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**Working Paper**

## The Stagnation of Chilean Agriculture: History and Outlook

Staff Paper, No. SP 76-25

**Provided in Cooperation with:**

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*Suggested Citation:* Smith, Marc A. (1976) : The Stagnation of Chilean Agriculture: History and Outlook, Staff Paper, No. SP 76-25, Cornell University, Charles H. Dyson School of Applied Economics and Management, Ithaca, NY, <https://doi.org/10.22004/ag.econ.184810>

This Version is available at:

<https://hdl.handle.net/10419/276481>

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THE STAGNATION OF CHILEAN AGRICULTURE:  
HISTORY AND OUTLOOK

By

Marc A. Smith

June 1976

No. 76-25

THE STAGNATION OF CHILEAN AGRICULTURE:  
HISTORY AND OUTLOOK \*

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Introduction

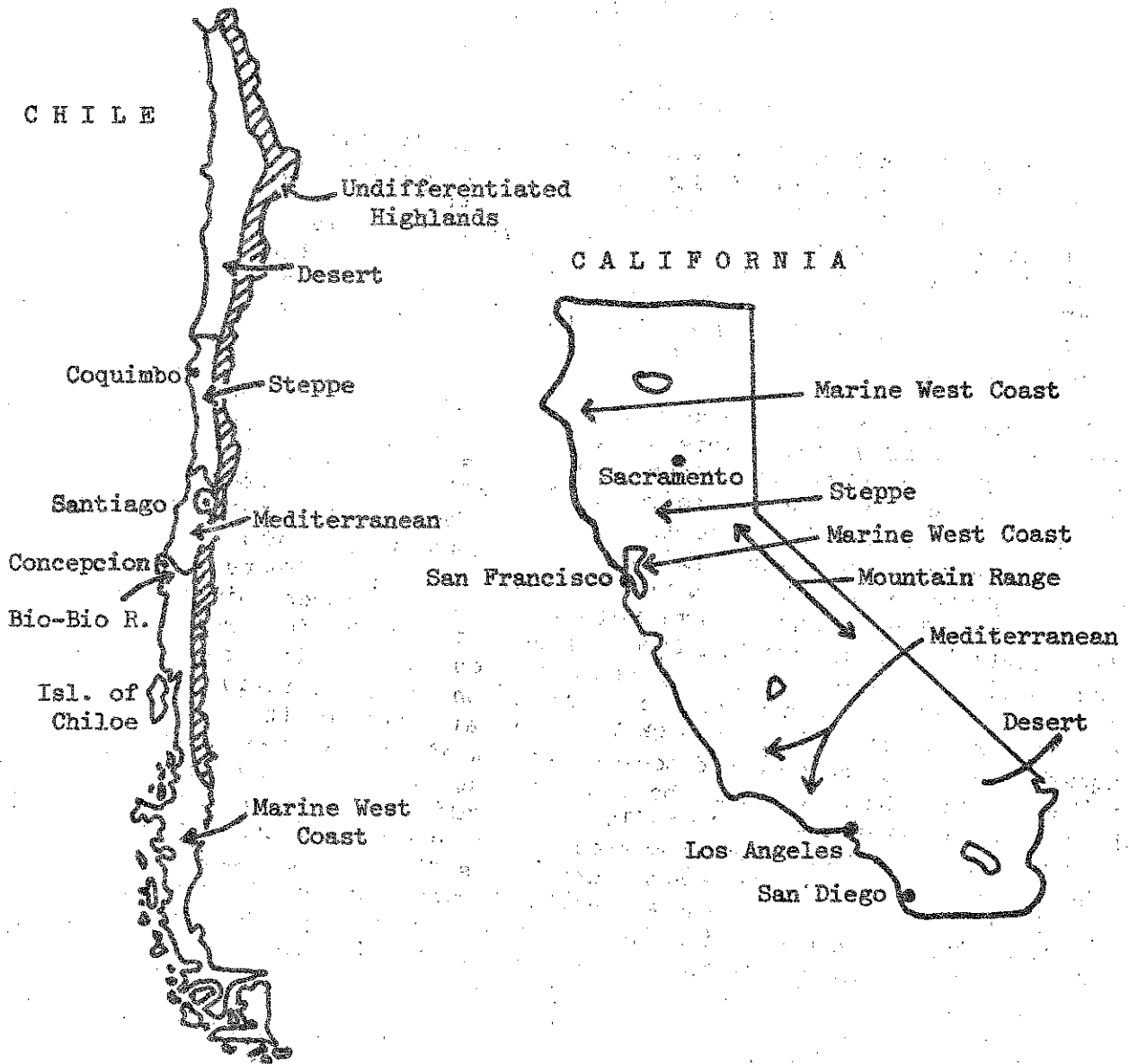
In historical perspective, the development of the Santa Clara (California) Valley represents an accelerated version of the agricultural evolution of Central Chile. Stimulated by demand, not too deeply immersed in Spanish institutional rigidities, and infused with vigorous eastern immigration, this small region so richly endowed with farm resources increased the value of production per acre ten-fold in half a century . . . (1, p. 220).

This paragraph was written as a description of the agricultural success story of California. This paper is to be written as a description of the failure of an agricultural system possessed of the same climate and natural and human resources. The Mediterranean climate which Chile and California are blessed with has fostered the progress of some of the most prosperous agricultural regions in the world. Figure 1 illustrates the features of this climate and its effects on both of these valuable agricultural regions. Table 1 further points up the nearly identical rainfall experienced within production areas in California and Chile. Despite these shared characteristics, the fact remains that California has become one of the most productive farming areas in the world, while Chile has remained one of the most disappointing. The economic and social systems which have been built upon the resource base have also been determining factors between agricultural and economic success or failure. In California agriculture followed a logical progression from specialized, extensive agriculture to the present-day system where crops are diversified and the land is farmed intensively. In Chile the agricultural system and production technology have not advanced significantly past the stage which existed during the days of the conquistadors. An explanation is necessary.

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\* In slightly modified form, this paper was first submitted as a part of the requirements for Agricultural Economics 660: Food, Population, and Employment, Fall Term 1975/76.

FIGURE 1. CLIMATE TYPE COMPARISON: CHILE AND CALIFORNIA\*



\* Map of Chile from William C. Thiesenhusen, Chile's Experiments in Agrarian Reform (Milwaukee, 1966), p. 8.

TABLE 1. CLIMATIC DATA FOR STATIONS IN CHILE AND CALIFORNIA AT COMPARATIVE LOCATIONS\*

Station	Latitude (degrees)	Elevation (feet)	Annual Rainfall (inches)	Average Temperature Warmest Month (degrees F.)	Average Temperature Coldest Month (degrees F.)	Length of Growing Season (days)
San Fernando, Chile	34° 33'	912	29.5	68.3	46.1	290
Los Gatos, California	32° 47'	795	29.6	68.2	47.6	316
Pichidegua, Chile	34° 20'	279	13.8	66.2	46.9	281
Hollister, California	33° 10'	284	13.1	65.6	47.4	257

\* Source: Thomas Carroll, "Agricultural Development of Central Chile" (thesis, Cornell Univ., 1951), p. 209.

There are indications that the plight of agriculture is growing worse with each passing year. Agricultural productivity cannot keep up with demand, and the sector is contributing progressively less to gross national product even though the number of people engaged in agriculture has remained fairly constant (2, p. 3).

This statement was written in 1966, and is a reasonably accurate assessment of the performance of Chilean agriculture for not only the years 1960-65, but for most of the twentieth century. During the last 75 years Chile has gone from a net agricultural exporting situation to the point where it is necessary to import agricultural products valued at \$335 million (3, p. 14). As economic development progressed, demand for food grew with population and national income, and agriculture, which at first responded simply by putting more hectares into production, has not been able to meet the task of greater and more efficient food production. Chile has faced more than her share of economic crises--inflation and a chronic balance of payments problem among them--and the agricultural sector has hindered rather than contributed to the finding of a solution.

