DISARTICULATED AGRICULTURAL GROWTH: A COMPARATIVE STUDY OF TWO CHILEAN REGIONS

by

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(ABSTRACT)

During the last twenty years, Chilean agriculture has experienced unequaled modernization and growth. The uneven character of this process shows that economic development and the expansion of some agricultural sub-sectors can be associated with the absolute and relative increase of poverty, particularly in rural areas. This dissertation postulates that the disarticulated nature of the accumulation pattern has impeded the achievement of sustained national growth and social equity, as well as threatened the preservation of national food security.

This study explains the disarticulated character of Chilean agricultural growth during the last 25 years, analyzes the effects that disarticulation has on national food production and consumption levels, and attempts to advance some policy alternatives. An important contribution of this dissertation is to interpret the ongoing process of regional differentiation in Chilean agriculture through the analytical framework of disarticulated growth.

The results of this study indicate that decreasing disarticulation requires restructuring of the prevalent

accumulation pattern. Otherwise, alternative policy instruments would not accomplish the goals of growth, equity, and sustainability. The development of the agricultural export sector is not contradictory to the achievement of sustainability and equity. In fact the expansion of the export sector could contribute to the articulation of the economy. However, this would require a shift in the investment priorities and increasing state support to the annual crops and livestock sub-sectors, particularly to the campesino producers. At the same time, investment in the agroexport sector would have to shift from expanding production via incorporation of new lands to increasing productivity and overall increasing the value of the products. That is, investment would have to be geared toward agroindustrial processes that would add value to the unprocessed agricultural commodities that are currently exported. Finally, sectoral and macroeconomic policy should contribute to internal expansion by increasing employment and minimum wage levels.

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CHAPTER I
INTRODUCTION

During the last 20 years, Chilean agriculture has gone through a process of unequaled modernization and growth. As in other countries in the region, the uneven character of this process left out significant segments of the rural population and agricultural producers. In fact, the Chilean experience shows that economic growth and the expansion of some agricultural sub-sectors could be associated with the absolute and relative increase of poverty, particularly in rural areas. The disarticulated nature of the above process has impeded the achievement of sustained national growth and social equity, and threatened the preservation of national food security.

It would be impossible to consider the agricultural sector modern and efficient until its uneven and contradictory character has been modified. Its current growth is subsidized by the poverty of small producers and agricultural workers. Transformation of the above condition is complex because the dominant macroeconomic framework sets limits on alternatives to the causes of disarticulation.

The modernization experienced by Chilean agriculture has left unanswered questions that must be addressed if growth and equity are to be achieved. Do the macroeconomic and sectorial policies that favored the integration of

Chilean agriculture with external markets allow for the development of small agricultural producers? Under current macroeconomic conditions, which policies aimed at decreasing disarticulation levels would be most feasible? Would these policies improve the living conditions of small producers and agricultural workers? Would they be sustainable in the long run? All these questions relate to the issue of how state policies may alter the development path of the agricultural sector and how these strategies alter the quality of life of the population at the regional and national level.

The purpose of this study is to explain the uneven development experienced by Chilean agriculture in the last 25 years. This research seeks first to analyze the changes occurred on Chilean agriculture using the theoretical concept of disarticulated growth. Second, this investigation seeks to describe the impact of macroeconomic and sectoral policy on the development of the agricultural sector in two different agricultural regions in Chile. Third, this study analyzes the effects that the disarticulation of the agricultural sector has over national food production and consumption levels. Finally, this study attempts to advance policy alternatives to decrease the levels of disarticulation that Chilean agriculture exhibits.

This research establishes a parallel between two

different agroecological regions and correlates the changes observed in each of them to the shifts in macroeconomic and sectoral policy. I explain the disarticulated character that agricultural growth has taken in Chile. Using this analysis as a base, I present some specific policy recommendations to ameliorate the uneven effects of disarticulation and to approach a socially and environmentally sustainable development strategy.

Chilean agriculture has experienced extreme changes in the last 25 years. The increasing demands that industrial development placed upon the agricultural sector in the mid-1960s generated a crisis that could not be solved within the context of the existing agrarian structure. The growth in domestic industry under the import substitution structure required increasing amounts of foreign exchange to purchase needed imported inputs creating pressure to restructure the agricultural sector. In the long run, protectionist policies helped to generate a negative bias toward the tradeable sector (Aziz 1990; Grindle 1986; Hurtado et al. 1990; Krueger et al. 1990; Ossa 1988; Valdés 1988).

Chile was one of the first Latin American countries to move away from the import substitution model after 1973. While from 1965 to 1973 various policies to develop an export-oriented agroindustrial sector were set in motion, an inward development model predominated. After 1973 an open

economy strategy, following market signals and the principle of comparative advantages[1], led the economy. As a result of this new approach, the annual growth rate of the export sector between 1975-1987 was double that of the 1961-1970 period (Ossa 1988). During the neoliberal period[2], macroeconomic policy dictated what to do, and there was no sectoral policy differentiated from the macroeconomic policy. No specific rules guided the agricultural sector (Bruna-Day and Silva-Véira 1990; Cox et al. 1991). After the 1983 crisis, structural adjustment policies shaped the development of the Chilean economy and the agricultural sector. The need for a more dynamic agricultural sector

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[1] According to Todaro (1989, p.617) "a country has a comparative advantage over another if in producing a commodity it can do so at a relatively lower opportunity cost in terms of the foregone alternative commodities that could be produced".

[2] Various scholars (Corbo 1985; Cox et al. 1991; Crispi 1990; Ossa 1988) have label the economic policies of Chile after 1973 as neoliberal. Succinctly, for these authors the neoliberal model involved trade liberalization and abolishment of pricing policies, export promotion, privatization, and increasing facilities for foreign investment, among others. Further, these authors identify at least two different periods within the neoliberal model. First, they identify the so-called orthodox period, characterized by the absolute liberalization of trade and complete subordination of sectoral policies to the macroeconomic framework. However, it is important to note that during the so-called orthodox period there were some features, such as a fixed nominal exchange rate between 1979 and 1982, that did not correspond to a pure neoliberal approach. After the 1982/3 crisis, the authors recognize a more pragmatic approach, following the structural adjustment programs, characterized, among others, by a crawling peg exchange rate system, and selected sectoral policies, such as price interventions for some agricultural commodities. Following these authors, uses the same terminology to classify the periods under study.

capable of increasing its output and generating foreign exchange gave form to new sector policies that fostered the export sector, particularly non-traditional agricultural exports (Barham et al. 1992). In conclusion, significant ideological differences distinguish the various Chilean governments between 1964 and 1989. However, most agricultural policies throughout the period have tended to subordinate agriculture, first to the demands of the industrial sector and, later on, to the expansion of exports and to the development of international comparative advantages. This disarticulated growth of the agricultural sector is a manifestation of the subordinated role assigned to the agricultural sector by different governments and various capitalist fractions in their definition of development policies.

CHAPTER II

DISARTICULATION, STATE INTERVENTION, AND AGRICULTURAL GROWTH

After World War II and the consolidation of the modern economic system, finance capital played a crucial role determining where productive capacities are expanded, reproduced, or simply abandoned. As a consequence, developing countries have became more vulnerable and subordinate to world economic powers (de Janvry 1985; Gereffi 1990; Griffin and Gurley 1985; Lal 1985; Portes and Kincaid 1990; Todaro 1989). Developed countries have moved away from an accumulation pattern[3] based on the extraction of absolute surplus to one based on relative surplus. That is, developed countries took advantage of technological and capital intensive work processes, augmenting the overall productivity of the labor force (Castells and Laserna 1990).

At the same time, labor intensive processes are moving into third world countries in the form of "maquiladoras", assembly plants, and other production processes characterized by the extraction of absolute surplus from a cheap labor force (Castells and Laserna 1990; de Janvry

[3] Accumulation pattern is used in this text to signify a specific strategy for capital accumulation based on a particular social, political, and economic arrangement that generates an ideological framework, legislation, and administrative norms that regulate and prolong the reproduction of the pattern. Behind any particular accumulation pattern are different social forces struggling to maintain, modify, or replace that particular pattern (Crispi et al. 1980).

1981, 1985; Portes and Kincaid 1990). These strategies involve more than an international productive specialization based on comparative advantages. Rather, they are an expression of the structural character that disarticulated growth has for third world economies[4].

These processes have had varied consequences. First, there has been a polarization of productive forces and labor processes, creating specific chains of production and unequal exchange that feed the world economy (Amin 1974, 1976; Castells and Laserna 1990; Emmanuel 1972; Evans 1985; Gereffi 1990; Marini 1973; Timberlake and Williams, 1984). As a result, sectoral disparities increased. Foreign capital in developing countries tended to favor and develop only certain firms and industries; thereby increasing the technological distance and deteriorating the terms of trade between developing nations and the world economy (Dos Santos 1970; Drucker 1986; Castells and Laserna 1990). The trickle down of industrial-based growth did not occur, and the gap between classes increased.

Various developmental strategies have been advanced by developing countries. Each one of these strategies

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[4] For a detailed discussion on the structural character of disarticulated growth see Dos Santos (1970) work. For Dos Santos (1970, p.234), the new dependency is characterized by uneven productive structures, "which limits economically the development of the internal market" and subordinate internal development to the fluctuations of the world economy.

(modernization, import substitution, and export promotion) can be understood as a process of economic re-orientation that has responded to internal economic crises, class conflicts and to the shifting conditions of the world economy (Bornschier and Chase-Dunn 1985; de Janvry 1981; London and Williams 1988; Marini 1973; Wallerstein 1984). However, poverty remains the experience of most of the population in developing countries.

For modernization theorists, economic growth and industrialization was the result of institutional changes, modern political structures, increasing investment rates, technological change, and the net addition of capital stock (Rostow 1956). Growth required external financial support and the transfer of resources from the traditional sector of the economy (rural/agricultural) to the modern industrial sector (Todaro, 1989). However, economic growth associated with modernization did not "trickle down", despite the continual growth of the national product.

From the late 1950s until the mid-1970s, **import substitution** emerged as an alternative strategy aimed at reverting the negative terms of trade between developing countries and industrial powers. The objective was to create internal markets for industrial goods. The development of the national industrial base was stimulated through various protectionist policies (Prebisch 1950). New

jobs would develop, increasing the purchasing power of the workers. National industries were supposed to replace imported commodities "with domestic sources of production and supply" (Todaro 1989, p.435). The expansion of the aggregate demand would sustain the growth of the "infant" industrial sector.

Although import substitution generated a process of industrial development, a number of contradictions emerged. Manufacturing industries tended to be concentrated either in the production of export goods or luxury commodities for the local elites. Overvalued exchange rates and low relative prices for domestically-produced commodities distorted the economy. Consequently, sectoral disparities increased, favoring the development of certain industrial sectors and firms, such as the construction industry, the textile industry and the mining industry in the Chilean case. Also, there was a rapid growth in the service sector. However, the increasing requirements for financial capital to support the development of the industrial sector and the shortage of internal savings facilitated foreign control over newly created industries (Dos Santos 1970; Grindle 1986; Lipton 1984; Todaro 1989).

Starting in the mid-1970s, export-led policies have progressively shaped developmental strategies. Based on the principles of comparative advantage and 'international

(free) trade, development was seen as the outcome of productivity and trade specialization due to the factor endowment of the country, labor force availability, and technological (capital) advantages (Todaro 1989). In the long run, free trade would tend toward an "equalization of prices paid to factors of production in different countries" (Colman and Young 1989, p.232). However, neoclassical export-oriented development faced numerous problems arising from the prevailing unequal structural conditions of the different countries, such as factor endowment, technological structure, and income distribution, among others[5].

In a recent analysis of non-traditional exports in Latin America, Barham et al. (1992) summarize the main problems this strategy faced during the 1980s. First, export-led growth assumes international demand for primary commodities is elastic. In reality such elasticity for primary products is low, particularly for those produced in developing countries, because of the sharp technological changes in production processes and the increasingly high-tech service oriented character of developed economies.

[5] For a general criticism of neoclassical free trade theory see Todaro (1989, Pp.384-397). Particularly relevant for this research result the questionable neoclassical assumptions of equalizing factor prices between trading partners, the positive impact that trade would have on real incomes, equally access to international markets and equalizing terms of trade between partners. According to Todaro (1989) and several other scholars (Barham et al. 1992; Dutt 1988) the above assumptions have been violated and need a severe revision.

Second, despite the short-run favorable terms of trade experienced in the early 1970s by developing countries, in the long run, primary export strategies are associated with increasingly negative terms due to the increasing technological gap that set apart both types of production strategies. Third, related to the above, what appeared to be comparative advantages really represented unequal structural conditions, such as an underpaid labor force. Fourth, the constraints created by foreign debt forced developing countries to increase their exports to obtain foreign currency, dragging down commodity prices, a situation exacerbated by developed countries' protectionism. Finally, accommodating all or specific sectors of a country's productive structure to market signals has high environmental and social costs, particularly for the rural poor. While the export sector could become the key sector of an articulated economy, if the earnings generated are redistributed for internal consumption, the export-promotion strategy advanced by several third world countries during the 1980s tended to increase their disarticulation levels and their vulnerability to international economic crises (de Janvry and Sadoulet, 1985, p.3; Gacitúa and Bello 1992).

In summary, developing economies have become more vulnerable and subordinate to the world economic powers, and sustainable development has not been achieved. Increasing

capital mobility has contributed to the polarization of productive forces, geographical decentralization of labor processes, and unequal exchange between developed and developing countries (Evans 1985; Frank 1984; Griffin and Gurley 1985; Hopkins and Wallerstein 1982). These processes have also contributed to the consolidation of the disarticulated character of the social, political, and economic structures of third world countries (Amin 1974; Anderson and Stokes 1990; de Janvry 1981, 1985; Touraine 1989).

Disarticulation

Disarticulation is a historical process resulting from different alliances among various capitalist fractions and state bureaucrats. Thus, national economies move along a continuum from articulation to disarticulation, depending on the national development strategies implemented by the state, class dynamics, and other political factors that affect the definition of state policy (de Janvry and Sadoulet 1983, 1985; Grindle 1986). A disarticulated economy is characterized by a feeble relationship between growth in production and growth in consumption (de Janvry 1985). Forward and backward linkages between the different sectors of the economy are extremely weak. In disarticulated economies stagnant local markets for wage

goods coexist with dynamic luxury markets for consumer goods and/or external markets for primary products (Amin 1974; de Janvry 1981, 1985; Marini 1973; Anderson and Stokes 1990).

At the political level, disarticulation involves the exclusion of significant social actors from civil society and the constitution of a fragmented state (Touraine 1989). While popular participation is insignificant, different capitalist fractions have the power to advance accumulation patterns which lead to various degrees of disarticulation over time.

Disarticulation has a negative impact on social well-being. As a structural condition, disarticulation promotes regressive income distribution and asymmetrical flows of surplus between economic sectors and productive agents, favoring the diversion of capital from internal wage-goods markets towards highly specialized and selective markets (de Janvry 1985; de Janvry and Sadoulet 1983). In disarticulated economies, the labor force is not an essential component in the expansion of demand since the goods produced by the more dynamic sectors are targeted to other markets. This disassociation inhibits the positive effects associated with the growth in the dynamic economic sectors.

There are various mechanisms by which disarticulation shapes the outcomes of economic growth and of human welfare.

First, disarticulation vitiates the relationship between productivity and wages levels. In disarticulated economies real wage levels tend to be depressed (Amsden, 1981; Breedlove, 1991; de Janvry, 1991; de Janvry and Sadoulet, 1985). As a consequence, circulation tends to be separated from production, because labor's income does not significantly participate in the market of the key economic sectors. Worker's consumption represents a small proportion of the accumulated demand for the goods produced (de Janvry, 1981; Marini, 1973). Second, disarticulation tends to produce an excessive and disproportionate growth of the service and informal sectors that in developing countries add little value to production because of their low productivity, lack of incorporate technology, and few backward and forward linkages (Portes, Castells and Benton, 1989; Stokes and Anderson 1990, p.67).

Disarticulation implies the existence of one economy in which different economic sectors, disarticulated in terms of market participation and sharing the benefits of growth, are consolidated into one predominant accumulation pattern. Specifically, disarticulation has an impact on food consumption via two mechanisms. First, it is consequence of unequal income distribution. In a disarticulated economy the growth of the economy is not followed by an expansion of the demand of staple foods (and wage goods in general)

because different segments of the population have unequal access to food (different demand levels) (Garcia, 1985; Wise, 1987). A second mechanism is what Lappe and Collins (1977, 1986) described as the shift of governmental policies from the support of internal food production to the promotion of export crops, with the subsequent shift in the use of land and other productive resources. Together, these two processes partially explain why developing countries which have experienced economic growth have not achieved real improvements in food consumption and basic needs satisfaction (Aziz, 1990; Barraclough and Utting, 1987; Dore and Weeks, 1982; Wise, 1987).

Disarticulation and State Policy

The state plays a fundamental role in either ameliorating or exacerbating the contradictions within disarticulated economies (de Janvry 1981, 1985). The state mediates between the various social actors, legitimizing and redefining policies, and influencing the relationships between production, accumulation, and circulation (Grindle 1986). Subsequently, the state has the capacity to redefine the relations of production, exert control and secure the extraction and circulation of surplus between classes and between peripheral and core countries (Dos Santos 1970; Skocpol 1979, 1980).

The state is a dynamic social institution, and various power fractions seeking hegemony may differ in strength across states agencies and time periods (Crispi 1990; Gilbert and Howe 1991; Hooks 1990). Further, state action takes place within specific historical conditions and socio-political structures. The interaction between these forces shape the possible policy outcomes (Bonanno 1987, 1990; Carnoy 1984; de Janvry 1981; Gilbert and Howe 1991; Goodman and Redclift 1982; Hooks 1990; Prechel 1990).

Also, world macroeconomic conditions may influence policy priorities at the national level, inducing changes in specific macroeconomic and sectoral policies such as exchange rates, fiscal and monetary policies, price intervention policies, public expenditures, and social programs. Although constrained by international macroeconomic conditions, such as structural adjustment programs and international markets (Friedmann and McMichael, 1989), state policies have potential to modify structural conditions that cause disarticulation (de Janvry 1981; Marini 1973).

State intervention influences capital accumulation. In agricultural production, particularly where there are natural impediments to capital accumulation, state intervention becomes more important (Mann 1990). State policies influence the use and organization of productive

factors by: 1) favoring the development of new technologies; 2) implementing subsidies supporting agricultural prices and/or supporting farm income; 3) intervening in the commercialization of agricultural products and inputs; and 4) intervening in the labor market (Gilbert and Howe 1991; Hooks 1990; Mann 1990; Skocpol 1980).

Disarticulated Agricultural Growth in Latin America and Chile

In the agricultural sector, disarticulated growth resulted in an increasing integration of production and agribusiness at the international level (Buttel and Goodman 1989; Goodman and Redclift 1989; Friedmann and McMichael 1989). For developing countries, productive differentiation relative to developed nations favored their subordinated integration to complex chains of agroindustrial production and international markets that changed internal production priorities (Barham et al. 1992; Drucker 1986). Also, it stimulated decomposition of and class differentiation within agricultural producers (de Janvry and Garramon 1977; de Janvry and Leveen 1986; Friedland and Pugliese 1989). These processes partially explain why -- despite the sustained growth of the agroindustrial sector -- food security has been threatened (Barraclough and Utting 1987), "particularly in Latin America and Africa, [where] rapid economic growth has been accompanied by a worsening pattern of income

distribution and a growing incidence of poverty and undernutrition (Aziz 1990, p.10)".

In Latin America, the modernization of agriculture decreased peasant-generated agricultural production and increased the number and productivity of highly capitalized and intensive agricultural enterprises. It also favored the coupling of agricultural production with industrial processing and linked agricultural production to transnational agribusiness capital and international agricultural markets.

In Chile, agrarian reform policies (1964-1973) facilitated capitalist accumulation in agriculture and the development of an emergent agricultural entrepreneur. State policies such as subsidies, credit policies, pricing policies, and tariffs enhanced the development of an export-oriented agroindustrial sector (Cruz and Leiva 1982; Cruz and Rivera 1983; Gómez and Echenique 1988; Hurtado et al. 1990; Sáez 1986). Large agroindustrial complexes began to emerge in the more dynamic sectors, particularly in the fruit and forestry sub-sectors (Gómez 1989; Gómez and Echenique 1988).

During the 1960s and early 1970s agricultural policies were conceived as mechanisms for lowering food costs by decreasing the cost of agricultural production and establishing marketing policies aimed at supporting

industrial development (Hurtado et al. 1990). At the same time, state policies favored the development of capitalist agriculture, integrated with agroindustrial processing, such as in the case of the national plan for fruit development (Gómez and Echenique 1988).

The beneficiaries of the agrarian reform were initially organized in diverse collective/cooperative production units. Later on, after the counter reform, individual family farms enlarged the small family farm sector. The initial expansion of the small family farm sector was followed by its pauperization. The counter agrarian reform prevented the complete proletarianization of the peasant sector. New forms of organizing agricultural production displaced former peasants from their lands but did not offer permanent jobs.

After 1974 the counter agrarian reform, launched by the military regime, accelerated a process of stratification among the peasantry, furthering the tendency toward semi-proletarianization and the development of an agriculturally-based bourgeoisie (Díaz 1990; Gómez and Echenique 1988). The division of the productive units created by the agrarian reform created some 40,000 new family farms that faced increasing difficulties (Crispi et al. 1980; Echenique and Rolando 1989, 1991; Gómez and Echenique 1988). Lack of capital, technical, financial, and managerial assistance

added to the adverse macroeconomic conditions such as high interest rates and low prices for agricultural commodities. More than 40% of the reform beneficiaries were thereby unable to pay their debts and were forced to sell their lands (see appendices 1a,b and c).

The incomplete process of proletarianization was the not only the result of ongoing transformations of the small family farm sector, but also of the shifts in the labor use patterns and the type of agricultural commodities produced by the new agroindustrial sector. As can be seen in Table 1, intensive use of seasonal labor became increasingly important in the dynamic areas of capitalist agricultural expansion (Díaz 1990; Gómez and Echenique 1988; Scott 1990).

Table 1: Change in the Use of Agricultural Labor Force by Year and Classification (Number of workers nationwide).

	1964/5	1975/6	1986/7
Type of Agricultural labor force			
Permanent	208,000	161,000	120,000
Seasonal	147,000	198,000	300,000

Source: Gómez and Echenique (1988, p.64).

State policies had a significant impact on the development of different forms of production within the

agricultural sector. These policies influenced the reproduction of small farms, labor power, capital accumulation, control of particular commodity chains and processes of production (Korovkin 1990; Scott 1990). A new process of capital and land concentration developed through the consolidation of individual properties, the acquisition and leasing of land by new industrial and financial capital, and increasing vertical integration and centralized management of agroindustrial processes. Different productive endowment, access to credit, and access to markets among agricultural producers had a regressive impact upon the peasantry, increasing the gap between the small semi-proletarian units and the more capitalized units (Korovkin 1990; Scott 1990).

An accumulation strategy based on the development of comparative advantages and export of primary agricultural commodities was set forward for the agricultural sector by state policy makers. By the end of the 1980s, agricultural exports generated almost 15% of foreign exchange (up from 5% in 1965), and 19% of the labor force was employed in the agricultural sector (down from 27% in 1965) (Banco Central 1986; Carreño and Fu 1987). The total value of agricultural output for exports increased (see appendix 2a). At the same time, land dedicated to production of staple food for domestic markets declined, in some cases to levels far below

the levels of the 1960s (see appendix 3 and figure 1).

