.2	98.2
1948	100.0	100.0
1949	85.3	91.2
1950 a/	71.8	97.1

Source: Foreign Trade Yearbooks

Note: a/ Figures estimated on the basis of data for January to November

/Other

Other exports, consisting of agricultural, forestry and industrial products, have not managed to maintain the absolute and relative importance which they reached during the war years.

Even the encouragement which the Government has tried to give them, by raising the rates of exchange or reducing the rate of compulsory handing over of foreign exchange at the official rate, has not been sufficient to provide these exports with a fairly regular foreign market. This is one of the obvious effects of inflation in bringing about a distortion between domestic costs and world prices.

Among agricultural exports, only two groups have managed to increase their proportion: that of fruits, tubers and vegetables, and that of spices, while the two most important, cereals and pulses, show considerable variations from year to year; raw materials of vegetable origin are constantly declining.

Something similar has taken place with exports of products of the manufacturing industry. The metallurgical industry had a share within the group of 34 per cent in 1945, but this proportion declined to 11 per cent in 1948, although there was a reaction in 1949 and 1950. Copper sheet and copper wire, two of its principal products, declined from 7,622 and 4,807 tons in 1945, to 760 and 3,040 tons in the first 11 months of 1950.

Exports of malted barley, included among the food industries, dropped from 20,000 tons in 1945 to 15,000 in 1950, while those of fresh lamb dropped from 5,136 to 1,137 in the same year.

Variations in the import coefficient

In the case of Chile, as of all the countries where exchange control and quantitative or selective regulation of imports exists, one cannot properly speaking discuss propensity to import, since this is not given free rein. It is none the less interesting to ascertain what proportion of the national income is used for purchases abroad and what changes have taken place in that proportion in the last six years.

/Table 79

Table 79 Chile: Import Coefficient

Years	National Income	Imports	Coefficient
	(in millions of current pesos)		(per cent)
1945	42,470	4,612	11.86
1946	48,947	5,873	12.00
1947	62,605	7,922	12.65
1948	76,014	8,980	11.81
1949	93,000 a/	10,929	11.75
1950	107,000 a/	10,997 b/	10.30

Sources: Corporacion de Fomento de la Produccion; General Department of Statistics

Notes: a/ Provisional
b/ Figure estimated on the basis of data for the first 11 months

The evolution of this coefficient is very significant in itself. The 1945 figures are still affected by the supply difficulties arising out of the war. Although channelled by exchange control, the backlog of demand caused the proportion to rise in 1946 and 1947, but this situation could not be maintained since, in view of the gradual draining away of reserves, the Government resorted to greater restrictions, exclusively in the sphere of exchange control. Customs protection through the movement of prices themselves had a lesser effect, as can be seen from the following Chart, which demonstrates the parallelism between the degree of real protection and the import coefficient.

Changes in price levels

The action of prices has also been a factor that has helped to prevent a greater expansion of imports. The comparison of price indices for domestic goods and for imported commodities shows that the former have experienced a smaller rise in these last few years, whereas before 1948 there was a trend in the opposite direction. The differences between the two prices were less in 1950.

/Table 80

Table 80 Chile: Index of Wholesale Prices

Years	Domestic articles 1945 - 100	Domestic articles 1948 - 100	Imported articles 1945 - 100	Imported articles 1948 - 100
1945	100.0	54.2	100.0	67.9
1946	115.9	62.8	114.6	77.8
1947	156.1	84.6	134.8	92.9
1948	184.5	100.0	147.3	100.0
1949	209.8	113.6	169.8	115.3
1950 b/	230.6	124.8	204.4	138.8

Source: General Department of Statistics

Notes: a/ The original base for this index is 1947

b/ Averages January to September

This trend and the exchange control explain the effort to replace foreign articles with those of local manufacture.

The normal development of Chilean imports has also been hindered by the further deterioration in the terms of trade, since the rise in the volume of imported products has been greater than in that of exported products, as has already been seen.

Variations in rates of exchange

Another cause of the rising cost of imports has been the variations which have taken place in the rates of exchange; this phenomenon became more acute owing to the dollar shortage, and imports were acquired from those sectors supplying merchandise payable through clearing accounts or in non-convertible currencies, even if these purchases would have been cheaper in dollars. However it is difficult to appreciate to what extent the comparative price factor has really influenced the direction of foreign purchases.