Different observers of Chilean agriculture have come up with different conclusions as to the cause of agricultural underdevelopment. There have been two general schools of conjecture on the subject. One line of thinking puts the major part of the blame on governmental policies which, while attempting to meet the dual objectives of curbing inflation and promoting economic development in nonagricultural sectors, have failed to provide for production incentives in agriculture. By squeezing the sector to save funds for use in development elsewhere, and by putting ceilings on food prices in order to curtail urban price inflation, the Chilean government has managed to choke off most of the incentives for farmers to reinvest in their enterprise or to increase production efficiency.

The second school, which is more visible in the literature on Chilean development, places the cause of agricultural failure in the structure of the Chilean agricultural system. Land is concentrated in the hands of a minority of the rural population, while the rest of the agricultural sector is made up of small farmers (minifundistas), who can contribute to little more than their own survival, and landless laborers, who are usually completely dependent upon the hacienda for their employment and subsistence. The argument continues by stating that it is this system of control over the factors of production which has stifled incentives in the agricultural sector. The large landowner (hacendado) holds a great deal of power, both in the countryside and in the policy decisions made by the government. The landowner cares less for improving production performance than for maintaining his position in the social hierarchy; the inquilino (agricultural laborer) can see no farther than the next day's survival, knowing that increasing his production efforts will leave him no better off than the day before. This lack of concern for efficient use of productive resources by the hacendado, and the absence of economic opportunity for the inquilino

and the minifundista can be partially blamed for the poor performance of the agricultural sector.

It can be safely assumed that both trains of thought on the subject hold elements of considerable validity for the search for a solution to agricultural failure.

One more feature of the Chilean experience has tended to affect the progress of economic and agricultural development. As the problems of the economy and of the rural sector have grown more pressing, politics have played a greater role in their resolution. Demands for change have often been met with ineffective and confusing policies which have led to a worsening in the political situation. When drastic reform measures have been taken by particular administrations, they have been met by drastic countermeasures taken by those who have wished to retain the status quo. The result has been that the real problem has been obscured by political passions--and efforts toward improving the Chilean economy have been diverted by political ideology rather than aided by effective governmental policy.

The agrarian problem in Chile was first officially recognized in the Constitution of 1925, which was a product of several years of political instability and the liberal solutions proposed by President Alessandri and his regime. These years also marked the beginning of the real decline in the performance of the agricultural sector. The Great Depression coupled with failures in Chile's mineral export sector put more pressure on agriculture and ultimately exposed the deep-rooted problems that existed within the economy. Thus, our analysis will focus on the period from the Constitution to 1970, a period in which agriculture became a recognized but still neglected, worsening, economic problem.

#### Background

Chile has been described as a long, narrow sash. It stretches 2,630 miles, from Arica in the north ( $18^{\circ}\text{S}$ ) to Cape Horn ( $56^{\circ}\text{S}$ ). The Andes and the Pacific Ocean mark her respective eastern and western boundaries which are never more than 250 miles apart (4, p. 234).

Chile can be divided into northern, central, and southern geographic regions. The north has one of the few weather stations where no rain has ever been recorded (4, p. 234). The Atacama Desert is one of the most desolate areas found in the world. The southern extreme of the country is made up of islands, peninsulas, and mountain ranges, with heavy forests and little arable land. Few people inhabit the region and rainfall is greater here than in most parts of South America (5, p. 22). In nearly all discussions of Chile these extreme regions are ignored--the real Chile is the land in between, the valley of shadows, the vale of Chile, the Central Valley. Agriculture and popu-

lation are centered here in (4, p. 234):

. . . a land which forms a narrow strip between high mountains and the sea; a land covered with fields of growing crops and green pastures, bordered by graceful rows of Lombardy poplars, eucalyptus, or weeping willows.

The assets and the problems of Chilean agriculture, economy, and society are found in the Central Valley, and most of our discussion will be focused on this dominant region of the nation.

Major Chilean agricultural products include wheat, cattle, and grapes for wine. The potential for production, as previously alluded to, is great--a Mediterranean climate, a fertile soil resource, and opportunities for irrigation of cropland should make agriculture a highly profitable enterprise. Nicholas Kaldor has stated (2, p. 9):

There can be little doubt that the combination of natural and human resources of the country--its climate and geology, its mineral resources as well as the potential fertility of its soil, the natural vitality and intelligence of its population . . . are as favorable, if not more favorable than that of the economically most developed nations of the world.

Let us examine these favorable resources by region, and through a brief look at the history and the people of Chile.

The north of Chile holds the vast mineral resources which have given her an international reputation. Nitrates were discovered in the mountains bordering the Atacama in the middle of the last century. It took a war against Peru and Bolivia in order for Chile to gain control of the resource--but demand grew rapidly as new uses for the minerals were found in the manufacture of explosives and fertilizer. The worldwide demand carried Chile as an export economy through the beginning of World War I, at which time overproduction threatened the entire industry, and German scientists discovered methods to synthesize artificial fertilizers. An industry had been born in attempts to overcome the desert and get the nitrates to port, while at the same time supplying those who were making their living in the northern nitrate fields. Thus, it can be said that this mineral export supported the development of the northern region as well as the trade sector of the Chilean economy.

Southern Chile lies at the other extreme of the sash and represents an extreme contrast to the other regions of the country. The River Bio Bio marks the northern boundary of the southern section. The Cordillera of the Andes dominates the eastern edge, and volcanoes and forests also contribute to the landscape (4, p. 264). The people that inhabited the area cleared the forests and devoted their medium size farms to the raising of livestock. The region's population is made up of many Europeans, who as colonists, pioneered the way for settlement in the South. Some soft wheat is grown here, at least as much as the rainy climate allows, and the other major agricultural industry of the region, lumber, has not been developed to its full potential. Farther south, the climate



grows much more hostile, the Andes move closer to the sea, and the rains become heavier. Few people inhabit the islands and fiords of the far south and the only agricultural enterprise carried out is the raising of sheep.

Central Chile is the most important region of the country. The amount of agricultural land available in the valley is limited by the mountain ranges on the eastern and western edges. However, the soil is fertile and the climate favorable to agricultural enterprise. There is little or no rainfall during the summer months, and irrigation is necessary to grow the winter crop of cereal grains. Most of the rest of the land is used for pasture land for cattle grazing, and for vineyards in the Valley of Aconcagua (4, p. 249).

It is in the Central Valley that the hacienda system, so deeply rooted in Chilean rural society, has grown up. The first impressions of these large estates were described by McBride in 1936 (4, p. 35):

One of the greatest charms of central Chile lies in its beautiful farms . . . The wealth of the landowners has enabled them to beautify their farms--in fact, one wonders whether, in the minds of Chilean proprietors, the first thought is not for the adornment of their country estates rather than the providing of an income.

This is the real Chile, the land in between. The agricultural performance of this region is that which has not lived up to its productive potential over the past fifty years. And it is this region in particular which will be examined in the search for the reasons for failure in Chilean agriculture.

Not only is the bulk of agricultural enterprise carried on in the Central Valley, but the capital city, Santiago, most industries, and 73 percent of the Chilean population are located here. Nearly all political, social, and industrial life is carried on in the middle third of the nation. Here lies the crux of the economic and agrarian development problem.

Chile's population is rather unique in Latin America. There is a heavy European atmosphere in most urban areas. Immigrants from Spain, Germany, Italy, and England have made their mark in Chilean business and culture. Also, while most Latin American nations have a distinct Indian-Spanish racial division, Chileans are nearly all mestizos of mixed Spanish and Indian blood. Class barriers in Chile, then, have been economic rather than racial in nature. Chile's population growth rate has been high--along the same lines as population growth in the rest of Latin America. Since 1920 population has grown at a rate of approximately 2.1 percent per year, and during the '30s and '40s the birth rate in Chile was one of the highest in the world. The final significant feature of the Chilean population is its central and urban distribution. As we have seen, nearly three fourths of the population lives in the central regions of the country, and 74 percent are classified as urban (6, p. 3). Present population is 8.8 million, growing at an approximate rate of 1.8 percent per year.