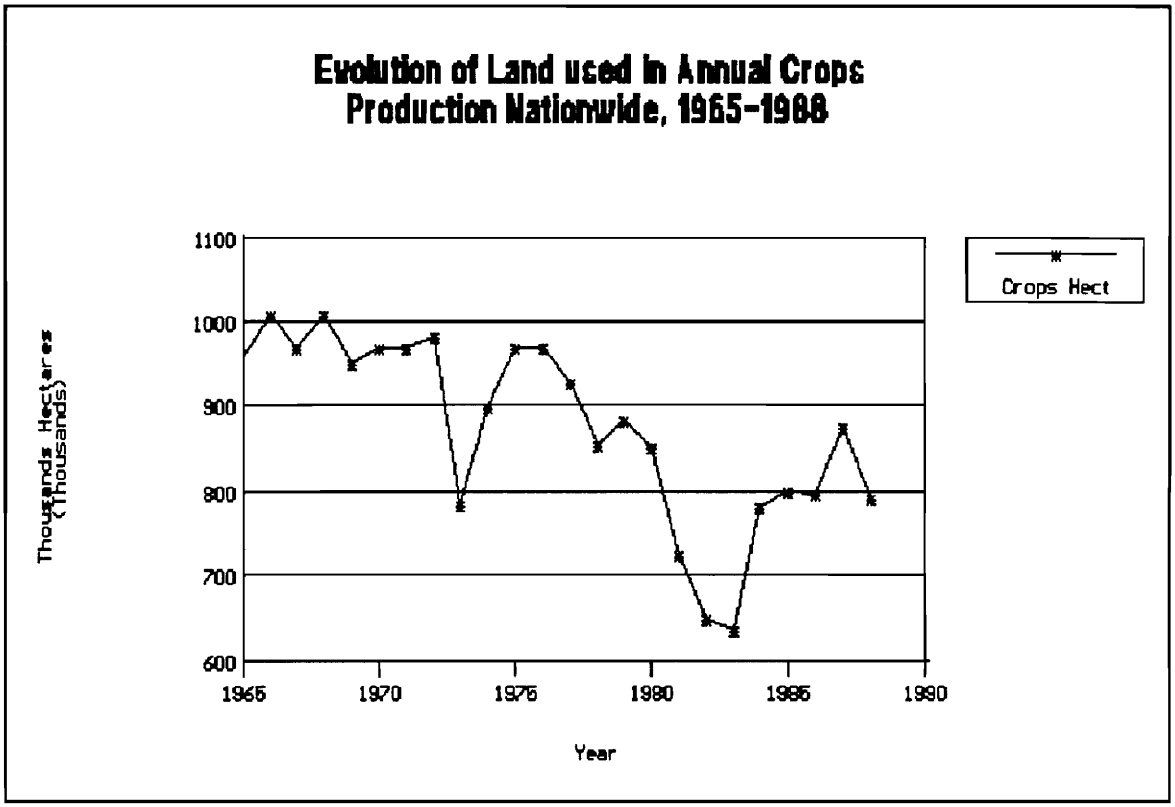

Figure 1 Land Used for Annual Crops Production

Priorities in the allocation of state resources shifted from annual crop and food production to the agroexport sub-sector. Whether or not state policies were directly targeted in this manner, they had a direct impact on the development of the agricultural sector and particular agricultural producers. The shifting state policy regarding credit access, interest rates, preferential exchange rates, pricing, subsidies and technological support favored the expression of regional imbalances and the development of

specialized agricultural production systems between and within regions (Díaz 1990). Further inequalities between regions developed, and agricultural employment became increasingly seasonal, heterogeneous, and unstable (Crispi et al. 1980; Gómez and Echenique 1988; Hurtado et al. 1990; Jarvis 1985; Ortega 1987; Rivera 1988).

Although the growth in the value of agricultural exports generated a positive balance of trade for agriculture (see appendix 2b), contributed to healthy national accounts, and to paying back the foreign debt, it has not contributed to the general welfare of the rural population. It has furthermore threatened food consumption and security. Per capita food consumption (calorie and protein intake) at the national level decreased below the levels achieved in the 1960s (see figure 2).

In sum, the growth of the agricultural sector has been extremely disarticulated and rests on deep and complex socioeconomic contradictions. The positive aspects of the modernization process have had a negative impact on the social and economic conditions of small producers and agricultural workers. The free market strategy favored the development of those regions and commodity producers linked to international markets. In the more dynamic regions small producers were bought out by larger producers and new agricultural entrepreneurs who constituted a new type of

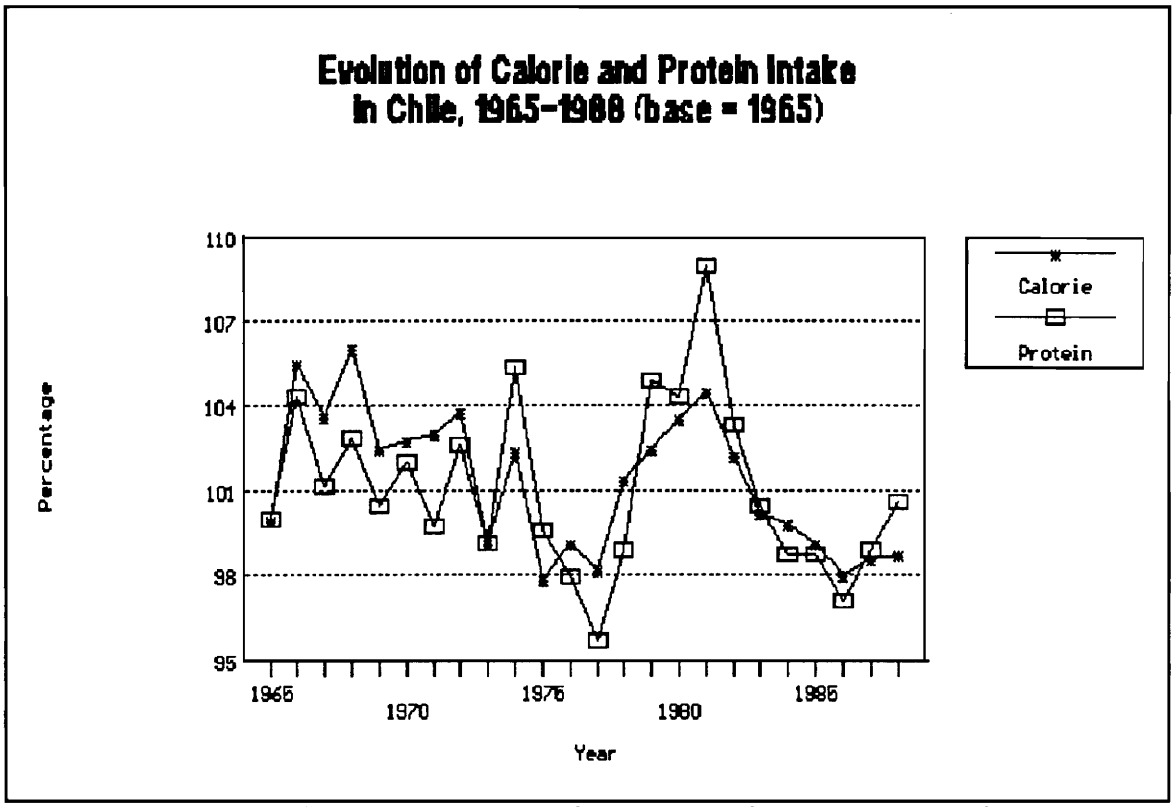

Figure 2 Evolution of Per Capita Calorie and Protein Intake Nation-wide, 1965-1988 (base 1965= 100).

agricultural producer. Displaced producers and agricultural workers increasingly became seasonal workers for the booming export agroindustries. Small producers went through a productive crisis; although, they continued to produce a significant amount of the staple food goods and provided the seasonal labor for large agricultural producers. There was a significant modification on the agricultural labor market which became increasingly seasonal and deregulated. A rural, landless, semi-proletariat emerged from the former

beneficiaries of the land reform who lost their land and other displaced peasants. Rural migration to large cities decreased because of the economic crisis and the few opportunities migrants could find. The excess rural labor force moved into small rural towns and medium-sized, agriculturally-based cities. These processes implied different levels of articulation of the agricultural sector with national and international markets. They also lead to differential access to credit, technologies, and an overall unequal distribution of profits among agricultural producers (Crispi et al. 1980; Crispi 1990; Díaz 1990; Gómez and Echenique 1988; Hojman 1990; Hurtado et al. 1990; Jarvis 1985; Ortega 1987; Rivera 1988).

CHAPTER III

RESEARCH OBJECTIVES AND DESIGN

Chilean agriculture reveals the contradictions inherent in a rapid process of unequal (disarticulated) modernization for distinct agricultural regions, productive systems, and agricultural producers. Briefly, different policy options from import substitution to a neoliberal economic model and structural adjustment plans, have contributed to the consolidation of disarticulated agricultural growth. Inequality between agricultural entrepreneurs and small family farm units in the market place have increased the differences between them and hampered the development of small producers. Domestic food consumption has declined due to depressed wage levels. As a consequence, demand for agricultural products supplying the domestic market has decreased.

A central hypothesis of this study is that disarticulated agricultural growth tends to increase the differences between regions and types of agricultural producers. This research seeks to analyze the impact of policy changes on the development of the agricultural sector in two Chilean regions, and to explain the disarticulated character of Chilean agricultural growth during the last 25 years. This study is particularly important for conceptualizing alternative policy options to approach

sustainability and equity. Furthermore, the Chilean case has special relevance since Chile is completing a program of structural adjustment within the context of a neoliberal model, which has been in place for more than a decade. Other Latin American countries are following the Chilean path, and this research could advance policy alternatives to counter the negative impacts of a disarticulated growth pattern.

I do not attempt to develop a causal model linking macroeconomic and sectoral policies to national and regional changes in the agricultural sector or to variation in specific indicators of quality of life associated with those changes. Rather, I seek to demonstrate the disarticulated character of Chilean agricultural growth by logically relating macroeconomic and sectoral policy shifts with ongoing transformations of the agricultural sector in two regions of the country.

Methodology

The methodology used in this study seeks to capture the effects of disarticulation on Chilean agriculture at the national and regional levels. In the previous chapter a theoretical framework for the analysis of Chilean agricultural development was proposed based on the concept of disarticulation. This framework provided the basis for

selection of regions to study as well as the variables to include in the analysis.

This research builds on historical analysis and the interpretation of secondary quantitative data. To analyze the impact of state policies on the development of different production strategies, time series for selected variables have been gathered for two Chilean regions and the nation as a whole.

Historical analysis is a key tool for understanding and explaining the development of disarticulated agricultural growth because it allows for incorporation of different variables into a processual framework. Historical analysis rises above the observed trends and highlights the conditions necessary for the emergence of those particular patterns. It links macroeconomic issues to sectoral and regional variables that shape the unfolding of state policies (Axinn and Axinn 1987; Buttel et al. 1990; Gilbert and Howe 1991). Historical analysis helps us to explain the regional changes associated with the expansion of capitalist agriculture in the Chilean countryside and to relate that process to state policy and specific outcomes at the regional level.

The analysis of time series for specific variables is used to visualize the various production strategies in each region and the relationships between these particular

strategies and the national environment. To analyze the impact of state (sectoral and macro-economic) policies on the development of specific regional production strategies and their effects on quality of life over time, several indicators of state policy, production strategies, and quality of life are measured and analyzed.

Studying the types of crops grown by peasant farmers and agricultural entrepreneurs contributes to the identification of the bottlenecks they encounter, their different reactions to state policy, and their participation in the market. Linking regional analysis to macroeconomic processes yields a powerful method for the analysis of state policy. Through this approach, different production strategies, patterns of labor force use, and economic conditions for each region can be related to state policy. Establishing a parallel between the two regions and the national trends facilitates understanding the process of capitalist development in Chilean agriculture.

Due to the historical character of this dissertation reliance on secondary data sources is essential for the interpretation of the processes under scrutiny. Several official secondary data sources are used as well as data gathered from previous researchers. The first stage of analysis is the construction of time series for a few key variables that characterize shifts in state policy, the

agricultural sector at the national and regional levels, the economy as a whole and the quality of life at the national level. Next, the analysis attempts to relate shifts on indicators of state policy to changes in regional production strategies and to modifications of indicators of quality of life at the national level. This analysis provides the framework for the explanation of the disarticulated character of Chilean agriculture. The interpretation of the data will be organized in time periods reflecting the changes in state policy occurring in the 25 year period this study analyzes: **a) 1965-1973; b) 1973-1982 and; c) 1982-1988.**

A similar research strategy has been developed by Goldin and Castro de Rosende (1990) in their study of agricultural policies in Brazil. They began by analyzing the historical framework from which Brazilian agriculture developed. Then they analyzed the macroeconomic and sectorial policies that had influenced the performance of Brazilian agriculture. For this they relied on trend and qualitative-historical analysis.

Adelman and Taylor (1990), in another qualitative study, analyzed the performance of Mexican agriculture during the last decade using a similar historical approach. They linked state policies to different strategies of development and examined the impact of those two variables

on quality of life measured in terms of income and food consumption.

In a different context with another research question, Gilbert and Howe (1991) analyzed the role of the state and various social groups in shaping the New Deal agricultural policies in the United States. Through their research methodology, they attempted to show that state institutional capacities and social class dynamics contributed to the development of specific state policies that shape the agricultural structure of the United States. Specifically, they argue that New Deal policies favored the development of a type of farmers "who were best able to take advantage" of existing policy instruments (Gilbert and Howe 1991, p.12).

de Janvry (1985), in his discussion of social disarticulation in Latin America, developed a similar approach. Using historical analysis he related the expansion of key productive sectors to shifts in the consumption levels of the population. de Janvry (1985, p.35) identified different styles of development in order to explain the disarticulated character of the economy.

Selected Regions

Two Chilean regions have been selected for the study (see appendix 12). Multiple criteria were used for selecting these regions. The regions were chosen so as to

contrast in their principal agroecosystem, particularly the predominant crops grown in each. In addition, each needed to contribute importantly to the national agricultural product. The first region selected for study is the IX Region which mainly produces grains and meat for the internal market. The second region chosen is the VI Region, the so-called fruit region, which specializes in apples, grapes, nectarines, and other fruits for international markets. (For a detailed account of these two regions, see Bengoa, 1981, and Cruz and Leiva, 1982, well as GIA 1981a, 1981b).

These regions represent two contrasting agricultural strategies that have been differently affected by state policies. Macro and sectoral polices favored the agricultural entrepreneurs of the VI region by facilitating their access to capital, land, markets, and labor force. The agricultural producers of the IX region were negatively affected by state policies of the past 25 years and had weak internal return rates (Crispi et al. 1980; Gómez and Echenique 1988; Huerta 1989; Hurtado et al. 1990). The comparison between the fruit and the wheat regions will focus specifically on the different production strategies and the impact that state policies had on the transformation of the agricultural sector in each region. By "production strategies," I mean the type of commodity produced, the

prevalent labor relations, the different types of agricultural producers involved, and the transformations in the use of labor force.

State Policy

According to the literature (Adelman 1984; Aziz 1990; de Janvry 1981; Grindle 1986; Hurtado et al 1990; Mellor 1986, 1989; Todaro 1989), governmental intervention in agriculture seeks to accomplish a wide variety of objectives. These goals can be either explicit or implicit in broader state policies. They can be consistent or contradictory one to another[6]. Furthermore, these objectives change across time and space, because they are the product of the interaction between civil society and the state (Gilbert and Howe 1991, p.6). Analytically, these objectives could be summarized under four headings:

1) transferring resources (i.e land, capital, and labor) within the agricultural sector and between the agricultural and other economic sectors;

2) securing a stable and cheap food supply for the urban labor force, and raw inputs for the industrial sector;

[6] A good example of this situation is the contradiction that exists between commodities price support program and an overvalued exchange rate - a combination that renders a negative real rate of protection for the agricultural sector (Hurtado et al. 1990; Ossa 1988; Valdés 1988).

3) generating foreign exchange through the export of agricultural commodities and processed subproducts; and

4) increasing the income and living conditions of the rural population.

Changes in land use, commodities produced, yields, and use of technology and labor are highly sensitive to shifts in macro and sectoral policy. State intervention can either protect or endanger specific agricultural producers from commodity price fluctuations in the international markets. Several scholars have demonstrated the importance of macroeconomic policy for explaining the changes experienced by the Latin American agricultural sector (Hurtado et al. 1990; Krueger et al. 1990; Valdés 1988). However, it is the interaction between sectoral and macroeconomic policies that affects the performance of the agricultural sector and the production strategies that develop (de Janvry 1981; Gilbert and Howe 1991; Grindle 1986; Mann 1990).

In Chile, all four objectives have been implemented through different macro and sectoral policies such as preferential exchange rates, tariffs, agrarian reform, privatization of land, price support programs, production and control programs for certain commodities, marketing boards controlling the marketing of certain inputs, research, extension, credit, and direct transfer payments to agricultural producers. Some of these policies have been

targeted to specific commodities, while others have been sectoral in their conception and implementation. Policies have been focused either at the farm level (i.e. technology transfer programs), at the market level (i.e. marketing boards, floor prices and subsidies for agricultural inputs), or at the international trade level (i.e. import/export taxes, exchange rate). To analyze the impact of state (sectoral and macro-economic) policies on the development of the regional production strategies, this study focuses on four policy indicators.

First, the **real exchange rate**[7] is used as an indicator of macroeconomic policy. Exchange rate has a significant impact on the behavior of the agricultural sector. Studies indicate that exchange rate and other macroeconomic policy instruments may exceed the effects of specific agricultural incentives (Hurtado et al. 1990; Krueger et al. 1990; Valdés 1988)[8]. Shifts in the exchange rate have a strong impact on

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[7] According to the methodology used by the Chilean Central Bank, the Real Exchange Rate is equal to the nominal exchange rate multiplied by the ratio between US inflation and the domestic consumer price index (Ossa 1988).

[8] One of the most important macroeconomic changes occurred through the period under study was the increase in the real exchange rate and the decrease of the effective rates of protection for agricultural commodities, or the decrease of anti-trade policy bias. To some scholars (Hurtado et al. 1990; Krueger et al 1992) this trend had a positive effect on the agro-export sector. However, there are some crucial limitations on the analysis these authors advance for interpreting the effects of real exchange rate and effective rates of protection on the agricultural sector (Barham et al. 1992; Kyle 1992).

the absolute advantages of the tradeable and non-tradeable sectors of the economy. A decrease in the real exchange rate causes the tradeable sector (e.g. export and import substitution industries) to contract, and the non-tradeable sector (e.g. construction, services, etc.) to expand. An increase of the real exchange rate yields an expansion of the tradeable sector and particularly of the export sector (Hurtado et al 1990; Ossa 1988). Obviously, the exchange

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A first pitfall is the assumption of causation (Barham et al. 1992) between changes in exchange rate, development of the agro-export sector and quality of life. It is not clear that there is causation and, if it exists, that the effect is linear. Also, there is evidence of intervening factors that may alter the expect or desired effect of changes in the real exchange rate. A second shortcoming of such approach is the assumption of equal trade among agricultural commodities, hence of equal effects among agricultural producers. "A common generalization in studies of real exchange rate bias and agriculture is that all agricultural goods are traded and that the effects on the sector can be identified as those which are presumed to affect traded goods. This is an assumption which is often true, but which is inaccurate for a substantial percentage of agricultural production... Policies which affect traded and non-traded crops differentially have a strong potential to affect some segments of the population more than others, particularly groups which rely on these sources for a large percentage of their caloric intake (Kyle 1992, p.1009)".

The crucial issue here is that the effects of macroeconomic policies (indirect interventions) should be analyzed in association with the changes in the structure of production and production strategies of different types of producers (Kyle 1992). Class, income, and agro-ecological-regional differences determine distinct reactions to macroeconomic policies among various groups of agricultural producers (Kyle 1992).

The above considerations are essential to the discussion of the impacts of real exchange rate and effective rate of protection in a context of disarticulated agricultural growth. It is not assume that the effects of macroeconomic policy would be the same for all producers. More importantly, these effects will be determined in a significant amount by the factor intensity of the different agricultural producers.

rate is a significant component of the trade policy. Changes in the exchange rate also influence the flow of capital and the rate of investment in particular sub-sectors of the economy. Specifically, this study analyzes and relates the evolution of the exchange rate to the productive behavior of agricultural producers of tradeable and non-tradeable goods. (The data are taken from the Central Bank (Banco Central)).

Secondly, **tariff systems** are used as indicators of macroeconomic policy and of trade policy. Tariffs regulate the foreign trade regime, constraining or favoring the import of certain commodities and internal production levels of competing commodities. Charging a tariff on the importation of certain agricultural commodities prompt an increase in the internal price and tend to stimulate internal production. This study discusses the evolution of nominal ad valorem import taxes for the period under scrutiny. To analyze the changes of these tariffs over time it is assumed that Chilean internal production of the imported commodities is irrelevant in influencing international market prices (Colman and Young 1989, p.254). (The data used for this analysis are from the Central Bank (Banco Central)).

Price support and marketing programs are used as indicators of sectoral policy. These two programs seek to

create stability for agricultural producers, setting minimum prices and establishing state purchasing powers. These programs influence the response that agricultural producers have to market signals. Pricing and marketing programs also facilitate the development of particular commodities by making inputs available, acquiring/removing surplus products from the market, and securing the internal supply of essential commodities. To simplify the analysis I consider both indicators as one variable. The analysis seeks to relate the existence or nonexistence of price support and marketing programs over time to farmers' productive response. (Data are obtained from the Ministry of Agriculture (Oficina de Planificación Agrícola, ODEPA, Ministerio de Agricultura)).

Public expenditures in the agricultural sector are used as indicators of sectoral policy that also reflect macroeconomic conditions. Particularly after 1982, they reflect the constraints imposed by the International Monetary Fund (IMF), aimed at reducing public expenditures. In terms of sectoral policy, they indicate the differential amount of resources allotted for different activities such as research and extension, technology transfer programs, property regularization, and state supported commodity programs. Therefore, they influence the development of particular commodities, technological systems associated

with them, and types of producers that are more likely to have access to particular resources. This research focuses on the changes of total budget and the shifting priorities of public expenditures in the agricultural sector. (Data are from the Ministry of Agriculture (Oficina de Planificación Agrícola, ODEPA, Ministerio de Agricultura)).

Regional Production Strategies

Any attempt to analyze regional production strategies should start by recognizing the differences that exist between and within regions. The analysis should start by characterizing the actual and potential agricultural production systems in each region, and explaining their implications for capital, technology, land, and labor use. Furthermore, it should consider that different strategies could overlap and be functional to one another (de Janvry and Garramon 1977; Friedland and Pugliese 1989). From the perspective of disarticulated agricultural growth it is important to analyze how these different regional production strategies are integrated into a peripheral strategy of economic growth (de Janvry 1989; Friedland 1984; Mann 1990).

The development of different production systems should not be viewed only as the outcome of different agroecological conditions. They are also the outcome of state policies that favor the development of different

strategies of accumulation in various sub-sectors. State policies contribute to increased control of the environment which facilitates capitalist domination of productive factors by 1) favoring the development of new technologies 2) implementing subsidies and 3) intervening in the commercialization of agricultural products and inputs (Skocpol 1980; Gilbert and Howe 1991; Hooks 1990; Mann 1990).

I use two main indicators to analyze the transformation of the agricultural sector in each region. First, **land use and cropping patterns** are used as indicators of the changes in production strategies in each region. In the short run they reflect market signals. They also indicate the influences that specific sectoral policies have on the allocation of productive resources. In the long run changes in land use and cropping patterns illustrate transformations in the agricultural production strategy of a country and specific regions in it (Friedland 1984). In this research particular attention is given to changes in land allocated to annual crop production (specially staple foods), the fluctuations over time in their yields, and the progressive increment of land dedicated to fruit production. (The source for this data is the Ministry of Agriculture (Oficina de Planificación Agrícola, ODEPA, Ministerio de Agricultura)).

Beyond the agroecological factors that confine the production of certain commodities to specific regions, the type of commodities produced in a region indicate the predominance of capitalist agriculture compared to small farms and subsistence agriculture. They also suggest the markets likely to be targeted by the producers (e.g. staple foods for internal consumption vs. table grapes for exports).

Second, **the ratio between seasonal and permanent labor** is used to measure the transformation of wage labor use. The different arrangements of wage labor used in specific production systems indicate the amount of labor in the production process and the degree of capital intensity in the system. The ratio is an indicator of the degree of capitalist development in agriculture. The analysis of changes in labor employment patterns throughout the year and over time is crucial for understanding the advantages that certain commodities and production strategies may have for developing a more capital intensive production system and getting higher profits (Mann 1990, p.33). I focus on relative changes in the composition of the regional agricultural labor force and the use of seasonal work. There is no complete data for analyzing changes in seasonal labor force, although some estimates exist. (Data are from the National Bureau of Statistics (Instituto Nacional de

Estadísticas), and published surveys from private research centers).

Quality of Life

Starting in the early 1970s, scholars have increasingly criticized the use of gross national product (GNP), growth rate, and other aggregate economic indicators of development (Dore and Weeks 1982; Hicks 1980). Comparing macro-economic trends to the social conditions of the poor in developing countries indicates that economic growth does not necessarily imply improvement of people's lives (Aziz 1990; Barraclough 1991; CEPAL 1990, 1991a; Hicks and Streeten 1979; Lisk 1977). In the late 1970s, Hicks and Streeten (1979) developed a methodological critique of the various indicators used for assessing development. Their work analyzed the relationship between several quality of life indicators such as literacy rate, infant mortality, food consumption, housing, and access to potable water, and GNP growth. Briefly, their results showed that GNP has an extremely unstable association with the above mentioned indicators. For example, in high income countries, GNP is positively associated with indicators of quality of life, while in low income countries the relationship decreases and even disappears.