By establishing the ratio between the values which official statistics give in money of account (gold pesos at sixpence each), and in current pesos, it is possible to determine the average rate of exchange at which imports have been acquired and to deduct a depreciation coefficient, as in the following table:

/Table 81

Table 81 Chile: Average exchange rate of imports

Year	Pesos per dollar a/	Depreciation index b/
1945	29.61	100.0
1946	29.90	99.0
1947	29.87	99.1
1948	33.37	88.7
1949	35.85	82.6
1950 c/	47.96	61.7

Source: Basic Data: General Department of Statistics

Notes: a/ Obtained by dividing the value of imports in current pesos by imports expressed in pesos at 6^d converted to dollars at the rate of 4.8546 gold pesos per dollar, gold parity

b/ Taking as a basis the value of the peso in 1945

c/ First ten months

These variations are the result of the application of different multiple rates, as well as of the different distribution of imports according to these rates. In the last few years, Chile's monetary authorities have tended to make a more pronounced discrimination among imported goods, taking into account their desirability and the possibility of replacing them by domestic products. The structure of the multiple rates has been gradually modified, in the sense of subsidizing essential goods or those which are of greater importance to the economy, and of taxing, on the other hand, the import of luxury or less desirable goods.

The movement towards the higher rates is very marked, indicating an ever greater depreciation of the external value of the Chilean peso.

The latest modifications introduced into the exchange system have retained the multiplicity of rates, even though an effort has been made to unify them, taking as a basis the provisional rate of 60 pesos to the dollar approved by the International Monetary Fund. But exceptions remain. The rate of 31 pesos to the dollar is granted only for sugar, newsprint and certain imports for official agencies. The rate of 50 pesos to the dollar is granted to pay for imports of crude petroleum, kerosene, tea, yerba mate and certain raw materials, such as rubber for tyres and cellulose for paper.

/The exchange

The exchange rate of 60 is applied to imports of tin, cork, raw cotton, jute fibre, oilseeds, tobacco in bulk, cotton and rayon yarn; cloth for tyres, jute sacks, chemical products, cellulose for silk, raw materials for fertilizers; tinplate, iron and steel, agricultural and industrial machinery, electrical machinery and material, railway equipment, tractors, tyres and tubes; cigarette paper, telephone material, medical and sanitary equipment.

Other goods are imported at the free market exchange rate. The case of coffee, which formerly enjoyed preferential exchange, deserves special mention. The Consejo Nacional de Comercio Exterior considers that, owing to the rise in prices, coffee has become a luxury article and that there is therefore no justification for preferential treatment, since that would mean an allowance of 300 million pesos. On the other hand, tea and yerba mate continue to be subsidized, because they are popular stimulants.

Towards the end of 1950, when the Consejo Nacional de Comercio Exterior was reconstructed under Act No. 9839, new regulations were introduced covering the exchange control system. The most far-reaching reform was the abolition of import licenses for a considerable portion -- almost 40 per cent -- of the value of imported goods; this measure is justified by the fact that, in the view of the Chilean monetary authorities, the consumption of these goods, which are of an essential nature, is not likely to expand much, while the license constituted a hindrance to the regular supply of the country.

The other important reform is the opening of the free market for foreign trade operations. Thirty per cent of the foreign exchange produced by exports can be negotiated on the free market, according to rates determined by supply and demand. Moreover, a part of imports, both of the kind now exempted from import licenses and of those which are subject to that formality, can also be paid for with foreign exchange bought on the free market. (The rate of that market, which was 50 per cent higher than the official rate at the beginning of

/1950

1950, has been approaching the basic rate of 60, so that it will not be much of an obstacle to the imports which have been transferred to that market).[1]

Variations in the composition of imports

The policy followed by the Government on the question of exchange, as indicated above, has had a decisive influence on the composition of imports, to which must be added the effects of industrialization. The main features of that process were analysed in the previous year's report, which covered the period 1925-1949. Hence it will only be necessary to add any aspect which may reflect or indicate a change in the situation described.

The variations in the percentage distribution of the value imported during the last five years give a good idea of the transformation which has been taking place in the country's economy. The most salient fact, and one

1/ Imported goods have been classified in five groups, according to the exchange rate applicable:

1. Category A-1 Free import (that is, without an import license and with no limitation on quantity), at free rate of exchange. Applied to indispensable or essential goods, the consumption of which is, however, limited and the selling prices of which are not controlled. This includes machinery, accessories and replacements for mining, industry and agriculture; automobile and truck spares; breeding stock.