### Chile's History

The agricultural system in Chile has its roots deep in history. The advanced state of the indigenous peoples of the New World, and the systems of agriculture established following the Conquest still have a great influence over the rural societies of Latin America. The land tenure structure and other unique characteristics of the conquest of Chile aid in a better understanding of Chilean agriculture over the last 50 years.

"There was no man who wished to come to this land." (5, p. 62). Pedro de Valdivia, the Spanish conqueror of Chile, said this of the land that was conquered and explored only as an afterthought to the conquest of the rich lands of Mexico and Peru. Chile was not easily accessible, and it possessed no easily visible mineral wealth. The only natives were the fierce but relatively primitive Araucanians. They were few in number and could not supply the amounts of forced labor required by the Spaniards to operate the mines and their newly acquired estates. Furthermore, the native peoples of Chile fought the Spanish settlers at every turn, and hampered the complete occupation of Chile for at least 300 years (5, p. 63). It can be seen, then, that Chile proved to be a much more hostile and less rewarding enterprise for the Spanish than had the previously conquered lands of the New World.

Spanish policy in Latin America was to subject new peoples and land to the Spanish crown (5, p. 65). To aid and reward the conquerors in the accomplishment of this objective, the encomienda system was implemented. The highest ranking and most powerful members of the conquering army were awarded the rights to certain parcels of land and to the services of the Indians who inhabited that land (7, p. 56). The lands and the labor of the indigenous people were regarded as forms of tribute to the crown, and the land was originally held in the name of the king rather than by the Spaniards who held the encomiendas. It was from this starting point that the feudalistic system of Chilean agriculture, which has been in existence for so long, developed. McBride points out the fact that the Indians' obligation to the settlers was of little value without practical ownership of the land itself--and that sooner or later, the land did pass into the hands of the settlers themselves (5, p. 67). Due to the hostility of the new territory, the early encomiendas were limited to the districts nearby the first settlement at Santiago. Indian laborers were scarce in these early pockets of settlement, and Valdivia was forced to readjust his grants of the encomienda privilege accordingly (7, p. 57). As the Spaniards gained control over the remaining lands in the colony, it was possible to grant more and greater encomiendas. The system grew and developed into the hacienda system which is still prevalent today.

It is not necessary within the context of this paper to detail the history of Latin America and Chilean independence from Spain. It is important, however, that we understand the nature of the independence movement within Chile. McBride describes the revolutionary feeling of Chile's leaders best (5, p. 188):

When agitation for independence began in the American colonies of Spain, many of the landholders . . . remained loyal to the crown. Their interests were in large part identical with the interests of Spain itself . . . Probably more than in any other Latin American colony this sentiment of loyalty was manifest among the Chilean hacendados . . . Chile broke away from Spain but not from Spanish institutions . . . The system on which Chile had been organized was continued and gave little opportunity for social transformation.

Thus it can be seen that the trend in Chilean history has been toward a consolidation of the power of the landholding class and a strengthening of the hacienda system. Even "revolution" increased the significance of McBride's description of hacendado and inquilino as "master and man."

The economic history of Chile has also been strongly marked by the powerful influence of the landholding class in the making of governmental policy. Drastic change has not been a common occurrence in Chilean history; since independence the government has almost always remained stable and effective in pursuing its policies. There are two reasons behind this Latin American oddity: first, the control of the landed class has been such that it has been able to give in to liberal demands for change when necessary while always maintaining and strengthening its own position; secondly, Chile has long been blessed with large quantities of exportable mineral resources. She was also a large agricultural exporter of grains during the middle part of the 19th century. Because of this wealth, government revenues have always been great enough to allow each administration to act with little fear of popular disapproval. Silver and copper provided the bulk of these revenues immediately after independence, and following the War of the Pacific against Peru and Bolivia, Chile won control of the desert nitrate fields and rode the world fertilizer boom through the First World War.

The conservative nature of most Chilean governments led to a favoring of investments in the private sector of the economy. Until the 1930s the agrarian sector--under the control of the influential hacendado class--was favored with easy credit terms from the government. This appeared to be a result of political influence rather than of development policy. Landholders preferred to spend rather than invest this extra money, and as a consequence, domestic prices have been subject to rather serious inflation since as early as 1879 (8). As inflation tended to force an increase in imports, chiefly of food products, foreign exchange earnings from copper and nitrate sales were drained, and the beginnings of Chile's economic troubles could be foreseen.

Reliance on a two commodity export trade put Chile in a situation vulnerable to world market price swings in copper and nitrates. In 1918 synthetic fertilizer was developed and Chile's prominence in world nitrate sales was gone. She was left with a still important copper mining sector, a climbing inflation rate, a worsening deficit in the balance of trade, and an agriculture which could not much longer meet the growing demands of population growth and industrial development.

Agriculture had been protected for too long against real world demands for productive efficiency and productive change with the times. The 1920s marked the beginning of a shift in governmental attitudes toward the agricultural sector. Since then, a search for effective reform and a struggle against ever-mounting economic problems have been the dominant issues in Chile's development. Our examination is of the rural sector's role in this process since the mid-'20s.

#### Criteria for Evaluation

A question arises as to how one is to judge a developing agriculture. Given a nation's development goals, the place of agriculture as a contributor must be determined. Strategies that have been followed have taxed agriculture to pay for industrialization; they have used agricultural surplus for export in order to build reserves of foreign exchange for investment in the development process; and others have included agriculture in an effort toward balanced economic growth--providing for transfer of labor out of agriculture as the entire economy develops in an interdependent fashion. The Latin American strategy has often been to squeeze and neglect agriculture in favor of developing industrially; this had been largely true in the Chilean case. Our attempt will be to show that this has not been the proper course for Chilean development, when judged against the following criteria:

Firstly, an agricultural sector must be viewed in terms of the resources available for use in the production enterprise. Have these production factors been used efficiently? Are there cases where similar land, water and climate resources have been used more effectively in conjunction with labor and capital inputs? Have agricultural practices and technology kept up with present world levels of achievement? This relationship between resources and performance can be termed agricultural potential--and our judgment can rest partially on whether or not this potential has been met.

Related closely to the above aspect of potential productivity is judgment in terms of growth in production over a given period of time. Over the past 50 years has Chilean agricultural production grown at a consistent and acceptable rate? Has food production been able to keep up with growth in population, income, and demand? Production measured against population growth and demand can give a fairly clear picture of where an agricultural sector has succeeded or failed over a given time period.

Just as important, and again in the same general context, is the measurement of agricultural performance against its contributions to overall economic growth. Has the agricultural sector been able to support itself as well as feed the people who must eat in the cities? Has a surplus been provided in terms of increased income for use in savings and investment in the economy, or in terms of food exports to build up the nation's foreign currency reserves, or in terms of a possible transfer of labor out of

agriculture for work in other developing sectors of the economy? An economy which can count on the agricultural sector to make these contributions to growth and development stands in pretty good shape.

Finally, it is important to view agricultural performance in terms of the lives of those who work in the rural sector. This aspect is perhaps the best "real life" measure of performance in an agricultural economy. Yet, it is the least tangible measure, and when problems exist they are extremely difficult to solve. Does the rural sector provide sufficient income to enable its inhabitants to subsist at a reasonable level of living? Does it provide enough employment opportunities for agricultural labor? Are there opportunities for the rural worker to move ahead in or even out of the agricultural sector? Are wealth and income distributed evenly enough within the sector to maintain employment and social stability? The answers to these questions, perhaps more than the trade and production statistics that can be found in an agricultural census, can prove the success or failure of an agricultural system.