Discussing potential alternative indicators, Hicks and

Streeten (1979) suggest the incorporation of input and output indicators (e.g. food consumption as an input indicator and infant mortality as an output indicator) to assess development and quality of life levels. The combination of economic and quality of life indicators would be a more efficient strategy for assessing the aggregate and distributional dimensions of social and economic development.

The relationship that exists between the fulfillment of basic needs and economic growth need not be in opposition to each other (Burki and Ul Haq 1981; Hicks 1980; Lisk 1977). By and large studies undertaken in the 1970s established that attention to basic needs instead of only economic growth does not have a negative impact on GNP.

At the core of this critique is the issue of the proper conceptualization of development. How should development be defined and how should it be measured? The notion of development as economic growth has been progressively abandoned. Development is best defined in terms of basic needs satisfaction and other indicators of the improvement of quality of life, as well as in terms of its socio-economic and environmental sustainability (CEPAL 1990, 1991b; Dore and Weeks 1982; Hicks and Streeten 1979; Redclift 1984, 1987).

Three common principles must be considered in the

conception of development strategies at any time and within any given society. First, development must be socially sustainable. Economic growth without social equity is not sustainable because it constitutes a continuous violation of human rights and source of political instability and, in the long term, it restrains the expansion of the economy (CEPAL 1990; de Janvry 1985; Touraine 1989). Second, it must be economically sustainable. Growth strategies that do not improve the terms of trade and the dynamic comparative advantages of a country do not assure sustained economic growth (Barham et al. 1992; Castells and Laserna 1990; de Janvry 1985). Third, it must be environmentally sustainable. Development strategies that lead to environmental deterioration constitute an imminent threat. Productive use of natural resources and industrial processes associated with their transformation must take into account the irreversible character of environmental degradation and the costs implied for human welfare (CEPAL 1991b; Dasgupta and Maler 1991; Redclift 1984, 1987; World Bank 1991).

A key indicator used to describe the evolution in quality of life associated with the changes in macroeconomic and sectoral policy is food consumption, measured as caloric and protein intake. Changes over time in absolute and relative caloric and protein consumption indicate the substitution process that occurs between high quality

expensive food and cheap food associated with income fluctuations. Due to the low income elasticity that cheap nutrients typically have, protein consumption is a more sensitive measure of shifts in food consumption in absolute terms as well as an expression of the quality of the diet (Gacitúa and Bello 1991; Svendberg 1984). Therefore, changes in food consumption are likely to have a more evident effect on the protein intake than on caloric consumption. Nevertheless, I analyze changes in both caloric and protein intake at the national level. (Data are taken from FAO (1991) Agrostat Food Balance sheets data base and published surveys from the National Bureau of Statistics (INE 1969, 1979, 1989)).

Economic Growth

Aggregate indicators of economic growth do not address issues of quality of life. However, they are helpful for analyzing economic trends at the national and regional levels. These aggregate variables contribute to identification of structural problems and trends that quality of life indicators do not necessarily identify.

Analysis of both types of indicators is necessary. It is possible to have aggregate economic growth in some key economic sectors and the nation as a whole with increasing pauperization of the population (CEPAL 1991a). Several

studies (Burki and Ul Haq 1981; Dore and Weeks 1982; Hicks and Streeten 1979; Hicks 1980; Lisk 1977) have shown that economic growth has not always been translated into better standards of living; rather, it has reproduced and accentuated previous patterns of income inequality, particularly in the Latin American context (CEPAL 1990, 1991a; Dore and Weeks 1982; Gereffi 1990).

In this research, national and regional indicators of economic activity are used to depict the trends of Chilean economy compared to the performance of the agricultural sector and changes in the quality of life of Chilean population. Five indicators are studied. The analysis of these indicators outlines the framework of disarticulated agricultural growth in Chile.

First, the unemployment rate is used as an indicator of economic activity that is highly sensitive to macroeconomic policy shifts. The unemployment rate measures the ratio of those seeking employment for at least two months (if they had previously held a job), or for one month for those seeking for the first time (INE 1982) to those employed. In this perspective, it is the couplement of the proportion of population that is getting a steady income, although it underestimates underemployment and informal sector employment (Ahumada and Gálvez 1992; Pollack and Uthoff 1986). When explained by sector, it indicates those sectors

of the economy that are more responsive to changes in the employment pattern productive structure (i.e. capital intensity and seasonality). I analyze changes in unemployment rates both at the national and regional levels. Data are taken from the National Bureau of Statistics (Instituto nacional de estadísticas, INE).

Second, Gross Domestic Product (GDP) is used as an aggregate indicator of economic performance that measures the total output of goods an services for final use. It provides a general assessment of the performance of the economy of the nation as a whole. It can be disaggregated to determine the net contribution that different regions and economic sectors make to it. In this case, changes in total GNP and its composition over time describes the evolution of the Chilean economy related to macroeconomic policy. (Data are taken from the Central Bank (Banco Central)).

Third, the regional agricultural product is used as an indicator of the performance of the agricultural sector at the regional level. It measures the contribution that the agricultural sector makes to the goods and services produced by the economy of each region. The relative weight of the agricultural sector indicates the economic importance of the sector within the region, and, therefore, the susceptibility of the regional economy to changes in the agricultural sector. Comparisons between regions and with the nation as

a whole help to establish the differential rate of development of the agricultural sector in each one of the regions. (Data are taken from the Central Bank (Banco Central), and the Ministry of Agriculture (Oficina de Planificación Agrícola, ODEPA, Ministerio de Agricultura)).

Fourth, the agricultural trade balance indicates the value of agricultural commodities traded and the extent to which the agricultural sector is reaching at least an equilibrium point. In this study is used as an indicator of the degree of dynamism of the agricultural sector, and it constitutes a rough assessment of the country's food dependence and potential for achieving food security. Data are taken from the Central Bank (Banco Central), and the Ministry of Agriculture (Oficina de Planificación Agrícola, ODEPA, Ministerio de Agricultura).

Fifth, the composition of agricultural exports indicates the apparent comparative advantages of the various agricultural sub-sectors and provides information regarding the diversification and processing of agricultural commodities for export markets. The objective of analyzing the composition of the agricultural exports is to determine shifts in commodities exported, and, therefore, which regions and producers are more dynamic. Data are taken from the Central Bank (Banco Central), and the Ministry of Agriculture (Oficina de Planificación Agrícola, ODEPA).

Data Quality

All data used in this research are from previously published reports either by official sources or private research centers. However, data availability and quality represents a limitation. Nationwide time series are not always comparable and there are no complete data banks at the regional level, and existing data should be interpreted with caution due to the different procedures used for its collection. In this vein, important variables, such as sectoral investment at the regional level, food consumption at the regional level, among others, were left out from the analyses because data were not reliable. In spite of that limitation, gathering data for this research constituted a significant effort.

Official data on national accounts (e.g., GNP, regional product, agricultural product, exchange rate, and consumer price index) were gathered and systematized according to the standard procedures proposed by multilateral agencies. Data sets on these variables are actualized monthly and yearly by the Central Bank and information is released through periodic publications (Banco Central 1989). Indicators such as Gini coefficients, and the real wage index are derived from the above variables both by the Central Bank and private research institutions. Those data sets are highly reliable and provide the basis of the time series analyses

undertaken on this dissertation.

Employment data are gathered by the National Statistics Bureau (Instituto Nacional de Estadísticas, INE) through periodic surveys nationwide. The national employment survey is a monthly survey of households distributed throughout the country that has been carried out since 1966. The sample has been stratified according to rural/urban divide and town/city size. One third of the total sample (N = 35,910) is rotated so that each month a third of the sample is interviewed (Ahumada and Galvez 1992; INE 1982). Although there have been some modifications in the survey, basic comparability throughout time has been preserved. The most serious limitation of the survey is the reliability of measures of the agricultural labor force. There are serious problems in counting agricultural workers (Gómez and Echenique 1988; Guglielmetti 1990; INE 1982). Defining what constitutes labor force participation in rural ares is difficult, particularly if self-employment, underemployment, seasonality, and minimum hours of work are considered. Further difficulties emerge if distinctions by gender and age are introduced. The current national employment survey uses the same concepts, methodology, and frequency for urban and rural workers. However, rural workers have specific characteristics that would require different methodology. Nevertheless, the existing survey has the virtue of

indicating the seasonal variations of agricultural employment, what is extremely important for this dissertation.

Agricultural production data are from INE and ODEPA (Agricultural Planning Office). In the last three decades there have been two agricultural censuses, one in 1965 and the last one in 1975. Since 1975, an annual survey has been used to estimate the ongoing trends in the agricultural sector. The survey is a weighted stratified sample (N = 3,140) according to region and farm size (INE 1985; ODEPA 1976, 1988). The survey covers a wide variety of topics, such as land tenure, land use, productivity, use of hired labor, stock, infrastructure, and gross sales. Since the criterion used to clarify agricultural producers has been farm size (hectares), the survey blurs the heterogeneity of agricultural producers that exist in the countryside, particularly small agricultural producers that combine a wide variety of survival strategies. Nevertheless, the existing data allow a gross distinction between large agricultural producers and small ones.

Official data from INE and ODEPA have been complemented with survey data from private research centers, which have centered their work on small agricultural producers, providing rich statistical information. However, these studies have been rather limited in scope. These studies

(Cox et al. 1991; Echenique and Rolando 1989) compliment the official information used to estimate the participation of peasant and non-peasant production in this research.

National-aggregate food consumption data are from FAO's Food Balance Sheets. The quality and potential problems of these data are well established (FAO 1986; Gacitúa and Bello 1991; Wimberley 1990, 1991). The "food balance sheet presents a comprehensive picture of the pattern of a country's food supply during a specified reference period" (FAO 1991a, p.v). The accuracy of food balance sheets depends on the quality of Chilean statistics on population, production levels, and utilization of agricultural products, which in the Chilean case is above average (Infante 1992; Mardones 1992). The most important limitation of the food balance sheets is that they do not "give any indication of the differences that may exist in the diet consumed by different population groups" (FAO 1991a, p.vi). To partially overcome this problem, survey data from INE was used (Cabezas 1992; INE 1969, 1979, 1989). The National Family-Budget Survey has been applied by INE three times to a weighted stratified sample (N = 513,496) of households. Although, these data are only representative of the Santiago-metropolitan area, they provide a good estimate of the changes by income level in urban population.

CHAPTER IV

AGRICULTURAL DEVELOPMENT AND STATE POLICY IN CHILE

A Brief Historical Framework

The landowner class held hegemony until the 1930s. That hegemony was a legacy of the colonial era. It was possible for the landed elite to maintain control well into this century, because landowners were able to expand their influence to the merchant banking and emerging industrial sectors (Crispi 1990; Zeitlin 1984; Zeitlin and Ratcliff 1988). During that period, the hacienda system was not in contradiction with capitalist interests at the national level. Rather, the expansion of international and national markets reinforced the agrarian structure based on the extraction of absolute surplus from the peasantry. Another factor that contributed to landowner hegemony was the political system. The existing legislation favored a type of political structure and electoral process that secured landowners' power and control of the state apparatuses (Bauer 1975, Barraclough and Collarte 1973; Crispi 1990; Zeitlin 1984).

Before the 1930s, Chilean agriculture was geared toward external markets. Internal demand for staples was low, since less than twenty-five percent of the population lived in urban centers, and there was not much industrial need for

raw materials (Bauer 1975; Cox et al. 1990; Gay 1973; Hurtado et al. 1990). However, international demand was large enough to support the expansion of the agricultural sector. By the end of the 1880s, large scale grain producers (from Argentina and the Great Plains in the United States) had not yet fully entered the international markets, and Chile could compete internationally with cheaper grains and other agricultural commodities due to the existing port facilities and overseas trade routes (Bauer 1975; Crispi 1990; Friedmann and McMichael 1989).

However, the hegemonic power of the landed elite began to decay with the increasing influence of international markets, starting in the 1880s. After Great Britain opened its market, large wheat producers began to emerge in new world areas closer to the demand centers and with a better freight infrastructure. At the same time, the wealth generated by the export boom in the second half of the nineteenth century was not invested in modernizing the agricultural sector. In fact, landowners financed the expansion of the growing urban areas. What is more, state policy did not stimulate reinvestment in other productive activities and the transformation of the agrarian structure that would have expanded the economic base and the employment-generating capacity of agriculture and the country as a whole (Bauer 1975; Crispi 1990).

Before the 1930s, the industrial sector had grown only as a result of the dynamism of other economic sectors and activities. However, the accumulation pattern followed for the previous 50 years was no longer viable, and no power fraction was powerful enough to impose an alternative pattern until the late 1930s (Crispi 1990; Stallings 1978; Zeitlin 1984; Zeitlin and Ratcliff 1988). After the 1930s crisis the outward-oriented base of the development of Chilean agricultural sector and economy broke down. The transformation of the world market after World War I ended the ongoing decline of the external demand for agricultural commodities and other primary products, such as nitrites.

Urban-industrial sectors gained relative power, and a shift in development strategy and state policy took place. While before the 1930s, state policy "did not intrude into the affairs of landowners" (Bauer 1975, p.81), after that time macroeconomic policies increasingly subordinated the agricultural sector to the needs and demands of the fast-growing industrial-urban sector. A long period of stagnation for the agricultural sector started, although increasing demand from the emerging urban centers and industries prevented the sector from collapsing. The new world food order and associated technological changes in production strategies plus the transformations taking place in the larger society contributed to the subordination of

the agricultural sector to the growing demands of the urban sector (Barraclough and Collarte 1973; Friedmann and McMichael 1989). Since then, the interaction of macroeconomic and sectoral policies have configured the salient characteristics of Chilean agricultural development. This policy framework must be taken into account in discussing the disarticulated character of the modernization process and differentiation experienced by Chilean agriculture during the period under study.

The industrial bourgeoisie advanced a different accumulation pattern based on the transfer of national capital to the industrial sector. An industrial bourgeoisie-led strategy promoted a series of transformations and directed national capital to economic activities that otherwise would have been disadvantaged in the international market place. That plan required foreign capital. It also demanded a strong, legitimate state, capable of defining favorable economic and sectoral policies and, to directly intervene in the implementation of the new accumulation pattern (Stallings 1978).

Within this framework, in 1938 the Chilean state established the Corporación de Fomento de la Producción, CORFO, that played a key role in the development of the industrial sector. At the same time, Chilean legislation conferred upon the state the tools for price intervention

and trade control (Crispi 1990). The exchange rate was set by the Central Bank, and a multiple parity system was introduced to favor the industrial sector. Although price control was the key policy instrument during the 1940-1960 period, other policy instruments, such as import quotas and tariffs, were increasingly activated (Crispi 1990; Valdés et al. 1990). The results were soon evident. The trade mix was substantially modified. The relative weight of imported capital goods grew from 17% in 1940 to 27% in 1955, while imports of consumer goods decreased from 35% to 28% for the same years (Crispi 1990, p.27). At the same time, agricultural imports grew significantly (see table 2).

Table 2: Agricultural Trade balance and Participation of 1936-1965 Agricultural sector in Gross Domestic Product (GDP), US$ Millions of each Year.

Years	Trade Balance	% GDP Agriculture
1936/38	+11.0	n.d
1939/41	+ 0.7	n.d
1942/44	- 6.7	15.0
1945/47	-12.3	13.7
1948/50	-29.6	14.0
1951/53	-39.2	13.0
1954/56	-77.7	12.7
1957/59	-51.8	12.3
1960/62	-92.0	10.4
1963/65	-124.4	9.6

Source: Cox et al. (1990, p.80).

However, the strategy had its weaknesses. Foreign currency was essential for obtaining the capital goods that

industrial development required. In theory, it was expected that with the development of the industrial sector, capital goods imports would decrease, since they would increasingly be produced domestically. But this substitution did not happen, and the burden was passed on to other economic sectors.

Cheap food was necessary to maintain low wage levels in the industrial sectors, and agricultural prices were tightly controlled by the state. Although the landed elite did not have enough power to reverse that tendency, it did get subsidies and others compensations for the low prices of their products. Even more important, the landed elite were able to keep the peasantry and small agricultural producers under political control and maintain a land tenure system that resulted in unequal patterns of income distribution, restricting consumption and investment (Barraclough and Collarte 1973; Crispi 1990). These conditions partially explain the low growth rate experienced by the agricultural sector during the 1930-1960 period and the increasingly negative agricultural trade balance of that period (see tables 2 and 3).

Table 3: Agricultural Growth Rate National and Per capita 1917-1967.

Years	National	Per capita
1913/17 - 1923/27	0.5	-0.8
1923/27 - 1933/37	3.3	1.9
1933/37 - 1943/47	1.1	-0.4
1943/47 - 1953/57	1.6	-0.6
1953/57 - 1963/67	1.7	-0.8

Source: Cox et al. (1990, p.80).

From the 1930s to the 1960s, state policy discriminated against agriculture. Many of these policies were the indirect result of the struggle to develop an industrial base in which the Chilean state was engaged. Despite the numerous protectionist policies at the national level, there was no real protection for the agricultural sector, because the development of the industrial sector demanded cheap food for the industrial labor force (Cox et al. 1990; Valdés 1973).

The awkward functioning of the hacienda system had resulted in decreasing agricultural production, while at the same time land prices escalated. This unusual situation was possible because agricultural profits resulted from social and political arrangements based on an unequal land tenure system (see table 4). The land tenure structure contributed to the dissociation of agricultural profitability from reinvestment in the agricultural sector, although land

itself was an investment (Barraclough and Collarte 1973; Crispi 1990; Warriner 1969). The landed elite was powerful enough to benefit from its alliance with the industrial capitalist and the conditions imposed by the accumulation pattern, while the vast majority of the rural population experienced most of the negative aspects of the import substitution accumulation pattern (Crispi 1990).

Table 4: Land Tenure by Type of Units, 1955.

	Number of units	% of total	% total land	% irriga-ted land
Type of unit				
Subfamily	55,800	37	0.3	2.1
Family farm	60,400	40	8.1	7.3
Multifamily	24,400	16	13.1	12.6
Large	10,400	7	78.5	78.0
Total	151,000	100	100.0	100.0

Source: Chonchol (1976, p.602)

Profits for the traditional campesino sector progressively decreased between early 1930 and 1960. Price intervention had a clear negative impact for small agricultural producers, since their products were undervalued and wages were low. Furthermore, small agricultural producers did not have access to subsidized credit, inputs, and other state supported programs.

From a strictly economic perspective, Chilean agrarian structure at that time cannot be described as a feudal one,

because capitalist relations of production were present in Chilean countryside to some extent (Lehmann 1976). However, the social and political arrangements constructed upon those relations, "the patronage relationship between landowners and laborers had something of feudal authority behind it" (Warriner 1969, p.229)[9].

The prevailing system had five internal characteristics. First, there was productive specialization and commodity exchange. Although the social relations of

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[9] This is not the place for a detailed theoretical discussion of the prevalent character of the agrarian structure in Chile or, more generally, if the peasant enterprise constitute a particular mode of production. For a detailed discussion of these issues see de Janvry (1979, 1981); Frank (1966); Goodman and Redclift (1982) and Lehman (1976), among several others. Rather, at this point, it is important just to establish a typology of the existing enterprises in the countryside.

Based on several criteria, such as farm size, satisfaction of basic needs, use of labor and organization of the production system, Barraclough and Collarte (1973, Pp. xviii, xix) provide a definition of these different units and agricultural producers which constituted the latifundium-minifundium complex. Sub-family size farms were those units that had insufficient land to satisfy the minimum needs of the family and/or to meet their subsistence needs, indicated by them, by selling their labor power throughout the year. Family-size farms had sufficient land to support a family according to the standard of living in the locality and the application of the production methods prevailing in the area. Multi-family, medium-size farms were those family units that hired some outside workers, but were not sufficiently large to justify a change in the organization of the system and hiring a manager. Finally, the large multi-family farms required further division of labor and the establishment of an administrative hierarchy that controlled the work processes.

Barraclough and Collarte (1973, p.22) identify two broad categories of rural workers. First, they consider rural workers who owned small holdings or had usufruct rights to land as payment for their services. In this category, they differentiate three subtypes, including a) minifundistas who worked full time or part time; b) sharecroppers or share-tenants; and c) workers residing on the farms whose remuneration included the right to use a plot of land. The authors group together landless workers, who could either a) used to live in neighboring small towns and work full time on other farms, or b) were migrant workers, with no fixed residence.

production were not those of free labor, the reproduction of the dominant sectors occurred under capitalist exchange (Goodman and Redclift 1982; Lehmann 1976). Second, there were various mechanisms of surplus extraction in place, such as land-rent, labor-rent, wage-labor, and unequal exchange (Lehmann 1976; Warriner 1969). Third, there was a socio-political structure that tied laborers to the estates and landowners, who erected their political power upon those relationships (Barraclough and Collarte 1973; Warriner 1969). Fourth, the political institutions that developed involved the political, economic, and cultural exclusion of the poorest sectors of the population (Barraclough and Collarte 1973; Touraine 1989; Warriner 1969). Fifth, this structure, characterized by unequal income distribution and land access, presented severe impediments for capitalist expansion in agriculture, as well as for the development of the urban industrial sector due to the uneven structure of consumption, expenditure, and investment it produced (Barraclough and Collarte 1973; de Janvry 1981).

By the mid 1950s the feeble balance between urban and rural demands came to an end, because the requirements placed upon the agricultural sector generated a crisis that could not be solved within the context of the existing agrarian structure. The inner contradictions of the import substitution model, the need for a more dynamic agricultural

sector capable of keeping up with the expansion import substitution model, and the increasing need for foreign exchange, cheap food and stable labor supply prompted the industrial bourgeoisie to break its alliance with the landed elite and to seek support for transforming the agrarian structures (Stallings 1978).

In 1955, inflation reached previously unknown levels, up from less than 10% during the 1940s to 76% in 1955. Forced to reduce inflation, the government attempted to amend the accumulation pattern by implementing a series of economic measures aimed at reducing internal demand and increasing Chilean industrial competitiveness in the international market. Initially, the plan was mainly to control inflation. Later on, the plan included cutting down fiscal expenditures, subsidies, and basic services. Wage increases were limited and set below the increase in living expenses. The objective was to control inflation by decreasing demand and public consumption. At the same time a program to increase foreign investment was set in motion, and a trade liberalization took place. "The nominal exchange rate was fixed, tariffs were reduced, and quotas on imports as well as import licensing were eliminated" (Hurtado et al. 1990 p.10).

However, these measures were unable to solve the contradictions of the accumulation pattern. It was

impossible to restructure the system based only on internal prices and liberalizing trade because the accumulation rate was too low to sustain growth. It became clear to the industrial bourgeoisie that the only way to sustain their model was to establish an alliance with foreign capital (Crispi 1990; Stallings 1978). However, establishing that association also required transforming the agricultural sector. First, the agricultural sector had to increase production to free the foreign exchange used to import food and to keep food prices low for workers. Second, it was essential for the industrial bourgeoisie to gain political support from the peasantry (Crispi 1990). These two objectives crystallized in the agrarian reform and the reformist government of Eduardo Frei in 1964.

Agrarian Reform / Counter Reform and Development

The specific policy indicators under analysis in this dissertation cannot be fully comprehended without examination of the agrarian reform that framed those specific policy instruments. Furthermore, it could be argued that the transformations activated by the agrarian reform constituted a turning point for the accumulation pattern. In this vein, the following discussion of the agrarian reform seeks to link the key characteristics of the agrarian reform process with the underlying theoretical

framework of this dissertation.

By the early 1960s, the land tenure structure was highly concentrated. Almost half of the rural families (165,000) were landless, more than 50% of the irrigated land was owned by large land owners (see table 5), rural illiteracy was three times (34.8%) the urban rate, and 87% of the rural population received no more than 34% of the total rural income (Chonchol 1976). As important as the legal control of the land, the pre-reform political control of the peasantry constituted an important source of power for the landed elite. Peasant unions were proscribed, and the few attempts made for peasant organization were severely repressed (Barraclough 1971; Landsberger 1967; Lehmann 1974).

Table 5: Pre-Reform Land Tenure Structure by Size in Basic Irrigated Hectares (BIH), 1965.

BIH	Number of Properties	Percent of Properties	Percent of Irrigated Land
< 5	189,529	81.4	9.7
5 - 20	27,877	11.5	12.7
20 - 80	11,633	5.1	22.5
> 80	4,876	2.0	55.3
Total	133,915	100.0	100.0

Source: Jarvis (1985, p.20).