2. Category A-2 Free import at official rate of exchange. An exchange permit is required only for the purpose of controlling domestic prices, since the group comprises indispensable or essential goods, the selling prices of which, in the final stage, are controlled, such as: raw cotton, petroleum, drugs and medicines.

3. Category B-1 Controlled import at free rate of exchange. An import license is required. This category includes textiles, rubber, chassis for lorries, printed matter, hides and skins etc.

4. Category B-2 Import subject to license, but at the official rate of exchange (in certain cases, preferential rate). Includes raw materials and mass consumption articles subject to price control, such as sugar, mate, tea, petrol, yarns etc.

5. Special Category Luxury goods the import of which depends on the export of gold from local mines, or of wine. Mainly includes automobiles at a factory price lower than 1,500 dollars; spare parts for cars, motorcycles, watches, refrigerators, cameras, cigars, liqueurs etc. The distribution of these imports according to the amount of foreign exchange which they are estimated to require is as follows:

(footnote continued on next page)

/which

which demonstrates the industrialization achieved in the last few years, is the growing share of reproductive capital goods in the total of imports. This trend has continued to be apparent in the last five years, favoured by the selective policy followed through the instrumentality of exchange control. It also shows the greater part played by industry in the relative increases in imports of raw materials and fuels. Non-durable consumer goods have diminished and as regards durable consumer goods, which could not be imported during the war, they only enjoyed a short recovery, because since 1949, when the volume of available exchange diminished, new restrictions have been applied to them.

Table 82 Chile: Distribution of imports by category

(In percentage of the total)

	1945	1946	1947	1948	1949	1950 a/
1. Non-durable consumer goods b/	38.9	38.3	36.2	29.8	21.6	25.1
2. Raw materials and fuels c/	24.4	29.9	27.7	24.2	28.8	29.6
3. Durable consumer goods d/	0.4	2.3	3.5	1.8	3.4	1.2
4. Capital goods e/	23.1	25.4	29.6	21.9	42.3	42.1
5. Others f/	6.2	4.1	3.0	3.3	3.9	3.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Basic data from Foreign Trade Yearbooks

Notes: a/ First six months

b/ Food, drink, tobacco, textile manufactures, paper, hides and skins

c/ Chemical products, non-edible oils and fats, fuels and lubricants, wood, earths, glass, metals

d/ Automobiles, domestic appliances and other appliances

e/ Building materials, agricultural machinery, industrial machinery, transport and communications material

f/ Unspecified balance

1/ (continued from previous page)

Category	Millions of dollars	Percentage of the total
A-1	56	20.1
A-2	75	27.0
B-1	34	12.2
B-2	108	38.9
Special	5	1.8
	278	100.0

/Two groups

Two groups can be distinguished in the structure of Chilean imports; one is more or less rigid, and its volume does not vary in the same proportion as the total value imported; the other expands or contracts according to the variations in that value. This situation has been the result of the exchange control policy, which has tended to distribute the foreign exchange derived from exports and foreign loans in accordance with strict necessity. While foodstuffs, fuels and raw materials for industry cannot be curtailed, even at a time when there is a great shortage of foreign means of payment, the acquisition of capital goods can be postponed at those times, to await a better opportunity. When an improvement takes place in the exchange situation, the increase is preferably applied to capital goods, and greater facilities are granted for the import of less necessary goods, such as durable consumer goods, with the margin for consumer goods being scarcely expanded at all.

In reality, there have been two currents at work: one a cyclic or short-term current, which we have just explained, and the other, a long-term one linked with modifications in the domestic economy. In this field, as in others, causes and effects are confused to such an extent that it is impossible to determine how far exchange control has forged a new economic structure and what influence this has had in turn on the composition of imports.

Imports of capital goods should be related to loans obtained abroad, since part of these imports have been financed with credits granted by institutions such as the Export-Import Bank and the International Bank to the Corporacion de Fomento de la Produccion, the State Railways, the Compania de Acero del Pacifico and other Chilean governmental enterprises.

Table 83 Chile: Imports of capital goods and foreign loans
(In millions of gold pesos)[1]

	Imports of capital goods a/	Loans utilized b/	Ratio in percentage
1945	174.6	29.7	17.0
1946	242.2	42.3	17.5
1947	381.1	53.2	13.9
1948	391.9	92.8	23.7
1949	625.9	181.1	29.0

Sources: a/ General Department of Statistics
b/ Banco Central de Chile.