The next step in our evaluation of the Chilean agricultural sector's performance is to apply these criteria to the performance of the structure and the system of agriculture in Chile.

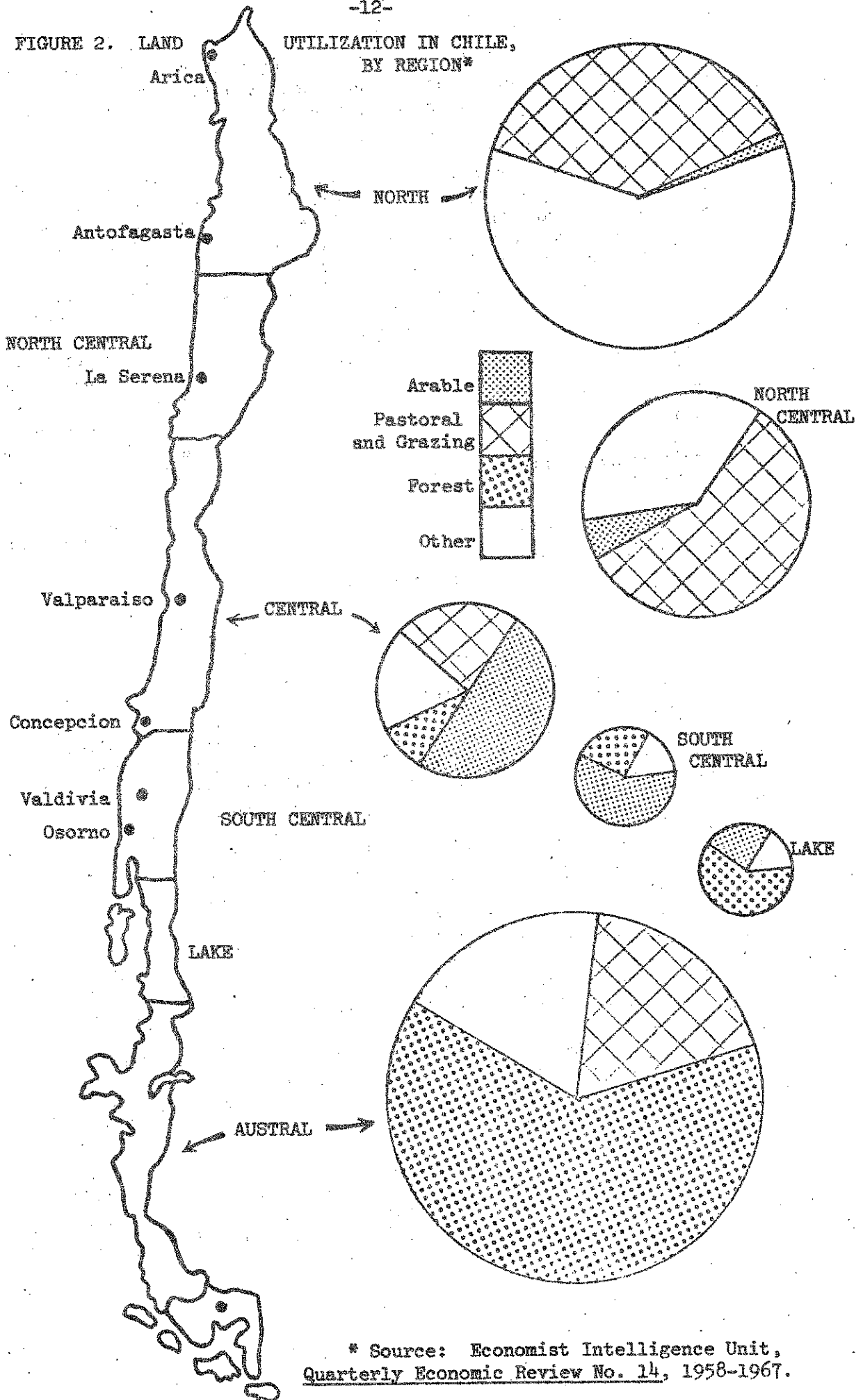
#### Agricultural Potential

The resource base with which Chile is endowed has led to great expectations for agricultural performance. "Blessed with a generally equable climate and rich soils, the great Central Valley of Chile has been described by Theodore Schultz as 'probably the best piece of farm real estate in the world outside California'" (9, preface). The Mediterranean climate is well suited to the Mediterranean agriculture (wheat, cattle, wine) introduced by the Spanish (5, p. 28). While problems have appeared with rainfall (or lack of it) and variation in the weather, it can be asserted that Chilean agriculture should be more than able to feed the population. A brief look at land utilization over the 50-year time span could serve to present a picture of the uses farmers have made of their resources (5, pp. 176-177):

To the visitor looking down from the neighboring hills upon haciendas about Santiago it appears that about one field in ten is being utilized for cereal production, the others lying fallow or devoted to hay, or grazed by small herds of cattle or horses--this, even though the soil on these farms is the most fertile in the country and an abundant supply of water is available for irrigation . . .

Chile does not possess an overabundance of arable land. Agriculturally productive land makes up only 14.9 percent of the total land area and better than half of this land is found in the central regions of the country (6, p. 4). Figure 2 illustrates the distribution of land

FIGURE 2. LAND UTILIZATION IN CHILE, BY REGION\*



\* Source: Economist Intelligence Unit, Quarterly Economic Review No. 14, 1958-1967.

suited for different purposes in the major regions of the nation. It indicates the relative size of each region and the percentage of arable land within those areas. It can be concluded that only the central regions of Chile are suited for significant agricultural production. These percentages would imply that efficient use of a small area must be made in order to take full advantage of Chile's agricultural potential. Historically, this has not been the case. The argument represented above would lay the blame for this failure on the hacienda system. McBride claims that due to the size of the holding and the power of the hacendado, the hacienda has never been an efficient unit of production. An opposing explanation asserts that smaller landholders would not necessarily use the land resource more efficiently, as they would remain subject to the same agricultural disincentives which have developed with government policy over the years. This argument will be dealt with in a later section.

In any event, the relative advantages of small, intensive farming over large land and capital intensive (extensive) agriculture have been argued in most parts of the less developed world. The hacienda, as well as price and trade policy, has played a part in the mismanagement of Chile's valuable agricultural resource base. The extent of the importance of these roles is discussed in the following sections.

#### Production Performance

It can be said that production in agriculture must meet three demands: to supply food and maintain a production level which can provide balanced sectoral growth in the developing economy; to meet the needs of a growing and more affluent nonagricultural population; and to provide foreign exchange in the form of export revenues to power the nation's development. We will look at the first two of these requirements in this section. The sector can also be broken down into grain and livestock subsectors in order to analyze the effect of their development upon the rest of the agricultural economy. Trade in agricultural commodities is the subject of a later section.

Mamalakis and Reynolds point out that the problems in Chilean agriculture have been grounded in an unbalanced relationship between limited output in food production, and dynamic growth in population and the other economic sectors. Table 2 indicates that agriculture has not been able to increase production fast enough. Since 1935 population growth and food consumption increases have surpassed the rural sector's attempts to keep Chile fed.

Most observations lead to the conclusion that development in the Chilean economy has tended to promote industry at the expense of an already poorly organized agriculture.