Although during the Alessandri administration (1958-

1964), a plan for reform and colonization had been initiated, it was not until 1964, with the Christian Democratic government (1964-70), that a profound transformation of the countryside was initiated. Under the premises of the Alliance for Progress, the Frei administration launched an agrarian reform in order to decrease the existing internal social pressure and to modernize and consolidate a capitalist agriculture.

The government hoped the agrarian reform would create the conditions for increasing agricultural production and integrating the peasantry into the national economy and Chilean society. Five main instruments were used by the Frei administration to implement the agrarian reform (Chonchol 1976). First, a law recognizing and granting state support for peasant unionization was passed. All peasants, rural workers, sharecroppers, and tenants were allowed to unionize, and employers were forced to negotiate with them. Second, expropriation of landholdings over 80 basic irrigated hectares (BIH), a standardized measure of land that established the equivalence between irrigated soils and others of less quality, was allowed. Landholdings of absentee landowners were expropriated. Inefficient farms and landholdings where employers did not meet the conditions required by law in terms of minimum wage, salary, and other benefits for their workers were also subject to

expropriation. Third, expropriated land was temporarily organized in collective state-worker enterprises called asentamientos, which after a period of settlement were to result in family units and cooperative farms. Fourth, irrigation water was placed under state control, and the state granted water use rights to agricultural producers and their organizations according to their needs. No private ownership of water was allowed. Fifth, specialized state agencies were developed to deliver technical, financial, and managerial assistance to small producers.

With the implementation of agrarian reform policies, agricultural output increased significantly (see Appendices 2a, 2b, and 3). Development of the fruit and timber industries began at the same time. In 1969 various mechanisms, such as subsidies, preferential credit rates and state investment were finally articulated into a national plan. The results were soon evident, and a rapid process of capitalist modernization the timber and fruit sub-sectors, including the development of an export-oriented agroindustrial base and agricultural exports, began (Cruz and Rivera 1983; Gómez and Echenique 1988; Sáez 1986).

Although these transformations were not intended to radically change the agrarian structure, they did create the conditions for further and more drastic changes (Chonchol 1976). Particularly, the organization of the peasantry, was

the engine for a deep social change that would force radical transformations in the countryside between 1970-73. The Christian Democrats' land reform benefitted only a small proportion of the originally planned for families. But it also created the conditions for the development of peasant organizations. In less than four years, about 400 unions with more than 140,000 members were organized. Also, more than 80,000 small producers were organized into peasant cooperatives and small producers associations (Barraclough 1971; Chonchol 1976; Huerta 1989; Lehmann 1977; Kay 1981) (see Table 6, and Appendix 1a).

Table 6: The Agrarian Reform Under the Frei (1964-70) and Allende (1970-73) administrations.

Reform Results	Frei (1964-1970)	Allende (1970-1973)
Number of Landholding Expropriated	1,410	4,490
Hectares expropriated	3,400,000	6,600,000
Families benefitted	26,577	29,577
Members of Unions	140,293	217,791

Source: Chonchol (1976, p.610) and Lehmann (1977, p.80)

Nevertheless, by 1967, when the Frei administration entered its third year, the accumulation pattern was facing a crisis, and the agrarian reform reached its limit within that context. The government had already exhausted the potential for growth based on the expansion of the

productive capacities and could no longer maintain that accumulation pattern while at the same time respond to popular demands for resource distribution. The Frei administration chose to slow down reforms, cut down public expenditures, and reduce monetary expansion. "The effects of these changes began to appear almost immediately, industrial output, as well as GDP in general dropped sharply, ... unemployment began to increase [and] opposition from both the workers and the bourgeoisie [grew]" (Stallings 1978, p.108). The different fractions of the bourgeoisie were divided, and it was clear to all social classes that the reforms would not solve the contradictions of the accumulation pattern.

Further transformations required new political directives and a different approach to the role of the agricultural sector. Those were the conditions and the framework in which the Popular Unity coalition, representing an alliance of the working class, the peasantry and the petty bourgeoisie, won the presidential election in 1970 with about 37% of the electorate. Between 1970 and 1973, the socialist government initiated a series of structural changes that hastened social and economic reforms.

Stallings (1978, p.126-7) summarizes the transformations contemplated by the Popular Unity government in three major categories. First, at the structural level,

the government sought to expand state ownership of key economic activities, implement centralized planning, and consolidate popular democracy. Second, at the economic level, the government wanted to shift priorities from luxury goods production to basic consumer goods, expand employment opportunities and wage levels, decrease dependency on foreign capital, increase and diversify exports, rationalize the marketing system, and control inflation. Finally, at the social level, the government's goals were to expand and consolidate the social security system and social services, increase the public housing program, and put an end to any type of discrimination based on class, age, gender, or race.

Within that framework, the agrarian reform was a key component of the program that involved structural, economic, and social issues. Using the legal instruments developed by the Frei administration (Thome 1990), the Popular Unity government deepened the agrarian reform, expropriating 4,490 haciendas with an area of about 6.6 million hectares (see Table 6), and installed a new type of collective production unit on the expropriated farms, breaking down the old agrarian structure (Chonchol 1976, 1977; Huerta 1989). Although agricultural production increased in 1971 (see appendix 3), afterwards it decreased sharply due to the unstable economic and political conditions and the boycott launched by associations of large agricultural producers.

The profound transformation of the agrarian structure prompted a severe reaction by the landowners. Productivity in the private agricultural sector decreased. At the same time, the incentive system within the collective farms was not enough to maintain and expand production in the reformed sector. The transitional character of the reformed sector presented the same obstacles that existed during the Frei administration. The lack of a clear organizational structure contributed to the inefficiency of the reformed sector, generating a very unstable situation. Agricultural producers from the reformed sector did not know what their future would be, and incentives were low and not germane to the demands of individual producers (Chonchol 1976, 1977; Cox et al. 1990; Garrett 1981; Huerta 1989).

To incorporate the peasantry in the national political arena, the government fostered peasant organizations. Particular importance was given to regions where peasant mobilization was more powerful, such as in the IX region, where Mapuche organizations overpowered the state (Berdichewsky 1979; Chonchol 1977). A Bureau of Indian Affairs and Development (Instituto de Desarrollo Indígena, IDI) was established, and new legislation was passed. These changes allowed the restitution of more than 70,000 hectares to Mapuche communities and increased political participation of Mapuche organizations.

Government policies toward fruit and timber sub-sectors were also part of this broader process of social transformation. The government sought to redistribute the benefits generated by the agricultural sector by establishing appropriate mechanisms for the control and redistribution of the capital produced. Priority was given to production for national markets and the achievement of food security (Gómez and Echenique; Huerta 1989).

The Popular Unity government attempted to use the state to change the accumulation pattern. Despite the deep and significant transformations produced by the Popular Unity government, the unfinished experiment presented important contradictions. The economic policy attempted to foster aggregate demand, but it faced structural problems. The inflationary trends caused by the rapid income redistribution and increased public expenditures were initially managed by price control. However, state control was unable to regulate the economy. Black market, hoarding, and production sabotage mined the economy, and inflation skyrocketed. The transformation of the accumulation pattern attempted by the socialist program encountered bitter opposition from the bourgeoisie, which further restricted the few alternatives the government had to respond to the political and economic crisis (Stallings 1978).

Although the Popular Unity was unable to impose an

alternative accumulation pattern, the previous industrial bourgeoisie-led pattern was clearly threatened, which led to the 1973 military coup d'etat. Workers had increased their political participation and control of productive resources. The hacienda system had also been dismantled. For financial capital, the transformations were not that traumatic. State payments to private banks and capital speculation enlarged the economic power this fraction previously had. The most important outcome of these transformations was that all capitalist fractions questioned the import substitution accumulation pattern, and a new hegemonic block was configured. After the coup, the combination of neoliberal economic policy and national security ideology created the conditions for the advancement of a new accumulation pattern under the hegemony of financial capital. This accumulation pattern assigned a new role to the agricultural sector, which increased its disarticulation. Later, the debt crisis and structural adjustment restrictions generated special conditions for the consolidation of a disarticulated growth pattern, which is evident in the ongoing transformations of Chilean agriculture.

Table 7: Distribution of Agricultural Properties, by Year and Size (BIH) Categories, 1965-1986 (percentages).

	1965	1972	1976	1979	1986
Size of Holding					
< 5	9.7	9.7	9.7	14.1	14.0
5 - 20	12.7	13.0	37.2	38.4	26.0
20 - 80	22.5	38.9	22.3	22.3	31.0
> 80	55.3	2.9	24.7	21.3	26.0
Public sector	0	0	0	4.0	3.0
Reform sector	0	35.5	7.5	0	0
Total	100.0	100.0	100.0	100.0	100.0

Source: Jarvis (1990) p.254

The counter reform based on the neoliberal/national security policy framework was launched right after the coup. In the new economic model, the state was confined to a subsidiary role. The state withdrew its participation and resources from productive processes. The counter agrarian reform enforced by the regime favored the privatization of land. A new process of land concentration developed under commercial and financial capital. Almost one third of the expropriated land was returned to the former owners. Another third of the land was auctioned and bought by highly capitalized agricultural producers and speculators. The remaining third was divided into small family holdings (see tables 7, 8; and appendices 1b, 1c).

Table 8: Counter Reform and Privatization of Reformed Sector Lands in Chile, 1973-1980.

	Number of properties	Area in BIH	Average size (BIH)	%
Total land in reformed sector	5,809	895,752	154.2	100
Land returned to former owners	3,806	251,142	66.0	28
Land assigned to family units	36,553	371,262	10.2	41
Land assigned to cooperatives	9,907	95,865	9.7	11
Land auctioned	1,972	177,483	90.0	20

Source: Silva (1985, p.168)

As a result of the privatization process, a significant change in the land tenure structure took place. Comparing the percentages for each size category in 1972 with the figures for 1986 (see table 7), it is evident that the total number of small properties increased. The increase in medium-sized holdings (5-20 Ha.) reflected the emergence of a new type of agricultural entrepreneur highly specialized and linked to foreign trade and financial capital.

The new accumulation pattern was organized on the basis of a price structure that reflected the prevailing conditions in the international market place and the hegemony of financial capital. However, it is important to distinguish between two periods during the regime, characterized by the application of neoliberal economic

policies. From 1973 to 1982, there was no sectoral policy or specific rules for the agricultural sector. The basic objectives of the policies advanced in this period were to maximize the profits arising from the differential prices among the factors of production at the international level and to correct the macroeconomic imbalance of the former period. The (very weak) foundations of the strategy depended on the underpayment and political control of the labor force and responded to the fluctuating international markets. Prices were liberalized and trade restrictions lifted. In general terms, production processes that presented comparative advantages at the international level were encouraged, and no specific programs to support disadvantaged producers were developed. Internally, a cheap labor force became one of the most important comparative advantages for agroexport producers.

This framework created two fractions within the agrarian bourgeoisie (Crispi 1990). One specialized in fresh fruits for the international markets, located in the central valley, from the IV to the VI region. A second fraction was confined to crop and livestock production for internal consumption. Due to agroecological restrictions, it was located mainly in the south-central and southern part of the country. While the former fraction benefitted from the policy framework, the latter fraction suffered the

consequences of the free market strategy, particularly the agricultural producers specializing in crops for internal consumption. Livestock and dairy producers were negatively affected to a lesser degree.

The second period was from 1982 to the end of the regime in 1989. It started with the unfolding of the 1982 crisis. The government was forced to adopt a pragmatic policy approach that responded to the requirements of structural adjustment, while at the same time allowed for the introduction of policy instruments designed to correct for some of the market fluctuations. "Both wage indexation and the fixed exchange rate adopted in 1979 were abandoned...[and] a series of more interventionist policies was introduced, particularly in the agricultural sector" (Hurtado et al. 1990, p.18 and p.53). The objective of this period was to overcome the debt and fiscal crisis and to consolidate the transformations introduced during the first period. Although these policy changes restored some stability to farmers producing for the internal markets, they did not change those farmers' subordinated position within the agricultural sector.

These processes distinguish the disarticulated character of the modernization of Chilean agriculture. On the one hand a dynamic and modern agricultural sector developed associated with export agriculture and some high-

value agricultural commodities. On the other hand, small family farms, with low productivity and extreme instability, became increasingly concentrated in crops of low profitability. The processes leading toward social and regional differentiation were anchored in the core of the strategy followed by the regime, and could not be solved within the existing policy framework. They reflected the structural character of a disarticulated growth pattern and, therefore, called for a transformation of the structural conditions that cause disarticulation.

Policy Indicators

There are numerous macro and sectoral level studies analyzing the evolution of Chilean state policy and its impact on the agricultural sector (Cox et al. 1991; Crispi 1990; Gómez and Echenique 1988; Hojman 1990; Hurtado et al. 1990; Jarvis 1985, 1990 Ossa 1988; Valdés et al. 1990; Walton 1985). These studies have detailed the behavior of the policy indicators selected for analysis in this dissertation. It is not the purpose of this study to develop a quantitative analysis of state intervention or to model possible outcomes. Rather, the objective of including policy indicators is to establish the relationship between their evolution and the movement of Chilean agriculture along the articulation-disarticulation continuum. For

clarity's sake they are presented separately. However, it is impossible to isolate the possible effects of any particular indicator from the impacts of the others and from the general socio-political context.

Exchange rate

By the end of the Alessandri administration the nominal exchange rate was fixed, and the Chilean peso was clearly overvalued. During 1965-1973 protectionist policies continued to regulate international trade. One of the key instruments used by the Frei and Allende administrations was the exchange rate policy.

To avoid external economic shocks and develop the export sector, the Frei administration adopted a crawling peg system. Nominal and real exchange rates increased progressively, although not in the same proportion (see table 9). The evolution of the real exchange rate during this period contributed to the maintenance of almost constant agricultural imports, while agricultural exports showed a slight absolute increase during the Frei Administration, but declined in the latter part of the Allende government. However, in relative terms, agricultural exports tended to decline vis a vis total exports (see appendices 2a, 2b).

Table 9: Nominal and Real Exchange Real, 1965-1988.

Year	Nominal ($ of each year per US$)	Nominal ($ of 1988 per US$)	Real Exchange Rate (1978=base)
1965	0.003	191.950	38.0
1966	0.004	197.590	40.6
1967	0.005	212.751	43.5
1968	0.007	226.649	46.8
1969	0.009	229.398	48.6
1970	0.011	222.830	48.6
1971	0.012	199.369	45.8
1972	0.019	176.067	43.0
1973	0.111	221.094	57.1
1974	0.832	274.511	79.7
1975	4.910	341.349	97.6
1976	13.050	290.886	96.2
1977	21.540	250.004	83.4
1978	31.670	262.325	100.0
1979	39.000	231.385	101.7
1980	39.000	179.285	89.0
1981	39.000	149.793	75.8
1982	50.910	177.855	85.9
1983	78.790	216.299	103.7
1984	98.480	225.557	108.3
1985	160.860	281.892	133.9
1986	186.180	282.978	147.4
1987	219.410	268.441	152.5
1988	245.010	245.010	149.0

Source: Elaborated by the author based on Banco Central (1989)[10]

To interpret the effect of the exchange rate on the agricultural sector, it is essential to consider that the

[10] To compute the real exchange rate the methodology used by the Central Bank was followed. The nominal exchange rate was adjusted by a coefficient reflecting the ratio between the US wholesale price index (IPM) and the Chilean consumer price index (IPC), taking 1978 as base year.

main sectoral objective of the government was the agrarian reform. Improving the negative agricultural trade balance was an objective, but within the framework of the agrarian reform. That is, the agricultural trade balance was seen as a long term objective resulting from the transformations initiated by the agrarian reform.

The Allende Administration contemplated progressive state intervention in the economy, particularly in those areas deemed decisive for attaining economic security, growth, and income redistribution. In that context, the government began expanding and consolidating the transformations initiated by Frei. Social policies were a priority, and the government approved substantial salary increases (see appendix 5). The government tried to decrease Chilean vulnerability to external shocks and dependence from foreign capital. The administration imposed increasing restrictions on foreign trade and foreign investments.

In accordance with those objectives, the exchange rate system was modified from the crawling peg exchange rate system to a multiple system with at least six different fixed exchange rates for separate economic sectors and trade activities, and "in practice one could negotiate with the Banco Central de Chile an exchange rate for individual transactions" (Corbo 1985, p.107). Critical results soon

ensued as the demand explosion created by wage increases was not matched by production increases. Scarcity developed, and inflation increased rapidly by the second year.

At the end of the Allende administration the nominal exchange rate had experienced severe fluctuations (see table 9, above), and the "ratio between the highest and lowest official exchange rate was 52:1" (Corbo 1985, p.115). However, the aggregate average real exchange rate for all economic sectors had decreased during the first two years of the Allende administration, and it was only after the devaluation of March 1973 that it showed a significant increase.

The effects of the exchange rate system on agricultural production during the Allende administration are mixed and cannot be separated from the political conditions that evolved into a general crisis. It is clear that the agricultural producers most negatively affected were the exporters, who saw the relative prices of their commodities decrease. The strict foreign investment policy associated with the exchange rate policy prevented the entrance of new foreign capital, which worsened the condition of export sectors. At the same time, agricultural production for internal consumption did not capture the relative increase in food prices because of state price intervention.

The military regime brought drastic changes in

macroeconomic policy aimed at developing a free market economy. Exchange policy was regarded as the key instrument to correct macroeconomic imbalances, particularly inflation. Four phases can be distinguished in the exchange rate policies followed by the regime. From 1973 to 1975 there was a progressive devaluation in real terms of the Chilean peso of more than 40% (see table 9). The different exchange rates were initially reduced to three and, later on, to just one standard exchange rate for all products (Cox et al. 1990).

The oil crisis and the sharp decrease in international copper prices induced several reforms. Starting in 1975, a crawling peg exchange system was reintroduced and in 1976 the Chilean peso was revaluated 10% to stop inflation and to slow down the massive inflow of foreign capital seeking to capture the differential between the Chilean and international interest rate (Corbo 1985; Cox et al. 1990).

From 1975 to 1977, the real exchange rate experienced a progressive devaluation. In February 1978 the daily devaluation system, based on observed inflation rates, was replaced by an exchange system based on the projected inflation rate and programmed for the entire fiscal year (Corbo 1985; Cox et al. 1990). In June 1979 a devaluation took place, and the exchange rate was fixed and leveled to the value programmed for February 1980, resulting in a

progressive overvaluation of the Chilean peso. Between June 1979 and December 1981 the accumulated overvaluation of the Chilean peso reached over 25% (see table 9, above). The fourth period started with a devaluation of the peso of 20% in June 1982, after a severe crisis and massive loss of reserves. The regime had to abandon the fixed exchange rate system adopted in 1979 and reinstated a crawling peg exchange rate system. It was the beginning of a more pragmatic economic policy following the structural adjustment recommendations which included, among other policies, the legalization of a parallel hard currency market (Corbo 1985; Cox et al. 1990).

These changes represented a severe obstacle for national industry and internally-oriented agricultural producers, while at the same time it was a great stimulus for exporters. By and large, the macroeconomic policies promoted imports that competed with national industry with great advantages. This was particularly true for agricultural producers. It was cheaper to acquire wheat, meat, or milk (to mention a few commodities) in the international market than to produce them internally. At the same time this policy instruments contributed to a sharp contraction of the wage level and internal aggregate demand. The modifications introduced after the 1982 crisis tended to ameliorate the severe economic problems that agricultural

producers had faced prior to that time. The crawling peg exchange system further stimulated agricultural exports (see table 9, above and appendix 2a). The consolidation of the model within the structural adjustment framework helped to recover some competitiveness of the internally-oriented agricultural producers. The devaluation of the Chilean peso made imported agricultural goods less competitive. However macroeconomic changes also contributed to push the consumption curve downward, limiting internal demand and, therefore, markets for internally produced agricultural commodities.

Tariff System

Import tariffs can take many forms. This study only discusses the evolution of ad valorem import tariffs[11]. However, it is important to note that during the period under study other tariffs and non-tariff barriers regulated international trade, particularly before 1973. Trade policy before 1973 was characterized by strong state intervention and protectionism. The imposition of tariffs was a clear indicator of protectionism and trade intervention. After 1973 the decreasing tariff system adopted by the regime

[11] Ad valorem import tariffs are those that charge a "fixed proportion of the value" of the commodity (Colman and Young 1989, p.270).

represented its commitment to liberalize trade and to develop a free market policy. This analysis does not attempt to measure the impact of import tariffs on trade. Rather, it illustrates the policy shifts that followed the transformation and subsequent change in accumulation pattern.

Since the 1930s, an intricate tariff system regulated international trade. As the import substitution accumulation pattern developed, the tariff system became more and more complex and comprehensive. By the end of the Alessandri administration the modal tariff had reached 94% (see table 10), with rates on different imports ranging from less than 50% to over 200%.

Table 10: Modal Ad-valorem Tariff Level, 1965-1988.

Date	Modal Tariff %	Date	Modal Tariff %
12/65	94	08/75	40
12/66	94	02/76	35
12/67	65	06/76	30
12/68	65	12/76	20
12/69	39	12/77	15
12/70	39	12/78	10
12/71	50	12/79	10
12/72	90	03/83	20
12/73	90	11/84	35
03/74	80	03/85	30
03/74	70	06/85	20
06/74	60	01/88	15
01/75	55		

Source: Cox et al. (1990, p.82-3) and Banco Central (1990)

With the entrance of the Frei administration a progressive effort to lift protectionist measures took place, and tariffs decreased from almost 100% at the beginning of the administration to less than 40% at the end of the period. The Frei administration aspired to stimulate international trade and to facilitate the import of capital goods and agricultural inputs associated with the technological changes unleashed by the agrarian reform. The variations in nominal value of ad valorem tariffs for different economic sectors were sharp (see appendix 5), and the sectors that experienced greatest changes were the industrial and agricultural. Agricultural machinery, fertilizers and pesticides were imported with preferential rates and subsidized credit. Tractor imports grew from an average of less than 1,100 units per year during the Alessandri administration to an average of more than 1,500 units per year, and other agricultural machinery imports rose in value almost 80% from the Alessandri to the Frei administration. Decreasing tariffs for agricultural inputs and machinery contributed to the rapid growth experienced by the agricultural sector during the Frei administration, but it was particularly helpful for those emerging agricultural entrepreneurs adopting the technological package associated with the Green Revolution and linked to international

markets.

When Allende took office a redefinition of trade policy took place, and tariffs levels were raised. During the short administration of the Popular Unity, sharp fluctuations in the nominal tariff levels occurred. Tariffs fluctuated between 0% to 750%, with a modal value of 90% (Corbo 1985; Ossa 1988; see also table 10, and appendix 5). The government imposed severe import restrictions, particularly on consumer goods and commodities that would compete with important industrial activities, such as the textile industry. As the economic crisis faced by the administration increased, especially for the state-owned industries, tariffs were increased not only as a protection against imports but also as an important revenue source.

The situation was somewhat different for the agricultural sector, the least protected sector. A clear double standard concerning tariffs affected the agricultural sector. Staple food imports had very low tariffs to facilitate covering the increasing food shortages that had developed over time. Further, food imports were controlled by the state owned Agricultural Marketing Enterprise (Empresa de Comercio Agricola, ECA), and import levels were set by the Agricultural Planning Office (Oficina de Planificación Agricola, ODEPA) of the Ministry of Agriculture. At the same time, the expansion and

consolidation of the agrarian reform required increasing support to agricultural producers, particularly from the reform sector (cooperatives and state-owned farms). Agricultural machinery was essential to the expansion of agricultural production, particularly for dairy and fruit production. Tractor imports during the three years jumped to 11,000 units, while at the same time the total value of machinery imports decreased about 30% due to severe budget limitations (Silva 1985). Also, fertilizer use significantly increased (see appendix 7). In summary, foreign trade policies during the Frei and Allende administrations were characterized by an overvalued exchange rate, which had to be compensated for by other policy instruments aimed at regulating trade at the border (such as high and multiple tariff and non-tariff barriers) and increasing capital availability through foreign borrowing.

After the coup, sharp changes took place. Starting in 1974, the regime announced a profound transformation of the tariff system to facilitate free trade. That year, three successive reductions of tariff levels took place (see table 10, above), and the government created a special committee to advise it on tariffs and trade policy. That committee proposed a differential tariff structure based on the degree of processing of the imported commodities, so that raw materials would be taxed at 25%, semi-processed commodities

would be taxed at 30%, and high-value processed commodities would be taxed at 35%. These tariffs would all together decrease until reaching an uniform tariff level of 10% in 1979 (Ossa 1988). Along with the tariff reduction, non-tariff barriers were also lifted. These measures, associated with the exchange rate policy, induced massive imports of capital and consumer goods (see appendix 2b).