1/ See footnote Table 74

/In 1949,

In 1949, a year in which imports of capital goods were particularly high, almost a third was paid for with dollar loans.

Changes in the direction of foreign trade

In order that the changes which have occurred since the war in the origin and destination of Chilean trade may be appreciated, it has been divided into four sectors as follows: (a) United States; (b) United Kingdom; (c) other European countries; and (d) neighbouring countries, Argentina, Peru and Brazil. These last have also been considered separately.

In the case of exports, the gravitation towards the United States has not been maintained at the high levels reached during the war. Nevertheless, more than half of Chile's exports continue to be placed on that market. In the case of the United Kingdom, there has been no return to the situation which prevailed before the Second World War, but the position has improved in relation to the war period. In the case of the other European countries, there has been an almost complete recovery and, in 1949, there was even an improvement, followed, however, by a decline in 1950 in relation to the immediately preceding years.

With the neighbouring countries with which Chile has the greatest trade -- Argentina, Brazil and Peru -- the trends imposed by the war have continued. Exports to Brazil and Argentina have gradually improved their relative position. In the case of Peru, exports in 1949 returned to their pre-war proportion.

From the following table it will be seen how Chilean exports have tended to be concentrated in certain preferred markets (the United States, continental Europe, the United Kingdom, neighbouring countries) while in 1935-1939, 31 per cent was directed towards other markets.

/Table 84

Table 84 Chile: Distribution of exports to certain countries

(In percentage of the total)

	1935-39	1940-45	1945-49	1949	1950 a/
United States	21.0	65.3	48.5	50.4	51.9
United Kingdom	17.8	3.0	8.5	8.4	5.2
Other European countries	27.9	1.7	21.7	25.0	19.6
Neighbouring countries	2.6	8.8	9.7	8.4	10.7
Argentina	1.5	4.8	5.2	3.7	5.5
Peru	0.7	1.2	1.2	0.6	0.6
Brazil	0.4	2.8	3.3	4.1	4.6
Remainder	30.7	21.2	11.6	7.8	12.6
Total	100.0	100.0	100.0	100.0	100.0

Source: Foreign Trade Yearbooks

Note: a/ Figures for January to November

Something similar has occurred in the case of imports. The United States in 1949 supplied Chile with 54 per cent of the goods acquired abroad, this proportion being greater than that for the three preceding periods: pre-war, war and post-war. The United Kingdom's proportion of supplies has dropped, but between the average for 1945-1949 and 1949 there has been an improvement, which became more marked during the course of 1950. As suppliers, the other European countries have not recovered their pre-war position, although they have improved it in relation to 1945-1949.

Imports from neighbouring countries, which had reached over a third of the total during the war, have dropped to less than a fifth. Imports from Peru, based on two essential commodities, sugar and cotton, continue to be large, although the relative value is declining.

In the case of Argentina, the difficulties experienced in importing cattle in 1949 reduced the percentage of imports from 10.8 in 1945-1949 to 4.9 in 1950. There has also been a decline but a smaller one in the case of Brazil.

/Table 85

Table 85 Chile: Distribution of imports from certain countries

(In percentages of the total)

	1935-39	1940-44	1945-49	1949	1950 a/
United States	28.4	44.9	45.3	54.3	49.4
United Kingdom	11.4	7.5	6.2	7.9	12.1
Other European countries	36.9	4.6	9.2	10.8	15.7
Neighbouring countries	12.1	35.7	29.3	19.4	16.3
Argentina	3.9	12.8	10.8	4.4	4.9
Peru	7.1	15.9	13.4	10.7	6.6
Brazil	1.1	7.0	5.1	4.3	4.8
Remainder	11.2	7.3	10.0	7.6	6.5
Total	100.0	100.0	100.0	100.0	100.0

Source: Foreign Trade Yearbooks

Note: a/ Figures for January to November

Another interesting aspect to be considered in the distribution of Chilean foreign trade by destination and origin is that of the equilibrium of the balance of trade. In the last five years, the situation has varied somewhat. With the United States, trade was favourable except in 1946 and 1949; with the United Kingdom also, except in 1945 and 1950. It is with the European countries that Chile tends to obtain its greatest surpluses, which, unfortunately, are seldom transferable to other currency areas. On the other hand, with the neighbouring countries -- Argentina, Brazil and Peru -- the balances were always unfavourable until 1949. The changes which have taken place in 1950 have been considerable, since the trade balances with Argentina and Brazil show a credit balance for the first time during the period under review, while the debit balance with Peru and the credit balance with other European countries have declined considerably.