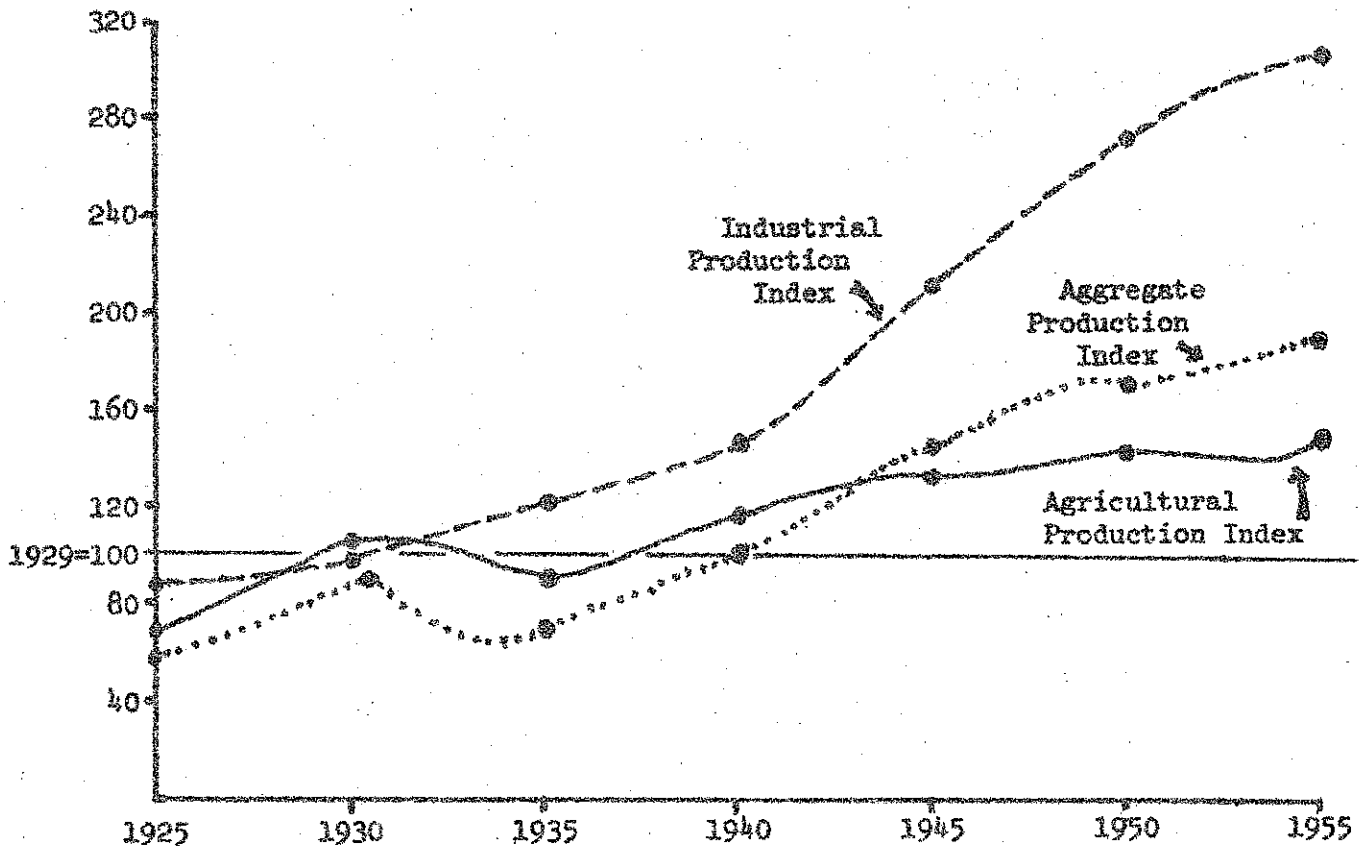
The relative growth rates in production for agriculture and industry from 1925 to 1955 are shown in Figure 3. During this period the industrial sector was, by far, the dominant sector in terms of growth and

TABLE 2. ANNUAL PERCENTAGE INCREASES, POPULATION, PER CAPITA FOOD CONSUMPTION, TOTAL FOOD CONSUMPTION, AND AGRICULTURAL PRODUCTION\*

	1935-39 to 1945-49	1945-49 to 1960	1960- 1970
Population	1.7	1.8	1.8
Per Capita Food Consumption	0.6	0.7	0.7
Total Food Consumption	2.3	2.5	2.5
Agricultural Production	1.6	2.5	2.0

\* Source: IBRD and FAO, Mission to Chile, The Agricultural Economy of Chile (December 1952), p. 83.

FIGURE 3. CHILE: INDICES OF AGRICULTURAL, INDUSTRIAL, AND AGGREGATE PRODUCTION\*



\* Data from Markos Mamalakis and Clark W. Reynolds, Essays on the Chilean Economy (Homewood, Ill., 1965), p. 30.



production. Agriculture continued to grow at a rate of about 2 percent per year from the mid-'50s to the beginning of the land reform in the mid-'60s. Industry, in the meantime, grew at rates of about 7-10 percent per year. In a developing economy it is agreed that agriculture should play a decreasingly important role in the growth rate of domestic production. However, it must maintain a certain production growth rate relative to the other developing sectors in order to provide those sectors with a needed supply of agricultural products. Demand for industrial products by those in the agricultural sector, and a release of labor toward the dominant sector are also desirable features of a growing agriculture. The unbalanced nature of Chilean growth has left agriculture stagnant, as well as saddling the economy with growing inflation.

The explanation for the industrial bias of Chilean economic development over the past 50 years can be found in the objectives of governmental policy.

Stagnation of agriculture appears to be the result of a deliberate disequilibrium position and an unjustifiable inequality in the rates of return on the capital invested in industrial and agricultural production. The own rate of agriculture was deliberately lowered by the lack of public investment opportunities . . . was promoted with subsidies, protection, and overhead investment (10, p. 148).

Agricultural prices were controlled in order to gain revenue to support the goal of industrialization. For this reason incentives to improve productivity and increase agricultural production were nearly nonexistent. Echeverria (15, pp. 23-30) points out that, as the country progressed toward industrialization and economic development, agriculture remained stagnant, not only because the sector was being squeezed, but because the large producers were in no great hurry to increase production. Their power and influence within the government were not being drastically eroded, and they managed to use it to sidestep all efforts aimed at reform in the agrarian income and tenure structure. The direction of the nation's development tended to divert public attention from the need for that reform.

In the meantime, the imbalance in the Chilean economy became more severe. As industrial development created greater demands for food from the agricultural sector, Chilean farms failed to meet that demand. Reliance on the mining and industrial sectors for building up a stabilizing reserve of foreign exchange proved to be a hopeless enterprise, as that foreign currency had to be used increasingly to pay for steadily growing food imports.

Thus, incentives for agricultural investment and production were stifled, at least until the advent of the reform measures of the 1960s. The industrial sector grew, along with the nation's population, and created a growing demand for agricultural products which could not be met by the domestic rural sector. Further manifestations of the disincentives in agriculture and their effects will be examined in the following sections.

While production growth in agriculture has lagged behind that in the industrial sector, it has also failed to keep pace with growth in the Chilean population. Furthermore, rising incomes have served to strengthen demands for food. From 1935-39 to 1960, per capita food consumption grew at a rate of over 2.5 percent per year. Agriculture was barely able to keep pace, and greater reliance on food imports became the rule. Since 1960 some reports have put the annual growth in per capita food demand at 4 percent--twice the growth rate in agricultural production for the same period. Inflation at a worsening rate has been the inevitable result. This demand pull situation has been both a cause and an effect for many of the policies which have damaged agricultural development. Lagging production in the agricultural sector, coupled with rapidly increasing population and growing demand, and a high inflation rate are the symptoms of underdevelopment. Chile, with a greater than adequate supply of human and physical resources does not fit the less developed context.

In order to better understand the reason for this imbalance in the growth of the Chilean economy, the relative incentives afforded the industrial and agricultural sectors must be examined. We have seen that industrial growth has progressed much more rapidly than the production growth rate in agriculture. Our first analysis would point to inefficiency in agriculture--poor utilization of arable land, absentee operation of the haciendas, and a failure to invest in capital and technological improvements. The question which must be answered here is why. What reasons did agriculturalists have for ignoring the need to make more efficient use of the resources they controlled?