For the agricultural sector the above policies, associated with the end of price and marketing intervention and the overall subsidiary role the state had previously assumed, represented a severe setback. Agricultural imports escalated, and internal prices went down. Cultivated land decreased sharply, and production of annual crops plummeted (see figure 1 and appendix 3). Only very efficient annual crops and livestock producers and agroexport producers that had comparative advantages survived the critical years of 1978 to 1982. While staple food producers faced increasingly negative sectoral terms of trade, the agroexporters had increasing facilities and foreign capital available to import machinery and expand its infrastructure.

Although there were no substantial modifications to the tariff policy after the 1982 crisis, some restrictions were placed on subsidized imports. In 1983 the uniform tariff level was raised to 20% and in 1984 the tariff level was raised again to 35% (see table 10, above). Since then,

three progressive reductions took place until 1988 when it reached a uniform level of 15%. Despite these fluctuations, the core of the tariff and trade policy remained constant after 1982. Non-tariff barriers had been eliminated, and trade liberalization had been consolidated.

At this point, it is also important to note that export taxes and several other restrictions for exporters were lifted. Among these it is noteworthy that in 1974 a law was passed allowing exporters to keep the tax on the value added (IVA) of export-related goods and services. Even more importantly, specific incentives and institutional mechanisms were developed to stimulate the growth of the export sector (for a detailed study of all these incentives see Ossa 1988). In 1974, PROCHILE, the Institute for Export Promotion (Instituto de Promoción de las Exportaciones) was created. With its establishment, several other specific sectoral and commodity committees (such as fresh fruit producers, dry fruit producers, canned fruit producers, etc.) were organized. Data banks, information services, and marketing study teams were assembled to help exporters discover new markets and better target their products to the international demand. As a result, exports grew significantly and non-traditional agricultural exports grew at a much higher cumulative rate than any other sector of the economy (Barham et al. 1982; see also appendices 2a, 2b

and 8).

Price Support and Marketing Programs

From the 1930s until the early 1970s, indirect (macroeconomic) state intervention contributed to the subordination of agriculture to an industrial development accumulation pattern based on import substitution. At the same time, direct state sectoral intervention reinforced that pattern by fixing agricultural prices, reducing the cost of food and thus lowering the cost to employers of the industrial labor force. However, sectoral policy also had to counter the negative effects of indirect and direct state intervention that made agriculture less profitable. "To compensate for the reduction of sectoral terms of trade caused by the control of agricultural prices, ... the government promulgated a series of measures to reduce production costs and to increase agricultural productivity" (Hurtado et al. 1990, p.35).

This study highlights two policy instruments, price supports and marketing programs, that were widely used to increase agricultural profitability. As in the case of indirect (macroeconomic) interventions, the analysis here does not attempt to measure the net impact of pricing policies or to determine what would have happened if they had been removed. Rather, the results obtained by other

researchers are used to illustrate the policy shifts in the framework of disarticulated growth. For an exhaustive analysis of price intervention in the agricultural sector, the reader is referred to the works of Hurtado et al. (1990) and Valdés et al. (1990), where complete analyses of the nominal and real effects of price intervention on various agricultural variables such as cumulative change in acreage, agricultural output, value added, wages, use of inputs, etc. can be found. To simplify the discussion, both indicators, price supports and marketing programs, are analyzed under the same heading because both were aimed at the same objectives. Pricing and marketing policies attempted to create stability for agricultural producers and control marketing margins by establishing minimum prices and creating state purchasing powers.

Pricing policy in the late 1950s and early 1960s experienced sharp shifts from a situation where maximum prices were set to where floor prices were established and then reversed. During the Frei administration, almost all agricultural prices were subjected to one or another form of state control. Complementing price supports (minimum price), state subsidies to agricultural inputs and credit were intended to help the small agricultural producers (Cox et al. 1990; Hurtado et al. 1990). Minimum prices for such basic products as wheat, rice, corn, sugar beets, milk, and

beef were established. At the same time the state owned Agricultural Marketing Enterprise, (Empresa de Comercio Agricola, ECA), assured agricultural producers receipt of the minimum prices set by the government. An increasing percentage of the total public budget allotted to the agricultural sector was for marketing programs managed by ECA (see table 11).

Table 11: Public Expenditures (US$ Dollars, 1988) Allocated for Agricultural Marketing Programs of the State Owned Empresa de Comercialización Agricola (ECA) and Percentage of Total Government Agricultural Expenditures, 1965-1988.

	Millions of US$ Dollars (1988)	Percentage Agricultural Budget		Millions of US$ Dollars (1988)	Percentage Agricultural Budget
Year			Year		
1965	4.6	7.7	1977	166.4	53.2
1966	8.5	11.4	1978	50.0	25.0
1967	6.7	7.5	1979	57.9	25.9
1968	26.0	21.8	1980	65.2	31.0
1969	22.4	16.8	1981	85.7	51.9
1970	19.4	13.3	1982	0.0	0.0
1971	38.1	15.0	1983	0.0	0.0
1972	35.6	14.0	1984	0.0	0.0
1973	348.8	66.4	1985	0.0	0.0
1974	n.a	n.a	1986	0.0	0.0
1975	337.2	81.0	1987	0.0	0.0
1976	519.6	83.0	1988	0.0	0.0

Source: Estimated by the author based on ODEPA (1976, 1988); Banco Central (1989).

Along with ECA, other state agencies played a key role in the marketing system. The national sugar industry (Industria Nacional Azucarera, IANSA) and the national

office for marketing control (Dirección Nacional de Comercialización, DIRINCO) had the mandate to protect agricultural producers against speculators and to expedite marketing procedures. However, in their day-to-day operations, these institutions entrapped small producers in bureaucratic procedures and deterred large agricultural producers.

The Allende administration maintained the pricing and marketing policy developed by Frei. The difference was that price controls became even tighter and the volume marketed by ECA increased, as its annual budget shows (see table 11). Also, the state marketing enterprise "contracted production with small farmers, cooperatives, and entities from the reformed sector" (Hurtado et al. 1990, p.39). Between 1971 and 1973 the state marketing system had no budget restrictions. The infrastructure developed by the Frei administration to store and handle agricultural production was expanded, and there were no limits to state purchasing powers. The result was that state agencies had almost absolute control of supply and demand. The objectives of Allende's administration were to secure a steady supply of cheap food. The government also wanted to expedite the marketing process, reducing marketing margins, thereby ensuring better prices for agricultural producers and improving post harvest management.

In conclusion, between the early 1960s and 1973, agricultural pricing and marketing policies granted increasing control of agricultural markets to the state. The outcome was that national agricultural markets were almost completely insulated from the international market place. State intervention was strongest for those commodities that had key importance in the consumer basket, such as wheat and its byproducts, sugar, edible oil, milk, and meat. That had a strong influence on the consumer price index (Hurtado et al. 1990). Besides this consumer-led objective, marketing programs also included other agricultural commodities and inputs that were essential to increase farmers' income and to achieve long term development of the agricultural sector. At this level, "development objectives focused on improving the balance of trade and on increasing the sectoral rate of growth, ... also the government sought to reduce rural-urban income inequalities while creating saving and surplus in agriculture" (Hurtado et al. 1990, p.55-6).

The regime's free trade policy approach demanded the elimination of all state control over market prices, with the exception of minimum wages, exchange rates, and tariffs of state owned enterprises and prices of a few commodities such as wheat, milk and oilseeds (Hurtado et al. 1990). However, due to the possible negative effects that

international markets could have upon national markets in the short run, the state kept open its option to purchase some agricultural commodities. Initially in 1974 those commodities included wheat, corn, rice, livestock, and dairy products. However, in 1975 the coverage was reduced to wheat, corn, and rice. In 1976 the import of wheat, rice, corn, and oil was liberalized, and private firms were allowed to import. At the same time price bands for wheat, sugar beets, and oil seeds were introduced to assure a minimum profit to national producers (Muchnik and Allue 1991). A progressive withdrawal of the state purchasing powers began in 1978 (see table 11), and in 1981 marketing functions were completely transferred to the private sector.

The liberalization of agricultural markets and elimination of state marketing boards diminished internally oriented agricultural production, both in cultivated land and agricultural output (see figure 1, and appendices 3a, 3b and 3c), culminating in 1983 with their lowest historical levels since 1965. With the policy modifications introduced after the crisis, state-supported agencies began to buy selected commodities (such as IANSA for sugar beets and COPAGRO for wheat and oilseeds). Price bands were introduced for the 1983 agricultural year for commodities that could not fairly compete with subsidized producers overseas (Muchnik and Allue 1991). "In the case of wheat

and oilseeds, the price band is announced by the government before planting, and the minimum price of the band is supported by procurement at harvest by COPAGRO" (Hurtado et al. 1990, p.41).

The introduction of these measures contributed to the revitalization of the agricultural sector, and production began to grow. However, by the end of the regime, cultivated land had not reached historic levels. What is more important, there had been a progressive reconversion to fruit and timber production of lands previously used for food production. In fact, fruit production had continued to grow during the whole period (see appendices 3b and 3c).

Public Expenditure in the Agricultural Sector

Public expenditures in agriculture are used in this study as a proxy for state support for particular production activities and agricultural producers. The analysis is based on the distribution of various budget categories over time. Overall, it provides a fair assessment of the changes in the state's role in the economy, and, more importantly, it is an estimate of the sectoral shifts that took place during the 1965-1988 period.

Since the 1930s the state has played a key role in the economy. The industrial substitution accumulation pattern required strong state intervention. In fact, the so-called

Chilean state of compromise was subservient to the interests of the industrial bourgeoisie (Stallings 1978; Zeitlin 1984; Zeitlin and Ratcliff 1988). Within that context, the reforms introduced by the Frei administration favored increased state intervention in the agricultural sector to modernize it. The state established numerous agencies and state supported institutions to implement the agrarian reform and work with small farmers and the reformed sector on rural and agricultural development. Consequently, public expenditures increased (see figure 3 and appendix 9) progressively, extending state services to rural areas and social sectors that never before had received for state attention.

The objective of state intervention was to promote substantial improvement in agricultural productivity through better use of the land, labor, and other resources. To achieve those transformations the Frei administration apportioned a significant amount of its sectoral budget to the Corporation for Agrarian Reform (Corporación de la Reforma Agraria, CORA) and other related state agencies that worked directly with the reform sector providing training, technological assistance, and providing organizational development to farmers (such as INDAP and ICIRA). These items represented the central priorities for state intervention (see appendix 9). The

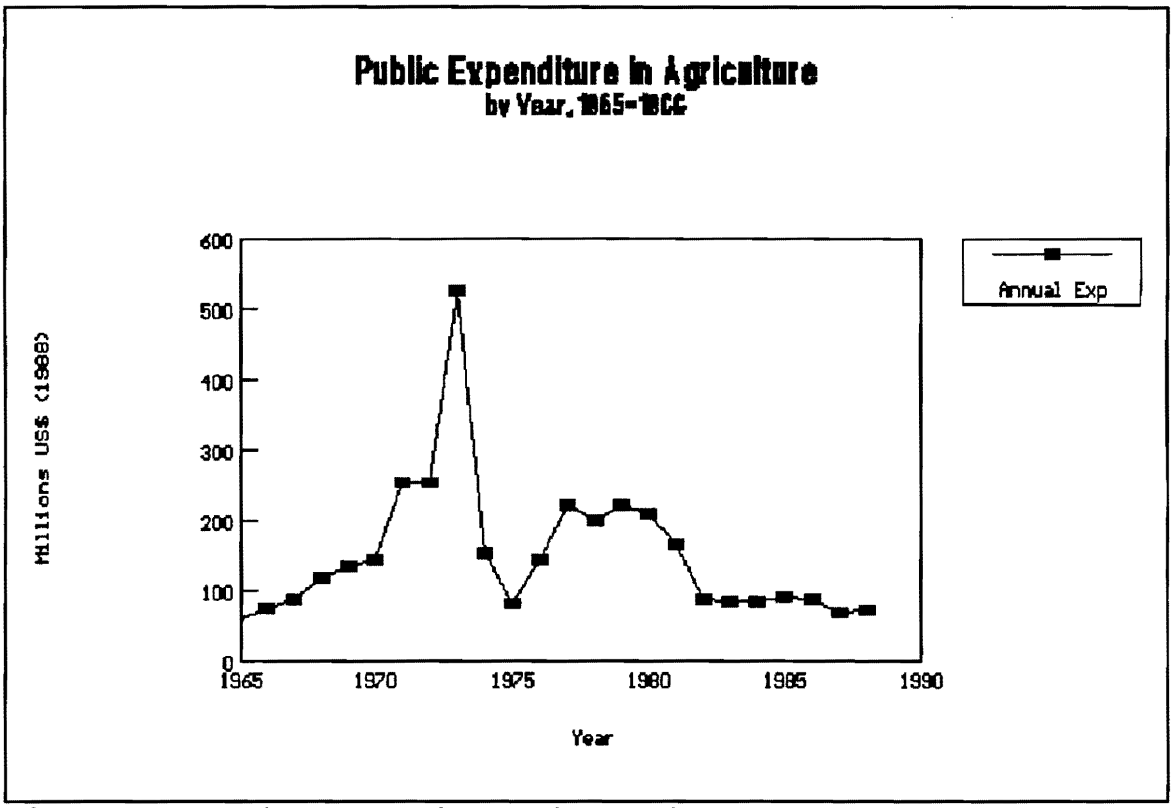

Figure 3 Public Expenditure in Agriculture, 1965-1988

expansion of the coverage of the agricultural extension service (INDAP) to small producers led to increased agricultural production and yields (see appendices 3a, 3b). Of great importance was the development of the state-supported Fruit Production Program, which served as the basis for the explosive development that took place during the military regime. In fact, the initial cooling and shipping infrastructure for fresh fruit was initiated under the Frei administration. During the Frei administration the state launched a livestock program aimed at increasing the quality of the herds, controlling some important infectious

diseases, and improving dairy infrastructure.

During the Allende administration public expenditures in general increased for all sectors. Public expenditures in the agricultural sector reached a peak in 1973. New specialized state agencies were established. The National Forest Corporation (Corporación Nacional Forestal, CONAF) was created to develop the forest industry. The Institute for Indigenous Development (Instituto de Desarrollo Indígena, IDI) was established to promote indigenous rights, participation, and development within the context of the agrarian reform. At the same time, CORA expanded its coverage, accelerating the process of reform (see appendix 1a). Marketing boards' increased powers, multiplying their purchases and imports. The budget allocated to all these activities increased. In relative terms, the budget for CORA, ECA and IDI grew even faster than those of other state agencies (see appendix 9).

Nevertheless state action was not free of problems. First, the state agricultural system was very bureaucratic and lacked coordination among the different agencies that had grown by aggregation rather than responding to a coherent plan (Silva 1985). Second, and related to the above, there was duplication of state functions carried out by the various agencies. Third, particularly by the end of the Allende administration, there was a growing politization

of state action. And, finally, state agencies were inefficient and had increasing budget problems.

The results were contradictory. State action and social policy reached levels never known, and new social sectors benefitted. State owned enterprises controlled more than 50% of agricultural and food marketing systems, "only fresh fruits and vegetables were freely marketed, with state controlling only 9% of production" (Barriga et al. 1990, p.3). However, the government faced a progressive fiscal deficit that in 1973 reached about 24% of the Gross Domestic Product. Inflation was out of control and prices increased more than 700% during the Allende period. The political opposition and economic sabotage from the right aggravated the crisis.

The military regime launched a drastic economic stabilization program. One of the key instruments for this stabilization was the state's withdrawal from economic activities. Elimination of state subsidies was a central tenet for the new accumulation pattern that was developing. State owned enterprises were transferred to the private sector, and state regulatory functions were set back to a minimum. Public expenditures were reduced and fiscal contraction complemented the privatization of public enterprises. The agricultural sector was one of the main targets of restructuring. In just one year, between 1974

and 1975, public expenditures in agriculture dropped almost 50%. However, the reduction of the participation of the state in the agricultural sector was not only a matter of budget cuts and efficiency. It responded to a broader effort to implement and legitimize a new accumulation pattern, where the agricultural sector played a different roles than before.

Several measures were taken. First, there was a progressive staff reduction in the Ministry of Agriculture, based on political criteria, from a total of more than 27,000 persons (among professionals, technicians and administrative personnel) in September 1973 to less than 13,000 in December 1976, to 5,000 in July 1980 (Silva 1985). Later on, after the structural adjustment program, new staff reductions took place and the total Ministry of Agriculture personnel by 1988 reached no more than 3,500 people. Along with the staff reduction, various state agencies were eliminated and their functions transferred to the private sector. Between 1973 and 1975, more than 50% of state owned enterprises were either turned back to their former owners or sold. Almost all state purchasing powers associated with ECA were eliminated or privatized. In 1977 the Rural Educational Institute (Instituto de Educación Rural, IER) was eliminated, in 1978 CORA was eliminated, and in 1979 IDI was terminated. At the same time the agencies that

continued working were severely reduced and transformed. As a result of all these transformations, state actions were increasingly targeted toward the more dynamic sectors of the agriculture, abandoning small farmers and less advantaged producers.

State Policy and Disarticulated Growth

The analysis of the policy indicators reviewed indicates that variations in commercial policy, international market fluctuations, and farmers' degree of security in the marketing process of annual crops have been crucial elements in the development of the agricultural sector. The overall performance of Chilean agriculture has responded to both macroeconomic policy and sectoral incentives. However, the effects of these policies have been different by sub-sectors and types of agricultural producers. It can be argued that the differential performance of agricultural production by sub-sector and type of agricultural producer shows the impact of state policy and development models dominant in each period.

To simplify the discussion, three different agricultural sub-sectors (fresh fruit, annual crops, and livestock and dairy) and two types of agricultural producers

(campesino and non-campesino)[12] are discussed. During the Frei administration all three sub-sectors grew, except in the 1968-9 season. Growth was accentuated during the first two years of the Allende government, but dropped sharply in 1973. Between 1974 and 1979, there was a recovery in the amount of land cultivated as well as in the production levels. However, from 1979 to 1982 the sharp fall in production revealed the consequences of the neoliberal model. Finally, since 1983 there has been a recuperation in production and productivity levels, especially in the fruit-export sector that continued to grow under all the different systems.

For most annual crops, it can be argued that increases in production, associated with changes in land use and yields, were highly sensitive to changes in macroeconomic policy. Annual crops (as well as livestock and dairy) experienced extreme variations compared to fruit production that grew steadily (see table 12).

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[12] Agricultural producers can be classified according to several criteria, such as farm size in hectares, net sales, and use of wage labor, among others (Wimberley 1987). In Chile all three criteria have been used to differentiate campesino from non-campesino producers (Cox et al. 1990; Echenique and Rolando 1988; Rivera 1988). The estimates presented in this study follow the classification done by Cox et al. (1990) because it represents a more comprehensive classification based on farm size and use of wage labor. The Campesino sector includes small family producers that rely mostly on family labor. They are linked to the market economy both at the input and output levels, although a significant amount of their production is self-consumed. The non-campesino sector includes large market-oriented agricultural producers that rely on wage labor and have higher levels of capital and technology (Cox et al. 1990; Echenique and Rolando 1989; Rivera 1988).

Table 12: Annual Percentage Growth of the Value of Agricultural Production by Sub-sectors, 1966-1988.

Year	Annual Crops	Fresh Fruit	Livestock & Dairy
1966	15.79	2.33	7.00
1967	-0.05	3.64	6.37
1968	0.00	6.62	5.42
1969	-14.98	8.77	0.52
1970	16.93	6.08	2.41
1971	6.27	3.80	-3.26
1972	-6.11	5.20	-10.68
1965/72	14.79	42.45	6.73
1973	-27.29	7.76	9.78
1974	24.59	13.95	27.85
1975	6.72	2.63	5.09
1976	-6.62	0.55	-3.67
1977	38.38	4.39	-3.99
1978	18.99	6.49	0.11
1979	5.51	5.75	4.17
1980	-6.90	7.90	8.24
1981	10.48	21.51	12.91
1982	-8.36	19.38	-4.06
1974/82	11.10	89.86	18.12
1983	-16.65	12.63	-4.67
1984	41.52	10.74	-4.48
1985	5.61	12.37	1.49
1986	10.45	12.77	5.82
1987	3.85	15.45	3.06
1988	4.66	19.53	8.06
1983/88	79.41	93.64	14.24
1965/88	72.76	624.37	58.36

Source: Elaborated by the author based on ODEPA (1976, 1988) and Banco Central (1989). See appendices 3b and 10.

Fluctuations, especially in annual crops, were greater during the free market period than during the Allende administration. These changes can be explained by the short-term rigidity in resource allocation in agricultural

production, the price fluctuations agricultural producers experienced, and the shifts in world market conditions (stocks and falling prices).

The livestock and dairy sector had a similar behavior to that of the annual crop sector (see table 12). State intervention in this sector was even stronger than for annual crops between 1965 and 1973. Due to the absence of foot and mouth disease during most of the period under study, the livestock and dairy products behaved as non-tradeables, particularly beef. Furthermore, state intervention helped to maintain an adequate balance between production costs and market prices of beef and milk. State intervention in the marketing process -both direct and indirect- played a key role in the behavior of annual crops and livestock. While indirect price interventions exerted an extreme influence (Hurtado et al. 1990), sectoral policies had the power to control market mechanisms and the response that agricultural producers had to market signals. During the Allende and Frei administrations, state interventions in the marketing process were essential for increasing the internal supply in the short run. After the coup, those interventions were countered by macroeconomic policy. However, they continued to be important, particularly for the sectors more negatively affected by macroeconomic policy. While annual crops and livestock

producers were negatively affected by macroeconomic and sectoral policy changes, the fruit sector grew almost independently from policy fluctuations (see table 12).

A careful analysis indicates that starting with the agrarian reform and the establishment of the national fruit plan, there was an expansion of the sector associated first with sectoral policies and later stimulated by the macroeconomic policy framework. The above is apparent when the evolution of the value of sectoral exports are compared. While in the 1960s, the value of export production was almost constant (and decreased in the early seventies), after 1975 there was a steady increase. Total agricultural exports grew continuously, except during the crisis of the orthodox neoliberal model (between 1980-83). Further, until 1973 agricultural exports were composed almost equally of fruit and livestock products. From the late 1970s on, fruit exports became the bulk of agricultural exports (see Table 13). Macroeconomic policy gave international advantages to fruit producers and contributed to the increased differentiation between productive sectors. The disarticulated character of Chilean agriculture increased, and the profits generated by the agricultural sector were not evenly distributed among different types of agricultural producers, as the growth rate by sub-sectors demonstrate.

Table 13: Value of Sectoral Exports, 1965-1988 (Millions US$ 1988).

Year	Annual Crops	Fresh Fruit	Livestock	Others*	Total
1965	14,05	30,03	24,38	32,66	105,52
1966	7,05	26,02	27,87	36,46	97,40
1967	9,32	22,96	23,92	41,82	98,02
1968	22,30	30,97	23,84	56,08	133,19
1969	11,17	28,94	29,02	38,39	107,52
1970	17,86	44,05	21,90	41,20	125,01
1971	29,63	45,11	13,97	42,46	131,11
1972	15,50	37,79	2,57	38,74	94,65
1973	8,90	34,73	5,22	12,11	76,77
1974	51,00	42,94	12,98	42,20	149,12
1975	96,73	76,91	32,85	67,38	276,87
1976	30,23	100,60	37,24	101,30	269,37
1977	77,65	111,49	40,84	95,98	325,96
1978	92,39	163,11	46,58	47,58	349,66
1979	92,41	187,39	58,12	68,31	406,23
1980	112,98	217,93	51,72	65,83	448,46
1981	93,11	230,32	38,23	37,73	399,39
1982	42,70	259,24	39,63	41,33	382,90
1983	41,64	241,17	29,83	24,04	336,68
1984	50,59	309,81	31,17	42,18	433,75
1985	63,81	380,68	30,66	38,66	513,81
1986	67,86	539,48	52,40	62,70	722,44
1987	58,69	598,90	65,35	77,92	800,86
1988	63,91	659,80	56,98	146,01	926,70

Source: Elaborated by the author based on ODEPA (1976,1988) and Banco Central (1989)
* Includes horticultural products and agricultural subproducts.