The foreign exchange budget for 1951

In the previous report covering the economic development of Chile, it was stated that the foreign exchange budget for 1950 had been drawn up under the influence of the drop in copper prices. It had been anticipated that copper exports would produce some 60 million dollars during the year, as against 91 millions in 1949 and 107 millions in 1948.

/The recovery

The recovery of copper exports in the second half of 1950 was so great that it is estimated that in 1951 there will be a return to the 1948 level, and consequently the foreign exchange budget was prepared on a more liberal basis.

The total receipts in the foreign exchange budget for 1951 have been estimated at 331.6 million dollars, that is, 100 million dollars more than in the previous budget. Of this increase, 24 million correspond to a surplus available from the previous budget. A comparison of these last two budgets shows certain significant changes.

Table 86 Chile: Receipts in the foreign exchange Budget for 1950 and 1951
(in millions of dollars)

	1950	1951	Differences Absolute	Differences Relative
I. Exports	194.9	257.1	52.2	31.9
A. Large-scale mining	106.2	153.8	47.6	44.8
Copper	59.3	105.3	46.0	77.8
Iron	2.9	1.8	- 1.1	-37.9
Nitrate	44.0	40.6	- 3.4	- 7.7
Possible exports for December		61.6		
B. Medium and small-scale mining	6.1	16.6	10.5	172.1
C. Other exports	82.6	86.7	4.1	5.0
Agricultural products	56.0	51.3	- 4.7	- 8.4
Industrial products	9.5	18.0	8.5	89.5
Manufactured copper	15.0	14.4	- 0.6	- 4.0
Crude petroleum	2.0	3.0	1.0	50.0
II. Invisible exports				
A. Freights and insurance	2.1	4.8	2.7	128.6
B. Official transactions	22.4	2.4	-20.0	-89.3
C. Private transactions	12.8	43.4	20.6	239.1
III. Surplus from previous Budget	-	23.9	23.9	-
TOTAL	232.2	331.6	99.4	42.8

Sources: Calculations based on figures from the Diario Oficial.

/In exports

In exports, the increase of 54 million dollars over 1950 will be derived almost exclusively from mining. In industrial products, the item which is considered capable of increasing sales abroad is the iron and steel from the new Huachipato works. On the other hand, a contraction is foreseen in sales of manufactured copper, since the domestic market is absorbing greater quantities. Petroleum, the new item among Chilean exports in 1950, will contribute three million dollars in 1951. Prospects for agricultural products continue the downward trend which exports in this sector have experienced, both on account of increased domestic consumption and decline in production.

Other receipts have been estimated to show an increase of 20 million dollars, which it is assumed will be derived mainly from entries of capital; in such cases foreign exchange can be negotiated on the free market, repatriation being ensured if the capital has been identified upon entering the country.

The decrease in the item "official transactions" is due solely to the fact that the 1950 budget had foreseen the utilization of 20 million dollars of the Export-Import Bank loan granted in 1949 to meet the disequilibrium in the balance of payments. This recourse does not appear necessary in 1951.

On the debit side, the 1951 foreign exchange budget is also much more optimistic than that for the previous year. Whereas in 1950 imports were originally estimated at 237 million dollars, including those made by the mining companies with their own resources, the new budget is based on imports amounting to 267.4 million dollars and outgoings for other purposes at 64.2 million dollars. According to recent decisions taken by the Consejo Nacional de Comercio Exterior, a third of the imports will be effected with free foreign exchange.

With import licenses no longer required for 49 per cent of imports, their trend will now depend on other factors and not simply on the system of quantitative regulation. The Chilean Government's intention was to eliminate import licenses for goods of limited consumption or utilization, or those which can be limited by means of the exchange rate resulting from the free play of supply and demand.

It is difficult to compare the foreign exchange budget for 1951 with that of the previous year owing to the change of method. The budget for 1951 only states the authorized quantity of goods requiring permits; in the others, a mere estimate has been made in accordance with the trend in recent years. The greatest increases foreseen will benefit capital goods, raw materials and certain commodities such as sugar and meat.