Two theories of industrialization have been advanced to explain the objectives which the agricultural sector is expected to meet in an industrially developing economy. Mamalakis and Reynolds have described these in terms of the following hypothesis (10, p. 118):

It is agreed that without a continual increase in agricultural output and productivity, neither the labor can be released nor the output supplied that are necessary for sustained industrial development and income growth.

One school asserts that investment incentives as well as improved technology will stimulate the greatest, most consistent agricultural output, as well as releasing labor and savings for investment in the industrialization process. On the other side, it is believed that agriculture must be squeezed in the short run to initiate the first burst of industrial growth. This is accomplished by reducing investment incentives in agriculture relative to opportunities in the industrial sector, and spending less for agricultural infrastructure requirements. The public funds and private savings not used for investment in agriculture are then transferred for use in industrial growth.

In Chile, a middle course was followed---complete neglect of the agricultural sector was not possible due to the political power of rural landowners (10, p. 118). However, the terms of trade were gradually

turned against Chilean agriculture, toward food supplied from abroad and toward the dominant urban-industrial sector. This was accomplished by using a variety of measures. First, no significant government funding went into the development of social and institutional "overhead" in agriculture--research, road development, and marketing of production inputs were left in the hands of a backward rural private sector. Even irrigation, essential for nearly all crop production in Chile, and a process not difficult to facilitate, was neglected in the development scheme of the public sector. Second, price ceilings were imposed on domestic agricultural commodities, while competing food imports were heavily subsidized (10, p. 119). Finally, the government encouraged industrial investment by subsidies, often given in the form of low interest industrial loans.

This was the situation that developed from about 1930 to the early '60s; its effects on the Chilean economy have been disastrous, and recovery from those effects has still not been achieved. Mamalakis and Reynolds described the development of the economic problem (10, p. 119):

In the pursuit of its objective the dominant sector overshot its mark . . . Resources released to the dominant industry were partially siphoned off by the policy of importing agricultural commodities normally produced in Chile. Worse than that, part of the mining sector's proceeds, which were appropriated by the government, were used to subsidize foreign agricultural products and penalize the domestic agricultural sector. The reduction in resources available for capital formation penalized both the already losing agricultural sector as well as the dominant industry.

Agriculture's failure to keep up with industry and population has been a major factor in putting the economy in its present position--plagued with 200 percent per year inflation rate, failure to meet foreign debt payments, and food shortage in the city while farmers cannot get hold of production inputs in the countryside.

If the agricultural sector is broken down into its major components we can examine two problem subsectors: the dominant feed and foodgrain sector and the livestock production sector.

Wheat is the classic crop in Chile. As in all Mediterranean areas it was the first staple food crop, around which agriculture of the colony was organized. It is still the most important single crop in the country (1, p. 177).

Wheat is grown mainly in the Central Valley but it is an important crop in nearly all agricultural areas of the nation. The annual pattern of rainfall dictates that in the north central regions wheat be grown as a winter crop. As one moves southward, rainfall increases, wheat varieties change, and the growing season shifts to summer.

Wheat yields have increased quite slowly since 1925. At the beginning of the period yields averaged about 11.8 metric quintals per hectare; in 1970 the average was reported at 18.8 quintals per hectare. This represents an increase of only 60 percent over a period of 45 years. There has been no green revolution in Chile. Three major factors influencing the production of wheat in Chile can be identified. First, weather conditions have been responsible for fluctuations in the average level of yields, as evidenced by low production years in the 1930s and 1970 due to drought. Secondly, production growth in wheat has been a function chiefly of increased acreages---new lands opened for irrigation, forests cleared, etc.--rather than through increased yields. Technology and modern inputs have not been put to sufficient use to raise production per hectare in a dramatic fashion. In turn, the number of hectares planted to wheat have been a function of relative crop prices and ultimately the overall agricultural terms of trade.

Supply elasticities for wheat in Chile have been shown to be consistent with those measured in other (highly developed) countries (9, p. 42). However, as in the rest of the agricultural sector, wheat production has been adversely affected by confusing and discriminatory price policies, usually with the objective of keeping the price of agricultural products low. Storage facilities have not been adequate in years of wheat surpluses, and when demand has exceeded domestic production (which has increasingly been the case) imports of this major crop have grown. Marketing facilities for all agricultural commodities have traditionally been inadequate in that poor access to markets and an absence of organization have posed great difficulty to farmers in the marketing of their crops. To these factors one can once again add the disincentives of the agricultural tenure and social structure. As market incentives for the production of foodgrains declined, landowners with other business interests found it more convenient to leave the farming operation to an overseer. Oftentimes, vacations in Paris were more important to the hacendado than the efficient use of his land. The small producer, on the other hand, along with the landless laborer had little part in the marketing process anyway, leaving them with no incentives to increase their production efficiency. Soon new areas of arable land became scarce, yields on lands already in production did not increase significantly, total production dwindled, and Chile's dependence upon imported wheat grew.

It can be seen that a disjointed, inefficient production system has been fostered by a disjointed set of price and development policies. With neglect, poor productivity and lack of incentives became the rule in Chilean agriculture. The effects of this situation have kept even the most suitable and important single crop at a relatively stagnant level of production.

The cattle enterprise in Chile suffers from chronic maladjustments, and is considered economically the weakest branch of agriculture . . . Costs of production are high, quality is low, and a very large percentage of the nation's huge forage resource remains unexploited . . . (1, p. 194).

Pierre Crosson, in his study of Chilean agriculture in the 1950s, concluded that the livestock industry was the major culprit for the stagnant agricultural situation. The number of beef cattle in Chile has not increased significantly since 1930 while consumption of beef has remained at nearly the same level (approximately 25 kg. per capita per year) since 1935-39. Production and slaughter dropped in 1970 apparently in response to the accelerated land reform effort (3, p. 12). Beef imports rose from a level of 29,000 head in 1935-39 to 40,000 head in 1970; production and trade in beef have been subject to wide fluctuations, after the war Chile imported 204,000 head of cattle, 111,000 in 1967. Cattle exports have been completely insignificant since 1935-39.

Mamalakis and Reynolds argue "that malfunctioning of the price mechanism and limited investment opportunities are strongly responsible for the backwardness of livestock production" (10, p. 130). Beef prices in Chile have been relatively low compared to prices received from other agricultural products, as well as when compared to beef prices in other countries (12, pp. 126-127). Price policy toward keeping retail food prices low might again have affected production. Furthermore, according to Mamalakis and Reynolds, monopoly power in the meat processing industry also added to the factors leading to stagnation in the production industry. Finally, competition from higher quality, more efficiently produced Argentine beef has also hurt Chilean beef production.

Because of the absence of price incentives, Chilean producers have been more likely to concentrate on areas other than the raising of beef cattle. They have certainly not been inclined to invest in modern forage and husbandry techniques or in animal shelter, breeding, or feeding enterprises. Thus the industry has remained unchanged and unimproved for most of the twentieth century.

As with most of the problems in Chilean agriculture, a social aspect can be added to the technical deficiencies in the livestock production system. The raising of cattle has long been seen as an enterprise which brings prestige rather than profit to the hacendado. Cattle grazing on his pasture land are a pretty sight; they make for good conversation at cocktail parties in Santiago, and fit well into the wealthy Chilean's view of agriculture as a way of life, or as a diversion rather than a business effort. This type of attitude by those who operate the nation's agriculture has definitely been a factor in the poor performance of the sector.

#### Contribution of Agriculture to Overall Economic Development

In addition to undoubtedly adding to the country's high rate of inflation, growth in internal demand working against an inelastic food supply adds to Chile's chronic balance of payments difficulties. Agriculture has not shown a positive export surplus since 1939. From 1935 to 1939 annual net surplus of agricultural products in

foreign trade was US \$11.8 million . . . from 1958 to 1963 the annual net deficit averaged US \$82.9 million over the five years . . . The drag agriculture places on the economy of Chile has been steadily growing (2, pp. 4-5).