With respect to the impact of these policies on different type of agricultural producers, their fate was intimately associated with the comparative advantages of the sub-sectors. By and large, it can be argued that more capital-intensive producers (associated with export crops)

experienced faster growth, since the changes in land tenure and accumulation strategy favored them. From 1965 to 1973, the ratio between the value of the agricultural production of the campesino and non-campesino sectors remained almost constant (see figure 4). During that period, the small fluctuations in the value of the agricultural production of both sectors responded to a structural differentiation process that was being distorted by state action. With the counter reform, the distance between these two sectors started to grow and became clearly differentiated across productive activities (see appendices 11a and 11b).

Both sectors behaved rather similarly regarding annual crop production. The effects of the transformation of the accumulation pattern shaped the response of both types of producers. Nevertheless, the fluctuations of the non-campesino sector were more dramatic that those observed in the campesino sector (see appendices 11a and 11b). The value of campesino livestock and dairy production during the period under study experienced an accumulated growth of 37%, while for the non-campesino sector the accumulated growth reached almost 120%. This difference is mainly explained by the development of the hog and poultry industry in large agroindustries, based primarily in the VI Region. For the campesino sector, livestock production remained as a buffer to prevent the devastating effects of price fluctuations or

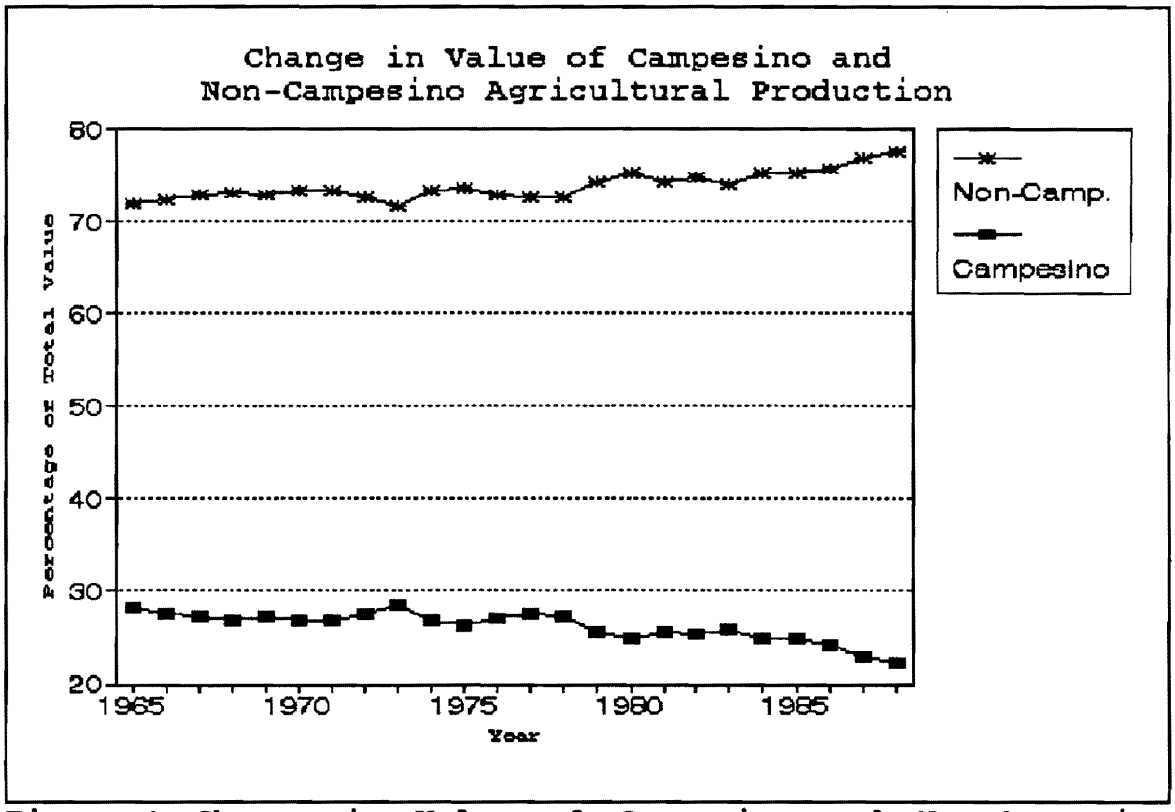

Figure 4 Change in Value of Campesino and Non-Campesino Agricultural Production, 1965-1988.

other unexpected events on the family. The development of the hog and poultry industry in the non-campesino sector was associated with the expansion of financial capital to agricultural production, as well as to the diversification of some large fruit producers in the VI region.

Fruit production developed in both in the campesino and non-campesino sectors. However, the differences between the campesino and non-campesino sectors grew even faster than in the case of livestock or annual crops production (see Table 14, and appendices 11a and 11b). The value of fruit

production increased several times more than the value of the annual crops and livestock production. The high capital requirements for establishing commercial orchards and the importance of the "know-how" to access international markets constituted insurmountable barriers for most of the small producers which progressively were either bought out by larger producers or incorporated as contract farmers.

Table 14: Percentage Change in the Value of Agricultural Production of Campesino and Non-campesino Producers, 1965-1988 (Millions US$ 1988).

	Campesino Producers			
Year	Annual Crops	Fresh Fruit	Live-stock	Total
1965/72	11.0	12.4	4.6	9.1
1974/82	11.0	89.0	7.7	14.7
1983/88	25.3	81.4	13.5	26.4
1965/88	41.2	356.7	37.2	55.3
	Non-Campesino Producers			
Year	Annual Crops	Fresh Fruit	Live-stock	Total
1965/72	16.6	42.5	7.5	13.4
1974/82	11.1	90.0	21.1	20.1
1983/88	23.5	139.7	56.6	53.9
1965/88	118.6	496.0	118.6	113.3

Source: Developed by the author based on ODEPA (1976, 1988) and Banco Central (1989).

Sectoral policies during the Frei and Allende administrations contributed to assure a minimal profitability for the annual crops and livestock sub-

sectors. Total agricultural production experienced little growth, although it was highly differentiated by agroecological regions, social sectors, and commodities. The fruit sector was the most dynamic sector and grew an average of 8.5% yearly. Livestock grew an average of 2%, the average for the whole agricultural sector throughout the period. However, there were sharp differences among beef, hog, and poultry production, with the hog and poultry industries the most dynamic. The evolution of traditional crops was very irregular, and they were the most negatively affected by the macroeconomic policies of the military regime. An indicator of the acute drop in production, especially after 1979, was the sharp decline (nearly 30%) in cultivated land between 1979 and 1983, which was partially countered by the 4% increase in productivity (see appendices 3a, 3b and 3c). The most important consequence of the macroeconomic and sectoral policies was the concentration of the growth in very specific sub-sectors. Fruit production, horticulture, poultry, and hog production were the most favored sub-sectors, and they are concentrated in a few regions. In summary, the most evident changes of the accumulation pattern in the agricultural sector were: i) an increase of agricultural exports, especially of the fruit sub-sector, and the decrease of production of annual crops; and ii) a decrease in the importance of the agricultural

production of the campesino producers.

Economic Growth and the Agricultural Sector

Chilean agriculture has experienced rapid growth and modernization in the last two decades. However, this process has been uneven, and significant segments of the rural population and agricultural producers have not benefitted from it. In fact, the Chilean experience demonstrates that economic development can be associated with an absolute and relative increase of poverty, particularly in rural areas. In this section some basic indicators of economic and sectoral growth are discussed. The purpose is to illustrate the above assertion and to offer the reader a broader framework to comprehend the regional differences that are discussed in the following section.

Gross Domestic Product and Agricultural Product

Assessing the evolution of the GDP is one of the most common ways to visualize aggregate growth. A closer look at GDP contributes to the evaluation of the performance of the economy and the contributions different sectors make. In that vein, GDP changes and the weight of the agricultural product at the regional level help to assess the degree of articulation between economic sectors, which may be growing

or declining at different rates and/or directions. However, an interpretation of the economic performance of the country based only on GDP would be misleading, as the data for unemployment and wages show below. Further problems of interpretation emerge when food consumption data are considered.

From 1965 to 1988 the accumulated GDP growth rate exceeded 180%, and there were only three times when the growth rate became negative, corresponding to the crisis of 1972/73, the 1975 recession, and the 1982/83 crisis (see figure 5; and appendices 4a and 4b). During the Frei administration the GDP growth rate was relatively low but sustained, with the exception of 1969 when it dropped.

During the last years of the Frei administration economic growth slowed down, unemployment rose and inflation grew. After a brief growth, the GDP growth rate during the Allende administration experienced a sharp fall (see figure 5; and appendices 4a and 4b). Allende attempted a demand-oriented economic policy through massive growth in production and income redistribution to deter inflation and rapidly increase employment (Stallings 1978). However, success was shortlived. The transformations failed, because it was impossible to sustain growth based only on expanding the demand side. A more articulated economy required a parallel growth in production in key economic sectors, but

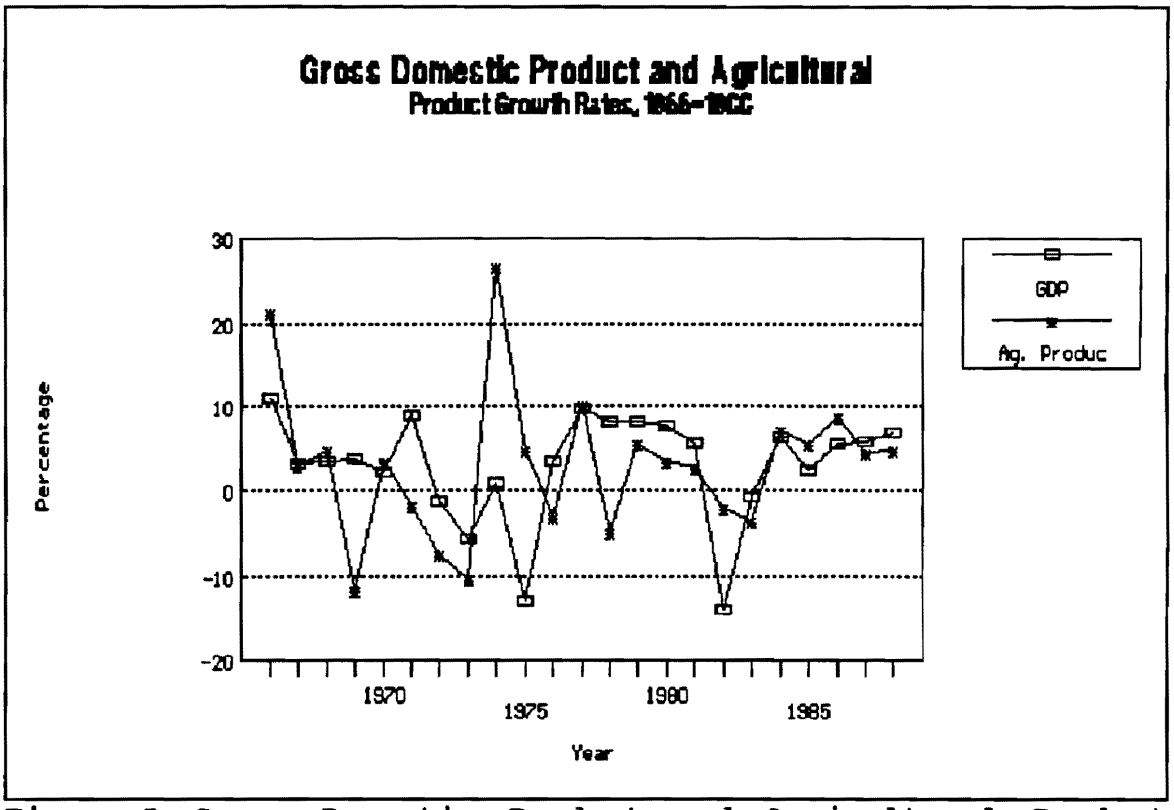

Figure 5 Gross Domestic Product and Agricultural Product Growth Rates Nationwide 1966-1988

that was not achieved (Corbo 1985; Cox et al. 1990; Stallings 1978).

After recovering from the 1975 recession, the Chilean economy began a rapid growth period associated with "Dutch" disease[13] (de Janvry 1985), which culminated in the 1982 crisis. From 1984 to the end of the period, the economy

[13] Dutch disease refers to the uneven effects a booming primary economic sector could have on other economic sectors producing tradeable goods. Dutch disease is associated to shift of resources and weak growth linkages between the key export sector and the rest of the economy. For a detailed account see de Barham et al. (1992), de Janvry (1985, 1987), Corden and Neary (1982) and Scherr (1989).

grew at an average of 5% yearly. The transformation of the accumulation pattern led to the boom of the non-traditional export sector (Barham et al. 1992; de Janvry 1985; Ossa 1988; see also appendix 8). The base of growth changed from the expansion of wage goods associated with internal aggregated demand to the expansion of external demand.

The evolution of the agricultural product followed a pattern similar to that observed by the GDP until 1973. After that time, the agricultural product evolved somewhat differently (see figure 5; and appendices 4a, 4b), particularly at the regional level. This phenomenon is partially explained by the transformation of macroeconomic policy. Before 1973 the agricultural sector was viewed primarily as a source of cheap food and of labor for the key sector of the economy, industry. After the coup the agricultural sector was conceived as a source of foreign currency. In the mid 1970s the fruit sub-sector became the most dynamic sub-sector, growing an average of 8.5% yearly. The horticultural sub-sector was also dynamic in comparison with other sub-sectors. Livestock producers were negatively affected but not as much as the producers of annual crops. However, there was sharp variations among beef, hog, and poultry production, with poultry the most dynamic. The growth of the annual crops sector was very irregular, though it was the most negatively affected by macroeconomic

policies, as the acute drop in wheat production witness.

Agricultural Trade Balance and Composition of Agricultural Exports

The Chilean agricultural trade balance has experienced a dramatic shift in the last 25 years. From being a net importer of agricultural commodities in 1965, Chile has become a large exporter of fresh fruit (see figure 6). During the 1960s the value of agricultural exports was almost constant, and it decreased in the early seventies.

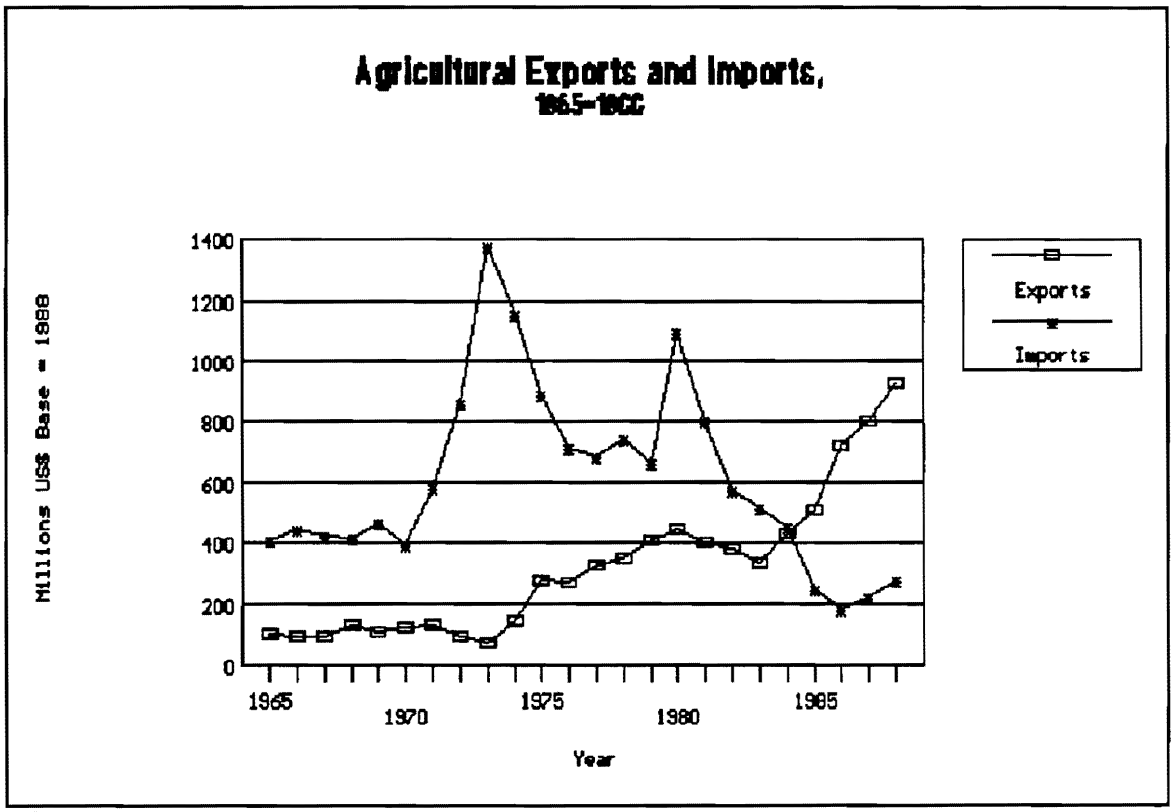

Figure 6 Agricultural Exports and Imports

After that time there was a steady increase of agricultural exports, along with an alteration in their composition. Starting in 1975, fruit exports became the core of agricultural exports (see appendix 2c). While the aggregate value of agricultural exports has continuously increased, annual crop and livestock exports has fluctuated with the economic crises.

Only fresh fruit exports had a sustained growth rate over the period. Despite these differences, the composition of agricultural exports within each of the sub-sectors remained almost constant throughout time. Among the annual crops, legumes, especially beans and peas, were the most important, followed by oats, which together represented 75% of the total value of all annual crops exports. Among livestock products, wool, beef and lamb subproducts were the most important. However, after 1975, poultry and eggs increased their importance, and it is possible they will displace the traditional livestock exports in the near future. Finally, among the fresh fruit exports, table grapes, nectarines, and apples were the most important products. Recently, some new, exotic fruits, such as berries and kiwis, have acquired more importance.

Agricultural imports behaved differently (see figure 7; and appendix 2b). During the Frei administration, the value of agricultural imports was almost constant, and food was

the main agricultural product imported. Staples and meat imports represented more than 60% of total imports, followed by agricultural machinery. With the expansion of the agrarian reform and growing internal demand during the Allende administration, agricultural imports reached the highest level in history (see appendix 2b). Food imports were essential to bridge the gap between growing internal production and the even faster growing total demand. Sugar, grains, and edible oil, among the staples, represented almost 40% of total imports. However, in relative terms, food imports decreased and agricultural machinery imports increased (see figure 7), primarily due to the different terms of trade between the primary and tertiary sectors.

After the coup, agricultural imports dropped progressively, with the exception of 1980, when the liberalization of the economy was at its climax. The composition of agricultural imports also shifted dramatically. During the first years of the regime, there was a progressive increment of food imports compared to agricultural machinery. The comparative advantages strategy contributed to force national grain producers out of production through the fast-growing grain imports. Nevertheless, the total value of agricultural imports fell rapidly as internal demand shrank. By 1980, the overvalued Chilean peso contributed to a sudden jump of agricultural

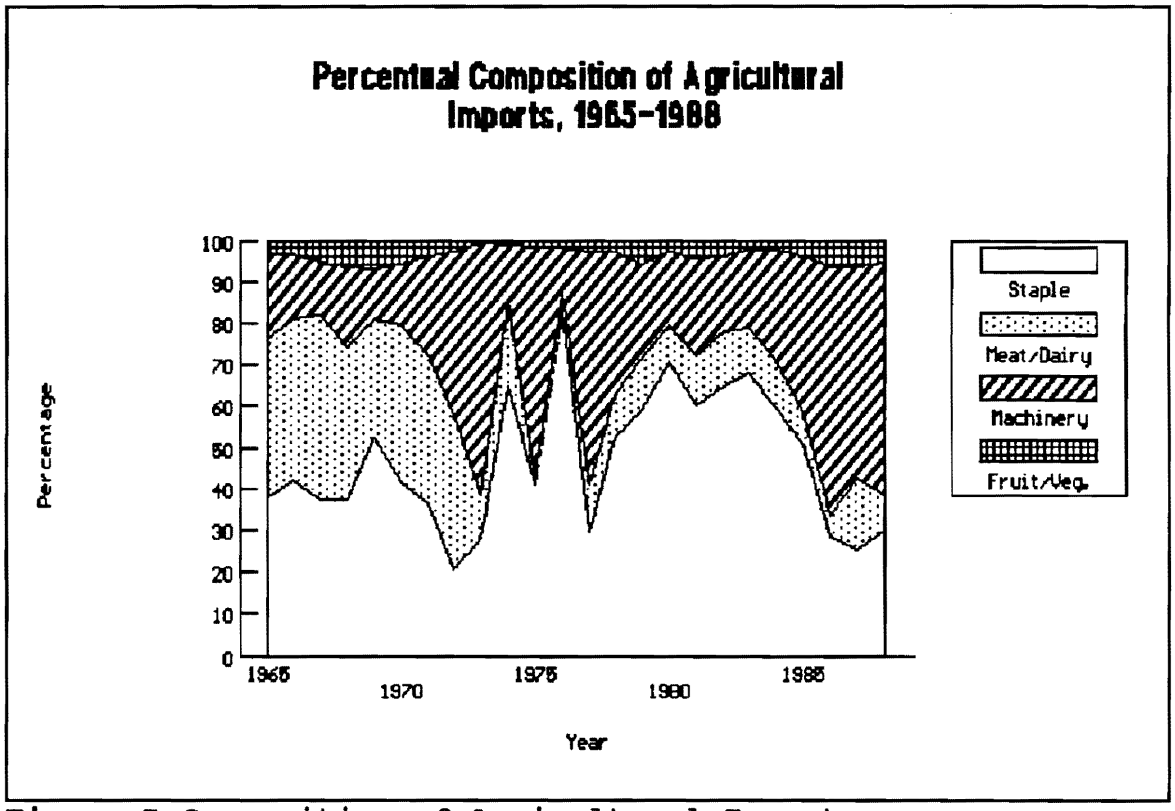

Figure 7 Composition of Agricultural Imports

imports, mainly high-cost processed food.

After 1980, agricultural imports plummeted even faster, reaching the lowest level for the whole period in 1986. However, this was not accompanied by a significant increase in internal production. In appearance, the internal demand was met by national production and food imports. However, there was a substantial contraction of aggregate demand due to the progressive decline in real wages and purchasing power of the population.

Unemployment and Wages

The import substitution development strategy kept unemployment relatively low and stable for a long period. Despite the economic crisis of the accumulation pattern in the late 1950s, by the end of the Frei administration, the unemployment rate was below 7% (see figure 8). There were not many regional differences, because there was a steady population flow from rural areas to the growing urban-industrial centers (see appendix 5) that kept unemployment at the regional level low. When Allende took office, the unemployment rate was growing, and one of the priorities of the new administration was to decrease unemployment. The expansion of the state and state owned/controlled industries helped to reduce unemployment rapidly. By 1972, there was almost full employment. However, this situation was somewhat fictitious, because productivity had dropped, inflation was growing, and the fiscal deficit was larger (Gatica 1989).