/Table 87

Table 87 Chile: Distribution of imports according to the foreign exchange budget

	1950	1951	% Variation 1951
	thousands of dollars		
A. Within the Budget			
1. Fuels and lubricants	23,095	25,980	112.5
Petroleum	6,100	6,860	112.5
Gasoline	11,200	13,380	119.5
Others	5,795	5,740	99.0
2. Foodstuffs	46,076	54,843	119.0
Sugar	19,500	23,486	120.4
Beef	6,921	16,000	231.2
Wheat and oil 1/	5,000	4,300	--
Tea, yerba, cacao	6,070	6,200	102.1
Coffee 2/	3,483	2,000	42.6
Others	5,102	2,957	42.0
3. Raw Materials	45,529	82,516	181.2
Cotton	14,800	27,600	186.5
Yarns	4,890	2,870	41.3
Others	25,839	52,046	201.4
4. Other consumer goods 3/	30,948	35,258	113.9
5. Capital goods	54,380	84,161	154.8
Imported	50,630	80,761	159.5
Imports of private companies, as capital contributions	3,750	3,400	9.3
TOTAL	200,028	282,758	141.4
B. Outside the Budget	25,550	27,100	6.1
1. Purchases of mining companies	25,550	20,000	21.7
2. Imports with foreign exchange derived from exports of gold and wine		7,100	
TOTAL	225,578	309,858	

Source: Diario Oficial

1/ To be paid for by means of exports of metallurgical products.

2/ Considered to be a luxury item, for free import with free dollars, quantity not fixed. Taking into account the possibility of decreased consumption, two millions have been assigned to these imports.

3/ Including 7.550.000 of goods bonded on consignment.

/To be

It is not yet possible to say whether or not the estimate based on imports of 150 million dollars worth of "free" goods is conservative. Imports have been restricted for some time and the pressure of unsatisfied demand may be great, especially at first. Inflation itself has favoured the formation of profits which have tended to switch towards imports. For a portion of imports, the official rate may constitute a premium which will encourage full advantage being taken of the difference between that rate and the free market rate. For that portion of imports which has to be financed with foreign exchange from the free market, the demand for exchange will have to be adjusted to supply, derived mainly from exports which up to the present have been somewhat difficult to place. In brief, all will depend on the value of the Chilean peso abroad, of which it will now be possible to form a more adequate estimate.

Foreign trade and balance of payments

Since the war, Chile's balance of payments had undergone a change which should be considered with some care, since it is one of the most typical signs of the new conditions under which the country's economy is developing in its relations with foreign countries. On the receipts side, there is a marked decline in the contribution of exports, while on the payments side, the contribution of imports is tending to increase.

Table 88 Chile: Part played by foreign trade in the balance of payments

(in per cent)

Year	Ratio of Exports to total Receipts	Ratio of Imports to total Payments
1945	81.0	63.3
1946	73.5	71.1
1947	75.3	69.6
1948	79.6	63.5
1949	66.6	70.9

Source: Banco Central de Chile, Annual Balances of Payments

/As will

As will be seen, exports in 1949 only provided two-thirds of the credit side of the balance of payments whereas in 1945 they represented over 80 per cent of these. On the other hand, imports raised their share of the debit side to 71 per cent as against 63.5 per cent in 1948.

These figures confirm that Chile has had to use foreign capital in order to continue importing over and above its normal capacity to import.

Changes in the balance of services

This is made up of four groups, two of which usually show credit balances, and two debit balances, but the latter predominate, thus setting the pattern of the whole sector. The only change noted in 1949 is the fact that private transactions (tourist trade, remittances by individuals etc.) left a small favourable balance, while in previous years the debit balances were relatively large.

Table 89 Chile: Balance of Services
(in millions of dollars)

Year	Service of goods	Official Transactions	Private Transactions	Service of Capital	Net Balance
1945	+6.7	+ 0.3	- 2.7	-40.1	-35.8
1946	+6.6	+ 1.0	-12.4	-41.3	-46.1
1947	+2.1	+ 0.8	-10.4	-50.3	-57.8
1948	+4.5	+ 6.5	-15.4	-63.5	-67.9
1949	+3.4	+10.8	- 0.5	-48.2	-33.5

Source: Banco Central de Chile, Balances of annual payments

The largest item in the service of goods is maritime freight; the relatively high credit balances in 1945 and 1946 may be considered abnormal, since they were still influenced by the situation arising out of the war, with high tariffs. In official transactions (diplomatic and consular expenses, expenses of offices abroad), the taxes imposed by Chile amply covered the expenses of its agents abroad.