In 1970, the agricultural trade deficit equaled US \$177 million (Figure 4)(3, p. 14). When one is armed with figures like these, the argument for proving the failure of Chilean agriculture is made painfully clear. Today Chile supplies barely half of her own food supply; a short 50 years ago she was a net exporter of foodstuffs, and in the 19th century Chile was regarded as one of the largest trading and export nations in Latin America.

Here lies the real drag on the growth of the Chilean economy-- public investment funds are drained to provide for import monies, foreign exchange earnings by other sectors are appropriated for food purchases from abroad when they could be used for investment in the development process, domestically produced food prices are artificially high and imported food prices are not at acceptable levels. Furthermore, when the mining sector experiences off years, as the result of lower world prices or failures in production, the economy is subject to default on foreign debt payments. Finally, overdependence on foreign imports, especially in the food sector, is regarded as unhealthy economically in most nations of the world. The worst aspect of the problem is that the entire, deepening foreign deficit, inflationary mess which Chile finds herself in is unnecessary. The measures which must be taken today to reverse the trend must be more drastic, and are less likely to be effective than they could have been had the real agrarian problem been recognized earlier.

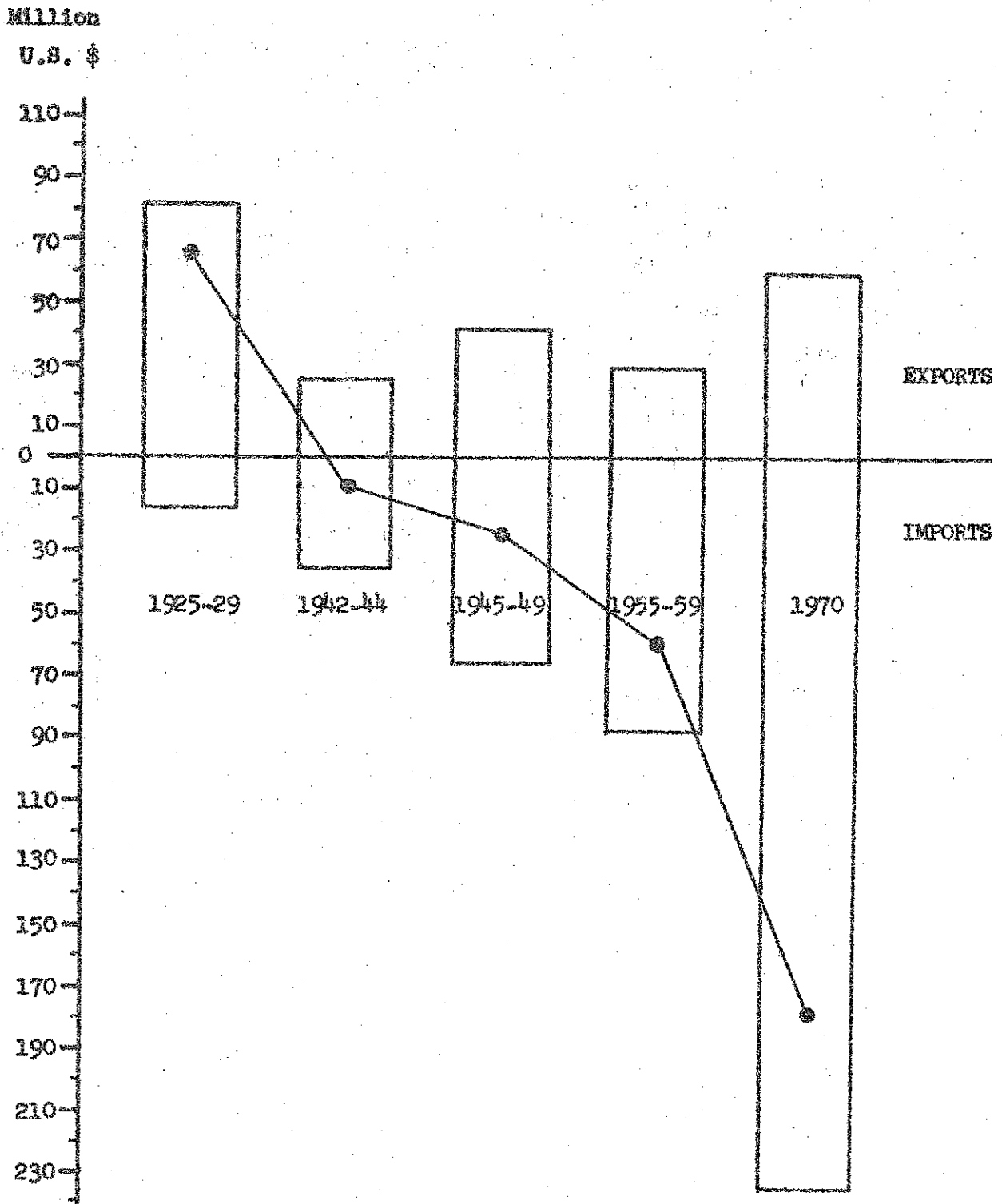
#### Life in the Rural Sector

I met them on the country road, Don Fulano and his mozo (servant), the latter riding at a respectful distance behind . . . His (Don Fulano's) strong figure, sitting firmly but gracefully on his mount set off with the handsome character of his trappings and his horse, made a strikingly attractive picture of virile, prosperous, commanding manhood.

The appearance of his riding partner was in sharp contrast . . . cheaply clad underneath his coarsely woven poncho . . . the mozo could be seen at once to belong to a different class . . . (5, pp. 3-4).

A description of life in the rural areas is perhaps the best way to bring home the true meaning of the agrarian situation to the people of Chile. The story of the hacienda system, which still holds on to rural life today, is not as easy to quantify as production and trade

FIGURE 4. CHILE: AGRICULTURAL BALANCE OF TRADE, 1925-1970\*



\* Sources: Thomas Carroll, "Agricultural Development of Central Chile" (thesis, Cornell University, 1951).

U. S. Dept. Agr., ERS, Agricultural Reforms and Productivity and Trade in Chile, 1955-1970.

patterns, but this aspect of the failure in agriculture gives us another perspective on the need for change in the Chilean agricultural system. It gives us a better idea, in human terms, of what the backwardness of Chilean agriculture has really done.

Analysis of life in the rural sector will be carried out by briefly describing the system as it has worked in the past five decades; by looking at the distribution of the value of the agricultural product, the prospects for education and better income as faced by the campesino; and by tracing the movement of labor out of agriculture to productive employment elsewhere in the economy.

McBride's description of the hacendado and his mozo presents a good idea of the feudalistic nature of Chilean rural life over the years. Industrial development, rising incomes, and demands for reform did not effectively upset this type of class structure. The first and most important feature of the system is the concentration of the land resource. In 1928, 0.5 percent of all landholders were reported to own 60 percent of nonpublic lands, while 2.5 percent of all landowners possessed 78 percent of private, arable lands (2, p. 14). In 1965, at the beginning of the agrarian reform movements of the last decade, fewer than 10 percent of the landowners held 86 percent of the arable land. Change in land tenure was not a characteristic of Chilean agriculture over that 40 - year span. In the rural sector, possession of the land brings with it possession of most production and income opportunities, as well as a great deal of power in the matter of controlling the direction of rural development. There have been few, if any, opportunities for the minifundistas or the landless laborers of Chile to improve their lot until the advent of the recent land reform and agrarian programs. As previously discussed, the hacienda provides employment, shelter, and subsistence for the inquilino. The absence of alternatives for labor caused wages for agricultural labor to be lower than in other sectors of the economy; in addition wages on haciendas in the past have often been paid in kind, in the form of a percentage of the farm's production, in housing provided, or in garden plots for the inquilino's use.