Several factors explain the unemployment growth after the coup in 1973. First, the privatization of state owned enterprises (not to mention the associated political purges) was associated with a new rationalization of the management system and production processes. Later, liberalization of the economy forced a deeper transformation of national industry which was facing increasing competition from

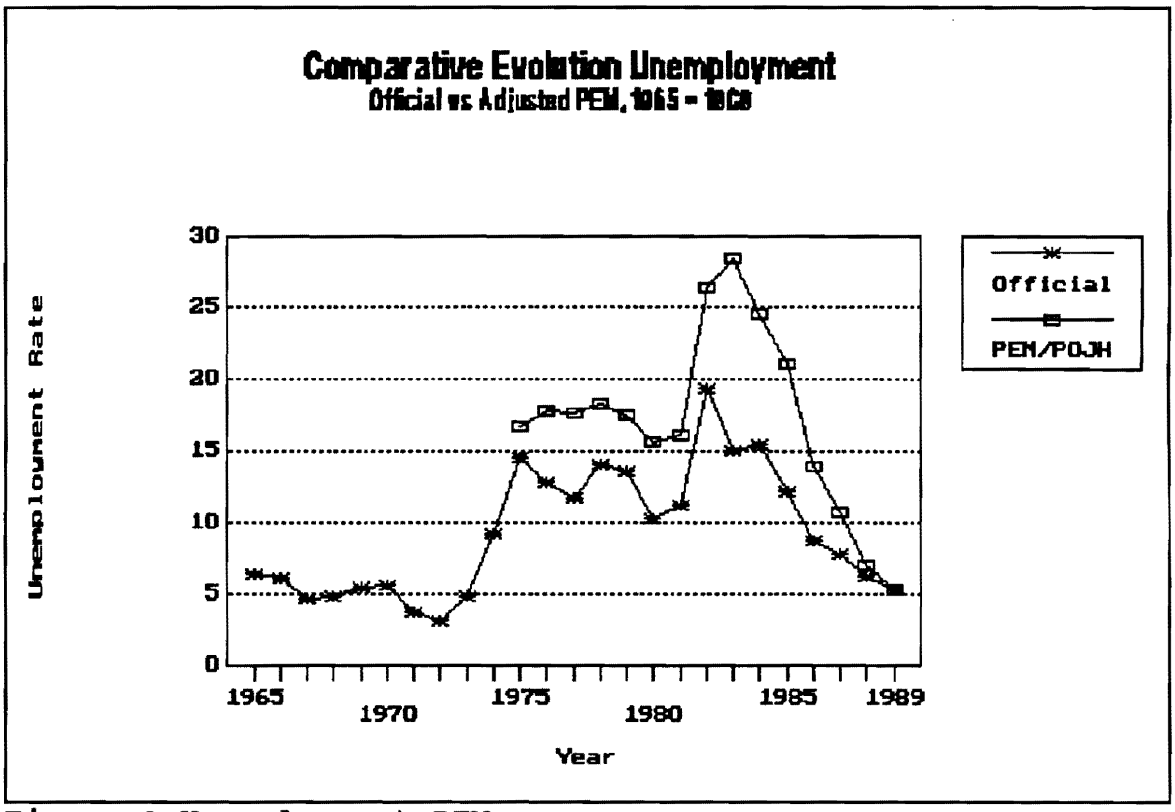

Figure 8 Unemployment PEM

imported goods. From 1973 to 1982 bankruptcies skyrocketed from 1,634 during 1965/73 to 2,774 for the period 1973/1982, -- a 70% increase (Gatica 1989, p.43). The manufacturing sector was particularly affected by bankruptcies. The industries that were able to resist bankruptcy were forced to terminate thousands of workers to survive. These processes fed unemployment, creating a vicious cycle of increasing unemployment, low wages, and decreasing internal demand for goods and services. The outcome of the transformation of the industrial-based accumulation pattern was that manufacturing's share of employment progressively

decreased (Gatica 1989). Facing increasing unemployment, in 1975 the regime established the Minimum Employment Program (Programa de Empleo Mínimo, PEM) that later was complemented with the Employment Program for Households Heads (Programa Ocupacional para Jefes de Hogar, POHJ). These state subsidies to the unemployed (conceived as temporary social policies) acquired a permanent character and concealed the actual unemployment rates, which reached almost 30% by the 1982 crisis. The coverage of these two programs decreased after 1984 and by the end of the regime had almost disappeared.

In the rural regions the situation was slightly different (see appendix 5). In the dynamic agroexport regions a drastic transformation in the labor use pattern had been taking place since the late 1960s. With the explosive development of agroexports, this transformation was accelerated, and unemployment in those regions grew even faster. Comparing the unemployment rates of the VI and IX regions, it is possible to conclude that during the orthodox neoliberal period (1973/1982), the laborers of the agroexport sector were more affected (see appendix 5). These semi-proletarian agricultural workers did not have other major job opportunities or access to sufficient land, either. Therefore, while the value of agricultural production for export markets grew, the labor force was

faced increasingly difficult times. Paradoxically, in the IX region, where the agricultural sector was negatively affected by the economic transformations provoked by the liberalization of trade, the unemployment rate was not as high as in the VI region or the nation as a whole (see appendix 5). Other studies of employment and wages in the rural areas confirm this trend (Gómez and Echenique 1988; Guglielmetti 1990; Rodríguez 1984; Vargas 1982).

The evolution of agricultural employment during the period was characterized by its permanent decrease as a percentage of the total labor force and its continuous transformation from permanent to seasonal jobs (see table 15). Nevertheless, agricultural workers in 1988 represented about 40% of the total rural population and an increasing number of them were seasonal workers. The agricultural unemployment rate lagged behind the total unemployment rate until 1986, when it surpassed it by a few points. The low agricultural unemployment rate of the Frei and Allende administrations can be explained by the relatively good conditions of extensive annual crop producers, which sustained a permanent agricultural labor force.

Table 15: Agricultural Unemployment Rate and Percentage of Labor Force in Agricultural Sector.

Year	Unemployment Rate	% Labor Force	Year	Unemployment Rate	% Labor Force
1965	4.7	26.5	1978	11.1	15.9
1966	4.4	25.2	1979	10.8	14.9
1967	3.4	23.8	1980	9.5	16.7
1968	3.5	23.0	1981	9.2	17.2
1969	4.0	22.0	1982	11.4	16.8
1970	4.1	22.3	1983	14.4	16.8
1971	2.7	19.9	1984	12.3	15.9
1972	2.1	17.6	1985	9.5	16.3
1973	3.4	16.6	1986	10.5	16.0
1974	6.8	17.5	1987	8.7	16.4
1975	10.9	18.3	1988	8.3	16.5
1976	10.7	17.0			
1977	8.2	16.4			

Source: Elaborated by the author based on ODEPA (1976, 1988) and Banco Central (1989).

With the policy changes after 1973, the demand for permanent agricultural workers in the annual crop sector decreased sharply, while at the same time the demand for labor in the dynamic agroexport regions became increasingly seasonal. The outcome was rapid growth in unemployment. Further, the PEM and POHJ programs were extremely important in depressed rural areas from 1975 until the end of the regime, decreasing the total unemployment (without considering the associated underemployment). After 1984, total unemployment rates began to decrease. However, it always remained above the early 1970 levels.

Real wages during the Frei and Allende administrations

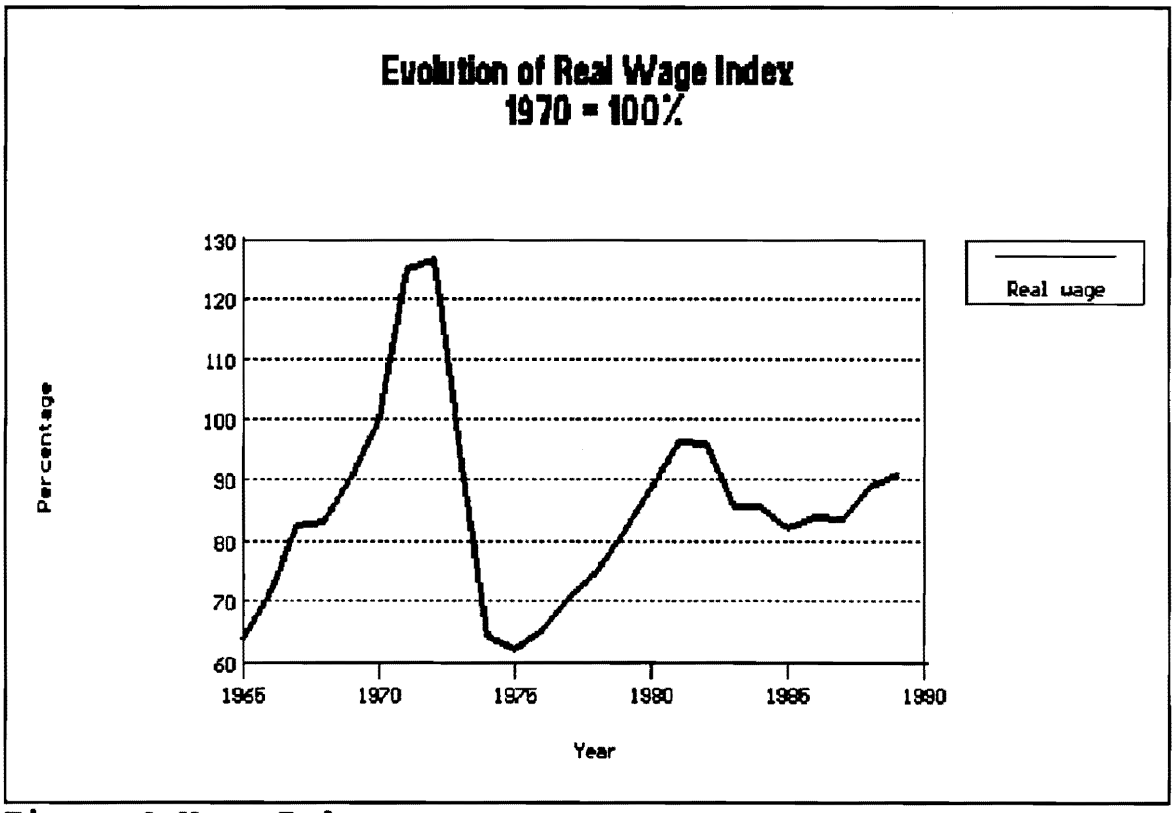

Figure 9 Wage Index

rose continuously, until 1972 (see figure 9; and appendix 5). After that, real wages decreased progressively until 1975, when they represented 35% less than the real wage level in 1972. With the overvaluation of the Chilean peso, there was a slight recovery of the real wage level, however not enough to even reach the 1972 standard. After the 1982 crisis and the imposition of structural adjustment measures, wage levels decreased again. Wage increments after 1982 were always below the real inflation rates, so that workers never recovered their previous purchasing power.

Real wage levels for agricultural workers have always

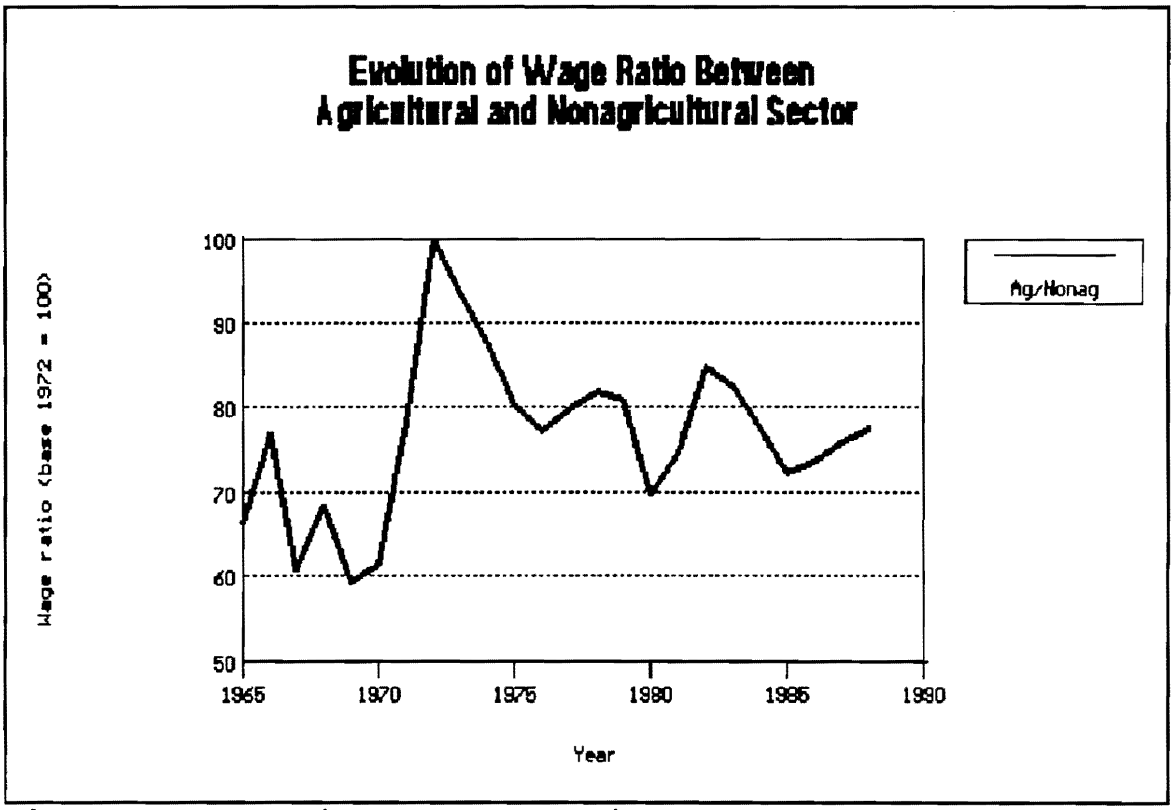

Figure 10 Evolution of Wage Ratio, 1965-1988

been below the national average. If the ratio between agricultural wages and non-agricultural wages for 1972 (when real wages were higher) is taken as a yardstick, it is possible to relate the evolution of agricultural wages to the ongoing policy transformations (see figure 10). During the Frei administration severe fluctuations marked the evolution of the agricultural / non-agricultural wage ratio.

However, there was a negative tendency that increased the gap between urban/industrial wages and agricultural wages. This was the outcome of the prevalent accumulation pattern which favored urban sectors. With the Allende

administration, rural workers increased their bargaining power. Their wages increased in absolute terms and relative to the urban sector, although rural wages remained below urban wages. The absolute increase was not long-lasting. The wage increases and equalization initiated by the agrarian reform were terminated by the counter agrarian reform, and the bias against rural wages increased in relative terms.

In conclusion, the outcome of the processes discussed was the transformation of an accumulation pattern based on industrial growth and internal consumption to an accumulation strategy based on international comparative advantages. The new agrarian structure contributed to increase the cost of labor, while at the same time the transformation of the agricultural productive processes decreased the amount of labor required. That is, the effects of the transformation of the agrarian structure was countered by the macroeconomic policies that emerged from the new accumulation pattern after 1973. This conversion contributed to reversing the income distribution pattern achieved during the 1965-1973 period (see figure 11; and appendix 5).

Income distribution became increasingly unequal, and rural areas were among the most negatively affected. Although there are no data to corroborate this over time at

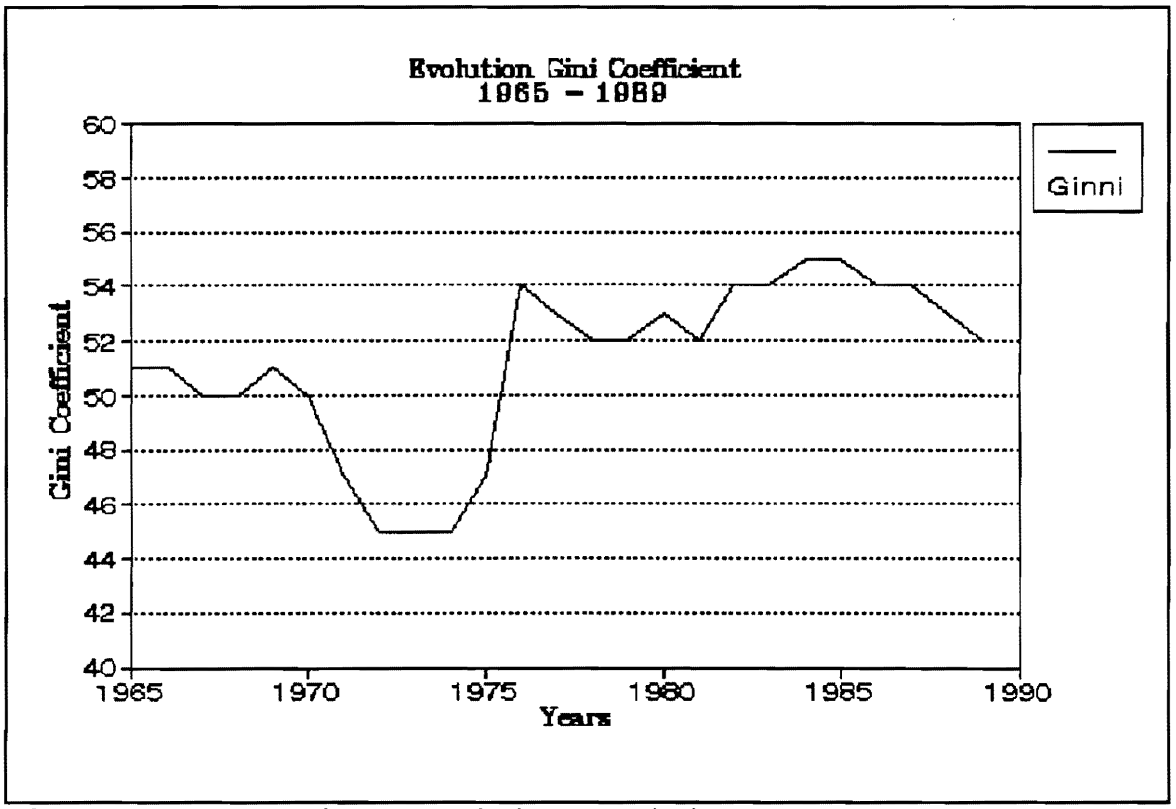

Figure 11 Evolution of Gini Coefficient, 1965-1988

the national level, case studies and recent data from a nationwide survey indicate that while most poor people live in urban areas, extreme poverty tended to be concentrated in rural areas, particularly in agricultural areas with no international comparative advantages, such as the IX region (Ihnen 1988; Rojas 1986; Rosende 1989; Torche 1987).

CHAPTER V

REGIONAL DIFFERENCES: INCREASING DISARTICULATION

Only a few analyses of Chilean agriculture have included the regional dimension in the analysis of the ongoing transformations and processes of social differentiation (Bengoa 1981; Crispi et al. 1980; Cruz and Leiva 1982; Cruz and Rivera 1983; Gómez and Echenique 1988). GIA elaborated a classification of agroecological-productive regions in the early 1980s (Crispi et al. 1981; Cruz and Leiva; Cruz and Rivera 1983). Five areas were identified: i) the fruit region; ii) the multi-crops regions; iii) the grains region; iv) the livestock region, and v) the timberland region. Other agricultural production activities take place in each region. However, they are subordinate to the predominant agricultural activity. Further, there are certain crops or productive activities that can take place only in very specific agroecosystems, such as fruit production, while there are others than can be developed in several regions, such as wheat and grains production.

In this study, I use the region as a unit of analysis to illustrate the development of disarticulated growth. The region is the agroecological context in which sectoral and macroeconomic policies define what agricultural producers can do. I compare two different regions to demonstrate the structural character of disarticulated growth. The first

agroecological area chosen for analysis 1) has comparative advantages for the development of fruit production, 2) uses capital and technology intensive production processes, and 3) is oriented to international markets. One political-administrative unit, the VI region, was chosen from this agroecosystem (see appendix 12). Another broad agroecological area, located in the southern part of the country, has potential for annual crops and livestock production with lower capital intensity than the fruit producers. The IX region, which produces mainly wheat and legumes for internal consumption, was chosen from this area (see appendix 12).

The two regions analyzed in this study have clear agroecological differences. During the period under study, macro and sectoral policies operated on those different regional contexts. From the 1930s until 1973, the state intervened to try to minimize the negative effects of those differences on the population of poorly endowed regions. After 1973, the new accumulation pattern was constructed based on those differences, and no measures were taken to control the increasing social and economic gap developing among the regions and different types of agricultural producers.

The expansion of agrarian capitalism has taken different forms according to the regions and prevalent

policy frameworks. I seek to demonstrate that these different forms and strategies facilitate the development of a disarticulated accumulation pattern. The production processes that developed in each region were essential for (and contributed to) the consolidation of the current accumulation pattern. This is not to say that each one of these areas is homogenous and exempt from internal differences. Rather, it implies that the ongoing processes of social differentiation respond to a specific accumulation logic for each region, and that the various types of agricultural producers and agricultural workers in each region are part of one predominant national strategy.

Agricultural production is constrained by nature. The agroecological characteristics of a region set the parameters of what is possible to produce and what is not possible. Further, those specific features define the ways in which capital, technology, and labor are deployed (Mann 1990). However, beyond those features that "can serve as impediments to the efficient use of advanced technology and wage labor" (Mann 1990, p.3), the state can intervene to overcome those restrictions. State action can ameliorate regional differences and play a homogenizing role by targeting specific commodity support programs, granting subsidies, establishing price differentials, giving

preferential credit rates, etc[14]. Or it may not intervene, leaving market dynamics to direct the allocation of productive resources. In either case, the state can contribute to the development of particular forms of agrarian capitalism.

Changes in the rate of growth of agricultural production at the regional level can indicate the differential impact that state (macro and sectoral) policy has on the regions. By and large, the growth rates of agricultural production in regions oriented to the internal markets are low, and fluctuations are not as sharp as of the whole economy or in regions with comparative advantages. In fact, poor regions suffered sharp production declines (see figure 12; and appendices 4b and 4c).

While in the VI region agricultural production increased in absolute and relative terms, agricultural production in the IX region declined. From 1970 to 1977, both regions contributed a similar amount to the total

[14] Mann (1990, Pp.42-43) analyzes two forms whereby capital can acquire increasing control of nature and the role that the state plays in that process: i) appropriationism, which "refers to attempts by industrial capital to reduce or weaken the importance of nature in rural production, so as to increase the social manipulation and control of this sphere of production (43) and ii) substitutionism, which "entails the actual elimination of the natural base of production, either by using nonagricultural raw materials or by creating industrial substitutes for food and fibers" (43).

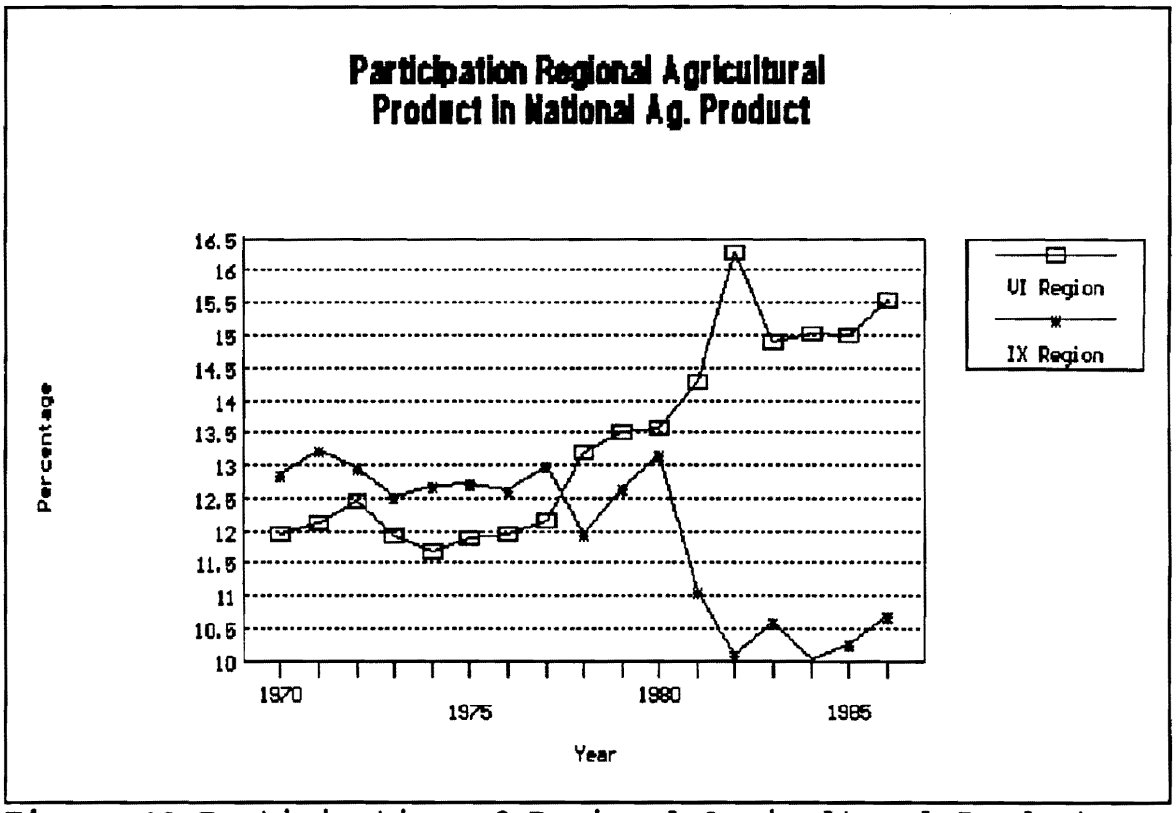

Figure 12 Participation of Regional Agricultural Products

national agricultural product. However, beginning in 1978, production in the VI region increased, and its contribution to the national total agricultural product surpassed that of the IX region (see Figure 12 and appendices 4b and 4c). In absolute terms the IX region's agricultural production declined the most while the VI region experienced one of the highest growth rates for the sector. The increasing gap between regions (see figures 12 and 13) was the most important consequence of the macroeconomic and sectoral policies which provoked the concentration of growth in very specific sub-sectors. In summary, sectoral growth was

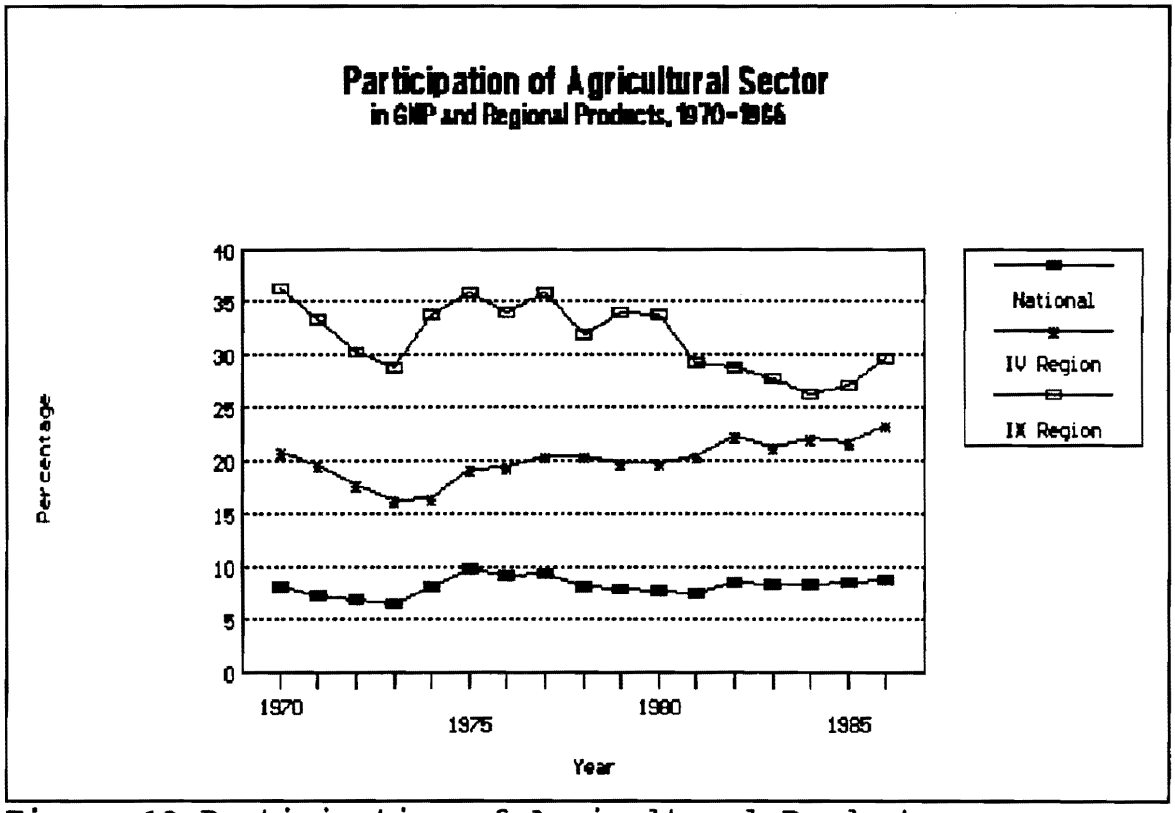

Figure 13 Participation of Agricultural Product

highly differentiated by agroecological regions, social sectors, and commodities.