/In the

In the service of capital (included in movement of capital in the balance of payments published by the Banco Central the principal and almost exclusive factor has been the portion of foreign exchange which the foreign mining companies retain for themselves as profits. After having increased since 1945, there was a heavy drop in this item in 1949, owing to the contraction of copper exports and the drop in price.

An item which has appeared in the service of capital in the last few years and the importance of which tends to increase is interest on capital received from the Export-Import Bank and the International Bank.

Table 90 Chile: Transfers of interest and profits
(in millions of dollars)

Items	1945	1946	1947	1948	1949
1. Profits of mining companies	15.4	26.0	44.5	56.3	30.2
2. Profits of other companies	5.7	5.2	2.3	2.2	1.1
3. Interest on the public debt a/	3.6	3.9	2.7	0.3 b/	8.0 b/
4. Interest on other foreign loans c/	0.6	0.6	0.8	1.3	2.4
5. Other interest d/	1.5	1.9	7.2	3.6	6.4
Total	26.8	37.6	57.5	63.7	48.1

Source: Banco Central de Chile, Annual Balances of Payments

Notes: a/ Includes State and Municipalities

b/ The 1948-1949 figures should be added together and divided by two, in order to make them comparable with those of other years.

c/ Corporacion de Fomento and State Railways

d/ On credits from the IAPI and private credits

While interest payments on the public debt have tended to decline, the amounts due under development loans have tended to increase, thus indicating the radical transformation which is taking place in financing with foreign capital.

/Changes

Changes in the movement of capital

This transformation is also reflected in the movement of capital. The development loan, as stated, tends to take the place of almost stationary exports. Its reverse is amortization, the effects of which appear on the debit side.

Table 91 Chile: Use and amortization of foreign loans
(in millions of dollars)

	1945	1946	1947	1948	1949
Use	6.1	9.7	10.9	22.1	40.9
Amortization	4.6	4.1	4.3	6.8	8.3
Net Contribution	1.5	5.6	6.6	15.3	32.6

Source: Banco Central de Chile, Balances of Annual Payments

In 1949 the net contribution rose to a figure never before reached: 32.6 million dollars. This was principally due to the loans to the Cia. de Acero del Pacifico, which in that year used 27 million dollars of its foreign credits, while its payments for amortization were scarcely 300,000 dollars. The other two beneficiaries were the Corporacion de Fomento, with 8 millions (of which 5.6 millions were amortized) and the State Railways, with 4.4 millions (of which 2.3 millions were amortized.

Table 92 Chile: Movement of capital
(in millions of dollars)

Years	Utilization of credits	Amortization of debts	Capital Contributions	Financial Operations a/	Net Balance
1945	+ 6.1	- 6.8	-	- 0.1	- 0.3
1946	+ 9.7	- 11.5	-	- 0.8	- 6.9
1947	+ 10.9	- 7.9	-	-	- 10.6
1948	+ 22.1	- 24.6	+ 14.2	+ 3.0	+ 2.6
1949 b/	+ 40.9	- 31.6	+ 31.4	+ 3.4	+ 39.7

Source: Banco Central de Chile, Annual Balances of Payment

Notes: a/ Mainly payments in advance and liquidations of commercial operations

b/ The 1949 figures are not strictly comparable with those for previous years, since the Banco Central introduced a change of method in transferring expenses of mining companies abroad and provision for their taxation from the item "Private Transactions" to the item "Movement of Capital".

/The movement

The movement of capital as a whole was strongly favourable to Chile in 1949, in contrast to the position in previous years. The surplus of almost 40 million dollars is mainly derived from two sources: foreign credits utilized and capital contributions in the form of goods. The mining companies have had particularly heavy investment expenditure, the major part of which was for the installation of a new processing plant.

Another characteristic of movements of capital in 1949 has been the repayment of credits contracted in the course of trade operations; 4.3 millions to the IAPI in respect of sales of wheat and oil and 2.2 millions in respect of the clearing account with Brazil.

Net outcome of the balance of payments and its financing

Except for the years 1945 and 1948, the net results of Chile's balance of payments have been unfavourable since the war, as may be seen from the following table:

Table 93 Chile: Determination of the net outcome of the balance of payments
(in millions of dollars)

Years	Total Receipts	Total Payments	Net surplus (+) or deficit (-)
1945	264.0	252.1	+ 11.9
1946	275.9	321.0	- 45.1
1947	347.0	392.4	- 45.4
1948	432.1	426.6	+ 5.5
1949	410.4	415.0	- 4.6

Source: Banco Central de Chile, Annual Balances of Payments

The financing of the net surplus or deficit of the balance of payments is achieved by means of compensating accounts and credits. In the three years in which its international accounts resulted in a deficit, Chile had to turn to gold and foreign exchange of the Banco Central, to funds abroad of the commercial banks, and when this was not sufficient, to credits from international institutions. This situation occurred in 1949, when it was necessary as a result

/of the

of the drop in the price and the exports of copper, to use 1.5 million dollars of the 25 million dollar credit granted by the Export-Import Bank for that purpose.