The nature of this system blocks agricultural development in a number of ways. We have already discussed the disincentives inherent in the system. Many land economists have argued that given an inequitable distribution of the land and wealth, all traditional forms of developing agriculture (new inputs, credit access, institutional infrastructure) only serve to further the inequality. The advantages of development accrue only to those who control the factors of production, while the situation of the rest of the agricultural population grows relatively worse. Thus, without a redistribution of the land resource, true development of the whole sector cannot proceed. The case in Chile has been one where change did not take place until very recently; and in many areas land reform failed without the concurrent introduction of development inputs, while in others the reverse situation was evident.

An idea of the "income" earned by the agricultural sector can be gained by relating the percentage of gross domestic product supplied



by agriculture to the percentage of the working population employed in agriculture. In 1940, agriculture with 36 percent of the active population produced 20 percent of national income. In 1951, the corresponding figures were 34 percent and 16 percent (12, p. 109). By 1964-66, a quarter of the active population depended on agriculture for a living, while agriculture provided only 10 percent of GDP. Explanations for this phenomenon could come partially from the increasing urbanization of the Chilean population--but further examination shows that agriculture must still support the absolute same number of people today as in the 1940s, even though the percentage of agricultural population has declined. Our conclusion must be that agriculture has contributed less and less to the income of the nation, while the people in that sector have received a smaller and smaller share of that income.

Eighty percent of the Chilean population is classified as literate; Chile ranks high among Latin American nations in this respect (13, p. 154). Schooling has long been accessible to the children of the members of the upper class. Education has been available for the last 30 years to most urban citizens. The extension of educational opportunities to the inquilino class has taken longer, but the process continues. If one assumes that education can lift the poor from their plight in the long run, Chile appears to be moving in the right direction. On the other hand, extension and research in agriculture are sorely missed in the effort devoted to agricultural development.

Life in the rural sector, then, appears to be one of great wealth on one hand, and dependence and severely limited opportunity on the other. People have been moving off the land, but the increased productivity which must accompany this transition has not been realized, and the agricultural sector has become the poorest contributor to the national economy.

#### Recent History: Land Reform, Allende, and the Junta

In the giant fundos of this long, thin country, many men still work as renters for two escudos, or 60 cents a day. By contract . . . he works six days a week, 8 hours a day in winter, twelve in summer. He understands that the master orders and he obeys . . . The frame of Chile, however, is worn out. None of it--not social, not economic, not political--works anymore . . . (13, p. 157).

This is where Chile was left when Eduardo Frei and the Christian Democrats were elected in 1964. A change of direction was imperative. Agricultural production continued to decline, and the situation of the economy was growing worse. The concept of agrarian reform had been put to limited use by the previous (Alessandri) administration, but it was Frei who promised social programs, a halt to inflation, and a land reform which would expropriate large and inefficient haciendas and redistribute the control of the agricultural land resource.

Expropriation, under the Frei program, could be carried out for land that was abandoned or poorly used, land operated by someone other than the owner, subsistence level plots, or land holdings in excess of 80 basic irrigated acres (3, p. 4). The objective was an improvement in agricultural efficiency. The reform was designed as a gradual one, so as not to allow the transition to damage chances to achieve this goal.

The reform was continued under the Marxist leadership of Salvador Allende. Redistribution and expropriation was extended and accelerated, building on the law drafted during the Frei administration. Allende incorporated social aims (milk programs, etc.) with the supplying of credit to agricultural producers, state management of the agricultural marketing process, and an input supply program initiated by the state.

"Agricultural production increased 2.4 percent annually from 1966 to 1971, compared with 1.8 percent during 1936-65" (13, p. 10). Population growth over the period was estimated at 1.9 percent. Progress was made toward a goal of eventual self-sufficiency in wheat and sugar. These results, however, must be regarded in terms of the overall economic and political context of those years. Frei was not able to bring inflation under control, and even with the increases in agricultural productivity, the balance of payments deficit grew worse. These problems were enough to cause political unrest, and led to the election of Allende in 1970, but they did not compare with the political and economic maladjustments faced (and perhaps, caused) by the Allende government. Allende froze prices and increased minimum wages, greater areas of farm land were redistributed, the U.S.-controlled copper interests were nationalized; all in a nation that was split down the middle politically. The increase in demand brought about by the Allende social programs put too much of a strain on the production sectors of the economy and inflation grew worse. At the same time foreign debts came due, copper prices on the world market dropped as Chilean production fell. Shortage of food and consumer goods developed in the cities, and the powerful labor unions called a number of damaging strikes. It is not the intent of this paper to analyze the problems of the Allende years--no one has yet been able to do that effectively. The point to be made here is that the agricultural programs implemented, taken on their own merit, in a stable economic situation could have moved agriculture in the proper direction. The Chilean situation in the early '70s under a Marxist government and politically divided did not allow that success.

Since 1973 Chile has been governed by a military junta. Agricultural and economic policy has reversed itself since the early '70s, and land reform is no longer a development objective of the government. Emphasis has returned to support of the private sector, but the apparent concern of the government in agriculture is with the reformed areas (14, p. 234). A program for development of an efficient agricultural infrastructure, provision of new inputs and technology, and irrigation development has been drawn up in conjunction with the setting of production goals for agriculture for the next decade. No judgment as to the commitment of the government to an effective agricultural development policy can yet be made.

### Conclusions and Alternatives

If they don't solve the agricultural problem, they will fail in the long run, because it will also mean failure on inflation and on industrialization. Copper brings in the foreign exchange but farming must provide the base for overall economic growth (11, p. 74).

It is clear that the problems of the agricultural sector have been at the root of many of Chile's economic woes. We have identified these problems as:

1) Unbalanced growth in the Chilean economy at the expense of the agricultural sector. Incentives for agricultural production have been removed through manipulation of the terms of trade against agriculture and failure on the part of the public sector to invest in necessary agricultural infrastructure and technology. Food imports were subsidized at the expense of domestic agricultural production, which eventually led to an enormous deficit in the agricultural balance of trade.

2) The poor distribution of land and wealth within the agricultural sector has led to inefficient use of a valuable resource base, and lagging production. The majority of the agricultural population receives low incomes and has little opportunity to move up.

3) The above deficiencies in agriculture have resulted in its failure to keep up with growth in population and food demand. Shortages, a balance of trade deficit, and a highly unacceptable rate of inflation.

Policies designed to deal with the inflation and industrialization problems have been ineffective and confusing--leading to further failures by agricultural producers in the efficient use of production resources.

It is difficult to assess the prospects for a reversal in the backward trend of the agricultural sector given the present situation. Statistics are difficult to come by and are usually unreliable. The alternative most supported in the past, land reform, is not within the list of agricultural priorities of the present government. The government feels that the reform has gone far enough, and that public sector interference in the agricultural system must now be minimized. Many observers would counter that unless the resource is now distributed at a reasonably equitable level, no successful development can take place.

Within the apparent objective framework of the present government, some alternatives do present themselves. Price incentives for small and large producers are necessary in order to insure a return to efficient production and a reduction in the trade deficit in agriculture. Care must be taken not to fall into a dependency trap--domestic production and development must be emphasized, with foreign aid, but without foreign influence and control. Funds must be made available to build an agricultural system of institutions and infrastructure to bring new technology to the producer and to smooth out the production and marketing process.

Faced with inflation and an uncertain political situation, the implementation of such proposals will not be easy. International development banks and the United States have shown a willingness to invest in Chilean development as defined under the new government. It is clear that the tools for successful Chilean development--natural and human--are still available. The question that remains is whether or not stagnation, inflation, and political upheaval have taken such a toll as to prevent Chile from finally using her resources in an efficient and effective drive toward economic success.

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