The algebraic sum of the results of the balance of payments in the 1945-1949 period gives a net deficit of 77 million dollars. It is therefore interesting to enquire how Chile financed this net liability in its international accounts.

Table 94 Chile: Financing of the cumulative deficit of the balance of payments, 1945-1949
(in millions of dollars)

	Increase	Decrease	Difference
Gold and exchange reserves a/	38.4	100.3	- 61.9
Available commercial bank funds	25.9	8.6	+ 17.3
Compensatory credits b/	3.4	35.8	- 32.4
	67.7	144.7	- 77.0

Source: Banco Central de Chile, Annual Balances of Payments

Notes: a/ Banco Central, Caja de Amortizaciones, Fondo de Conversion and funds available for the account of third parties

b/ International Monetary Fund, Export-Import Bank and clearings

The pressure of the balances of payments on the country's monetary reserves can easily be seen. These have borne almost the entire weight of the deficit, the assistance of foreign loans having been required in addition.

In 1950, the situation improved a little, thanks to the recovery of copper prices and increased sales of nitrate, as well as to the new items which have appeared among exports (iron and petroleum); however, the fact that exports in the best years do not provide a margin for the formation of reserves with which to meet the debit balances of the years of depression cannot but be a cause for concern. It is true that this also depends on the domestic monetary policy.

The balance of payments by areas

In 1949, the Banco Central to its great credit managed for the first time to compile the balance of payments by major areas. This is particularly interesting in view of the difficulties inherent in the non-convertibility of currencies. In reality, the situation may be even less good than would appear

/from the

from the figures. In the case of Chile, as of other countries, the favourable balances of trade procured on the basis of agreements does not relieve the shortage of dollars or hard currencies.

The balance of payments has been divided into three sections: (1) United States and Canada; (2) Latin America; and (3) the rest of the world. This makes it possible to discern the principal movements of Chile's international accounts in two of the sectors of most interest: the dollar area and Latin America.

The importance of the dollar area to Chile is considerable: almost 60 per cent of the credits and debits of its balance of payments arise in that area.

Table 95 Chile: Balance of payments by areas, 1949
(in millions of dollars)

	United States and Canada	Latin America	Rest of the world
Receipts	239.1	43.8	127.4
Payments	251.6	79.2	82.4
Balance	- 12.5	-35.4	+ 45.4

Source: Banco Central de Chile, Balances of Payments 1949

As regards equilibrium by areas, a glance at the foregoing table shows the problem that arises. The balance of payments in the dollar area and Latin America shows a deficit which could theoretically be paid for with the surplus obtained in the balance of payments with the rest of the world. But it is precisely in this last section that almost all the countries are to be found which trade on the basis of clearing agreements.

Taken as a whole, the situation is not so serious, since Chile obtains a certain amount of dollars outside the dollar area from its copper sales. On the other hand, it has to pay in dollars for its petroleum, sugar and cotton purchases, even if they do not come from that area.

/The principal

The principal problem lies in the fact that trade with the United States and Canada, and with Latin America, leaves an adverse balance which cannot be entirely offset by the surplus in the balance of payments with the rest of the world, where the dollar shortage is even more acute.

However, with the partial data available, the Banco Central has reached the conclusion that the situation has tended to improve in 1949 as compared with the immediately preceding years.

"In the last few years, a slow readjustment process can be noted, tending to the redistribution of transactions according to patterns more similar to the pre-war ones. Already in 1949, exports and imports to and from countries situated outside the American continent had recovered considerably in relation to the war period.

"This has been the result of the rapid economic recovery of the European countries, which are now in a position to offer goods which Chile had been importing from the United States; while there has also been a diversion of part of our exports, especially agricultural products, towards those countries. The devaluation of the pound and of numerous other European currencies has given a special impulse to this process. This redistribution of our import trade has partly helped to relieve the problem of the acute shortage of dollars." 1/

1/ Banco Central, Balance of Payments 1949, page 29.

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