Regional Differences and Differentiation

The VI region borders the metropolitan area of Santiago on the north (see appendix 12a and 12b). It is a rich agroecological zone that can sustain various agricultural activities and is particularly appropriate for fruit production. It was the core area of the landed elite and now has become one of the most dynamic fruit production areas (with the IV region). In 1988 it had an estimated

population of 610,000 inhabitants, more than 60% of them living in the rural areas. In 1988, about 30% of the economically active population was in the agricultural sector, followed by the service sector. The most important economic sectors of the region are the mining industry and agriculture. In 1988, the agricultural sector represented about 23% of the regional product (see appendix 4a). Within the agricultural sector, fruit production has the highest value, followed by corn, rice, hog, and poultry. During the last 20 years the region has experienced rapid growth in the agroindustrial sector, and it has the most advanced fruit-packing and fruit-canning facilities in the country.

The IX region is located in the south-central zone of the country, about 450 miles south of Santiago (see appendix 12a and 12b). It is a transition zone, where fruit production and other crops that require mild weather are no longer possible. This region was one of the last areas of expansion of the agricultural frontier in the late 1800s and early in this century. In 1988 it had an estimated population of 690,000 inhabitants, about 61% of them in the rural areas. More than 70% of the total regional population are Mapuche Indians, who are concentrated in the rural areas. In 1988 more than 40% of the economically active population worked in the agricultural sector. Agriculture constituted the key economic activity of the region,

although it declined (from 36% in 1965 to about 29% in 1986; see appendix 4a). Historically, the IX region was the grain basket of the country, and it currently contributes about 35% of the total grains produced in the country. However, starting in the 1980s, the relative weight of forestry has increased.

From an historical perspective, the VI region agrarian structure and agricultural production strategies evolved from the traditional encomienda system, which during the 19th century was characterized by the latifundium-minifundium complex (Barraclough and Collarte 1973; Gongora 1974). In contrast, the IX region was settled in the 1800s by European colonists brought by the Chilean government after defeating the Mapuche Indians which occupied those territories (Bengoa 1985). The Chilean state established a reservation system, granting Títulos de Merced[15] and initiated a rapid process of colonization.

The land tenure structure before the agrarian reform

[15] After Independence, the Chilean state began to expand its borders and to consolidate its soveregnity. By the end of the 1880s, after conquering the Mapuche territories the Chilean state imposed a reservation system based on Títulos de Merced. The Título de Merced was a legal document that granted control over certain amount of land to a group of related Mapuche families under the leadership of a chief or "Lonco". More than 3,000 Títulos de Merced (about 525,000 Ha) were granted in the whole territory (that included the actual VIII, IX and X regions). After the 1920, the Chilean state attempted through various laws to divide the reservations, a process that culminated with the division law passed during the military regime (for further analysis see Bengoa 1985 and Gacitúa 1989).

reflected the different settlement patterns in the two regions and the type of agricultural producers and production strategies that emerged in association with those social and historical processes. In both regions land tenure was concentrated, but in different degrees. Land concentration was extreme in the VI region, where 77.6% of the agricultural producers owned only 2.1% of the total land and 1.3% owned 76.4% of the total land (see table 16).

That concentrations was clearly the result of the hacienda system, with extremely large landholdings. Productivity was very low, the use of labor was inefficient, and there were significant amounts of idle land. Equally important, the peasant labor force was tied to the land, and the landowners exerted political control.

In the IX region the land tenure structure was different. The frontier settlement pattern had produced a variety of medium-sized agricultural producers, most of them Chilean colonists and merchants (see table 16). While medium-sized properties (more than 10 and less than 100 hectares) in the VI region represented less than 11% of the owners and 8% of the total land, in the IX region they represented about 40% of the owners and 16% of the total land. In the VI region there were about 2,300 Mapuche reservations that totaled more than 400,000 hectares.

Table 16: Land Tenure Structure by Region. Farm Size in Hectares Before the Agrarian Reform, 1965.

VI Region

Size (ha)	Number of Holdings	% of Holdings	Hectares	% Land
< 5	21,333	77.6	27,798	2.1
5 < 10	1,826	6.6	12,991	1.0
10 < 20	1,399	5.1	19,953	1.5
20 < 50	1,195	4.3	37,767	2.9
50 < 100	592	2.2	41,739	3.2
100 < 200	450	1.6	62,417	4.8
200 < 500	320	1.2	102,838	7.9
> 500	360	1.3	990,142	76.4
Total	27,475	100.0	1,295,645	100.0

IX Region

Size	Number of Holdings	% of Holdings	Hectares	% Land
< 5	8,265	22.6	18,120	0.7
5 < 10	5,906	16.1	40,124	1.5
10 < 20	6,855	18.7	93,198	3.6
20 < 50	7,571	20.7	232,467	8.9
50 < 100	3,930	10.7	269,913	10.3
100 < 200	2,040	5.6	277,026	10.6
200 < 500	1,317	3.6	403,602	15.5
> 500	754	2.1	1,274,967	48.9
Total	36,638	100.0	2,609,416	100.0

Source: Elaborated by the author based on INE (1965).

These differences in land tenure, beyond the power and legal aspects involved, contributed to the development of specific production strategies. Until the reform, the large agricultural producers of the VI region had relied on the exploitation of labor and extensive use of land. Their profits were mainly based on the extraction of the absolute land rent. In the IX region, absolute and differential rent

contributed to the profits of large and medium-sized agricultural producers. With the agrarian reform, significant changes took place. First, a significant number of large landholdings were expropriated and transferred to the reformed sector (see table 17; and appendices 1 and 1a). More than 800 landholdings were expropriated in the VI region (about 32% of the total land), and over 150 landholdings in the IX region were redistributed (17% of the total land). Also, some 70,000 hectares lost to colonists were restored to Mapuche communities. However, overall, Mapuches' access to land continued to decrease.

It is important to underscore that the "minifundista" sector, those small units in the fringe of proletarianization, remained almost constant in both regions. This was, and still is, very important for the development of the agroexport strategy and associated changes in the pattern of labor use, because they constituted a source of cheap labor that could survive part of the year on their own. The transformation of the tenure pattern led to the expulsion of inquilinos and other permanent workers living within the landholding, who became seasonal workers living either on small family plots or in emerging rural shantytowns (Cruz 1986).

Table 17: Land Tenure Structure by Region. Farm Size in Hectares After the Agrarian Reform, 1975.

VI Region

Size (ha)	Private Sector Holdings Number	%	Private Sector Hectares Total	%	Reformed Sector Hectares Total	%
< 5	25,809	70.0	34,042	2.1		
5 < 10	3,483	9.4	24,902	1.5		
10 < 20	2,772	7.5	38,390	2.3		
20 < 50	2,202	6.0	70,151	4.3	800	0.1
50 < 100	1,120	3.0	78,301	4.8	7,031	0.4
100 < 200	617	1.7	85,965	5.3	13,279	0.8
200 < 500	425	1.2	133,425	8.2	30,279	1.9
> 500	452	1.2	1,171,256	71.6	463,835	28.3
Total	36,880	100.0	1,636,430	100.0	515,224	31.5

IX Region

Size	Private Sector Holdings Number	%	Private Sector Hectares Total	%	Reformed Sector Hectares Total	%
< 5	14,999	29.6	31,185	1.2		
5 < 10	9,714	19.2	65,167	2.4		
10 < 20	8,980	17.8	119,851	4.4		
20 < 50	8,625	17.0	263,937	9.8		
50 < 100	4,016	7.9	275,040	10.2		
100 < 200	2,102	4.2	284,980	10.6	331	0.0
200 < 500	1,435	2.8	441,098	16.4	19,107	1.2
> 500	716	1.4	1,216,404	45.1	253,942	15.5
Total	50,587	100.0	2,697,659	100.0	273,379	16.7

Source: Elaborated by the author based on INE (1976)

The reform changed the power structure. In the VI region the landed elite lost much of its old political power. A recomposition began based on a new capital and a new production strategy. The agrarian reform contributed to the organization of the peasantry and agricultural workers

as well as to the strengthening and transformation of the landowners associations, which became increasingly professionalized.

Another important consequence of the reform was the stimulation of the land market. That phenomenon acquired major importance after the counter agrarian reform launched by the military regime. Market relationships were expanded, and differential land rent became a key issue for the development of agriculture, particularly in regions with comparative advantages.

The counter agrarian reform reversed some of these results and accelerated others. Some 3,800 landholdings, about 29% of the total expropriated land, were restored to their former owners, and a significant amount of the collective beneficiaries (about 20,000) from the reformed sector "failed to receive individual land parcels when the collectives were dissolved by the military" (Scott 1990, p.71; see also appendix 1a). A new process of land concentration took place after the privatization of the reformed land. More than 40% of the individuals who received land parcels were forced to sell their land. After a few years, these temporary beneficiaries were strangled by the burden of their debts and the high cost of working capital (Scott 1990).

This phenomenon was particularly important in those

regions with comparative advantages within the free trade model, such as the VI region, where more than 50% of the total beneficiaries sold their land. In contrast, in those regions where the model had provoked a contraction of the agricultural sector, the pressure on land was lower, which was reflected in fewer land sales. In fact, in the IX region no more than 29% of the individual beneficiaries had sold their land by 1983 (see table 18; and appendix 1b).

Table 18: Land Sales in the VI and IX Regions as a Percentage of Total Units and Total Land, 1975-1983.

Region	Units(%)	Land(%)
VI Region	51.3	40.9
IX Region	28.4	26.3

Source: Elaborated by the author based on Echenique and Rolando (1991).

In 1979, the regime passed new legislation dividing the remaining 2,400 Mapuche land reservations. As a result of the division, by 1988 more than 60,000 individual land titles (over 300,000 Ha) had been granted to Mapuche minifundistas, with an average of 5 hectares per family, or 0.8 hectare per person. This represented a significant decrease in land available per capita, compared to the 1.9 hectares of land available in 1963, before the agrarian reform had started (Gacitúa 1989).

In summary the counter agrarian reform accelerated the processes of social differentiation. In the VI region, few land reform individual beneficiaries managed to retain ownership, while a significant amount of the land was bought by new agricultural entrepreneurs and large agribusinesses. In the less dynamic IX region, large non-campesino agricultural producers, faced with increasingly negative conditions for their traditional crops, were forced to diversify and seek more profitable agricultural activities. In the more dynamic region, a new agricultural entrepreneur associated with the export sector developed (Díaz and Rivera 1986; Cruz 1986; Sáez 1987). A few small producers, no more than 10% of the total buyers, were able to buy more land and start an upward mobility process. The vast majority of small producers became semi-proletarianized and subsisted using several survival strategies that included seasonal off-farm income-generating activities and on-farm agricultural production (Echenique and Rolando 1991; Rivera 1988).

Land Use and Cropping Patterns

Land used for annual crop production in both regions experienced sharp fluctuations during the period under study. However, fluctuations in the VI region were more irregular (see figure 14; and appendices 13a and 13b).

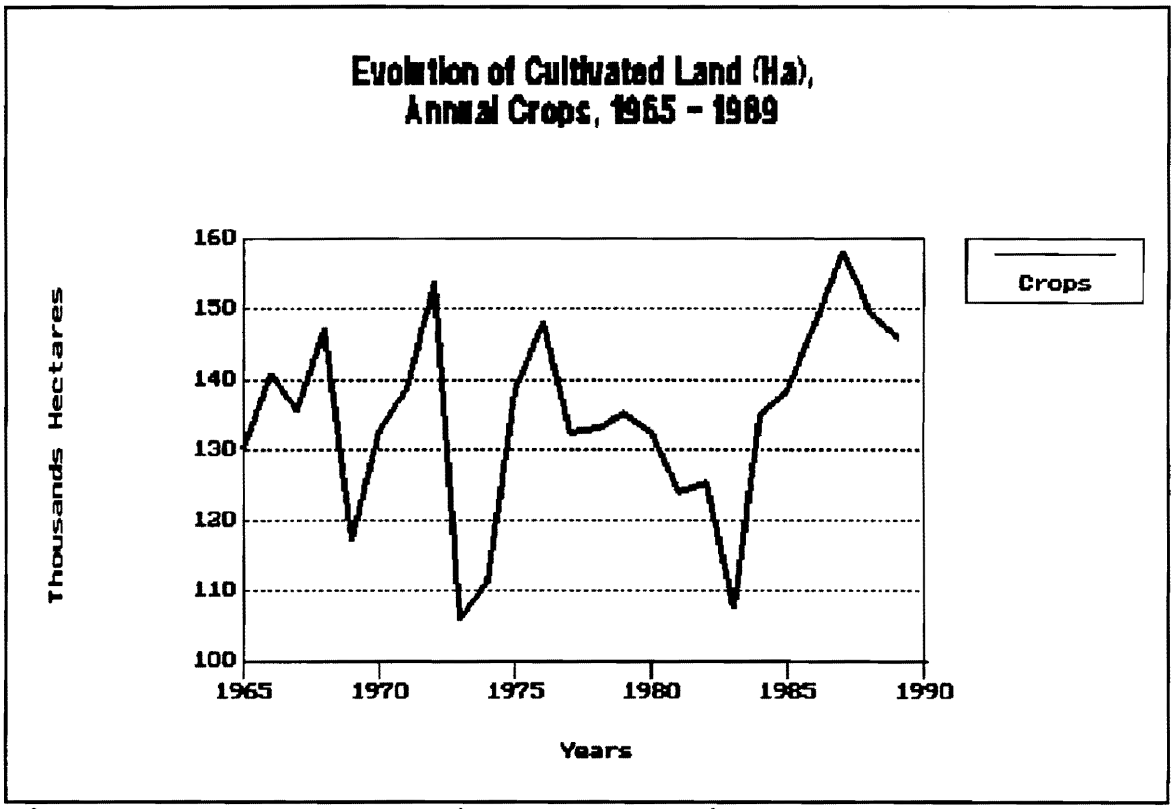

Figure 14 Annual Crops in the VI Region (Ha).

Three periods can be distinguished by land use patterns. The first period corresponded to the agrarian reform, when land allocated for annual crop production increased, with the exception of 1969. The sudden drop in 1969 was not associated with any significant policy change (either macro or sectoral). Rather, it responded to the pre-election situation of the country. After that year land allocated for annual crops continued to grow until 1972, when political crisis again was reflected in a sharp drop in the amount of cultivated land.

The recovery of production after the coup was very

short, corresponding to the time gap between the change in macroeconomic and sectoral policies and their negative impact on agricultural producers that began to be clearly felt after 1975 (see figure 14). The crops most affected by the policy changes were wheat, potatoes, barley, and sunflower (see appendices 13a and 13b), all of them intended for internal food consumption or animal (cattle) feed.

After the critical 1982/3 season, land dedicated to annual crops began to increase, reaching the 1965/6 level in the 1985/6 agricultural year and surpassing it after that. It is important to underscore that the recovery was not homogeneous among different crops, and that crops with comparative advantages under the existing policy environment experienced a faster recovery and even growth, such as in the case of maize (see figure 15).

Another significant and expected change was the increase in productivity (see table 19), particularly for those annual crops with a comparative advantage. Crops like maize in the VI region were associated with hog and poultry production and experienced a much larger increase in productivity than staples like wheat or potatoes. Annual yields tended to follow the land use pattern, although crops with higher profitability tended to decrease less than the other crops. Agricultural producers were highly responsive to market prices and incorporated technology accordingly.

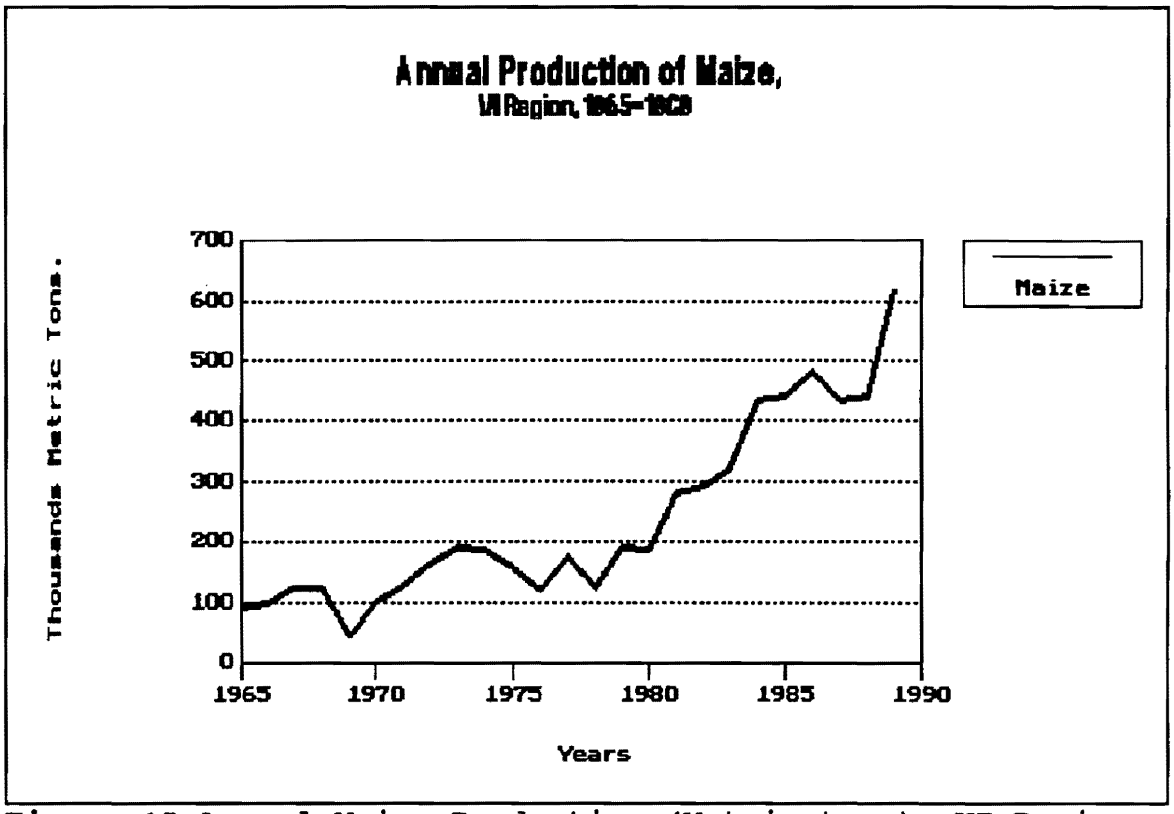

Figure 15 Annual Maize Production (Metric tons), VI Region

Table 19: Evolution of Annual Yields for Selected Annual Crops, VI Region, 1965-1988.

	Metric Quintal per Hectare			
	Wheat	Maize	Rice	Potatoes
Year				
1965	21.3	38.0	37.8	120.3
1966	23.1	46.2	29.4	157.2
1967	22.4	51.4	36.0	138.6
1968	23.2	45.9	42.0	122.4
1969	22.5	35.8	30.4	110.2
1970	22.6	45.2	41.1	118.4
1971	22.2	49.5	29.2	134.7
1972	20.4	51.4	36.7	121.3
1973	10.8	50.6	36.9	93.7
1974	18.2	49.0	38.6	138.3
1975	15.5	44.5	40.1	109.4
1976	12.9	33.9	43.3	80.1
1977	22.9	40.8	37.7	116.6
1978	20.6	37.1	42.6	95.4
1979	18.7	46.5	49.8	104.4
1980	20.4	41.2	31.9	106.2
1981	14.7	50.8	43.3	112.8
1982	19.2	56.0	45.5	107.3
1983	16.1	64.7	44.7	87.3
1984	24.1	67.7	45.3	115.9
1985	25.5	73.5	45.9	154.4
1986	35.1	83.1	60.4	152.6
1987	32.2	86.8	51.5	132.2
1988	31.9	90.9	51.4	185.0

Source: Elaborated by the author based on ODEPA (1976, 1988).

Also, it is important to note that most annual crop yields in the VI region were above national averages and specifically above the IX region yields. However, if yields are compared over time, which control for agroecological restrictions, despite the disadvantages that specific crops had in the market due to the policy shifts, crop yields for

wheat and potatoes grew more in the IX region. This could be explained by the few alternatives available to agricultural producers in the IX region, which forced them to focus their resources on those crops.

Turning to the evolution of fruit production, land in commercial orchards had an impressive growth. Its evolution evidenced the new policy context which was positive for fruit exports, particularly after 1982. Although there are no yearly data available for both regions, it is possible to compare the evolution of commercial orchards in both regions taking four points in time. Because establishing an orchard requires about five years, such multiyear comparisons are appropriate.

The increase in land in commercial orchards in the VI region is impressive and represents one of the highest growth rates in the country. The explosive growth, almost 400% between 1965 and 1988, was even faster than the national growth rate for the sector, and the relative weight of the VI region in national fruit production increased from 22% at the beginning of the agrarian reform to more than 29% by the end of the military regime (see table 20).

Land in commercial orchards grew from less than 10% of the total cultivated land (without counting pastures and grasslands) in 1965 to about 25% in 1989. The expansion of the fruit sector resulted from a long term policy followed

by the all the regions. It started with the fruit production plan (Plan de Desarrollo Frutícola) established by CORFO during the Frei administration. However, the most notorious growth of land in orchards followed the transformation of the accumulation pattern and the liberalization of trade in 1974. This can be illustrated by the different growth rates of lands in orchards between the periods 1965-1974 and 1974-1986, which were 56% and 100% respectively.

Table 20: Change in Land (Ha) in Commercial Orchards by Region and as Percentage of National Total for Selected Years.

	IX Region		VI Region		National Total
	(Ha)	(%) Total	(Ha)	(%) Total	(Ha)
Year					
1965	436	0.78	12,461	22.30	55,885
1974	708	1.08	19,553	29.77	65,670
1986	794	0.58	39,100	28.40	137,700
1989	955	0.57	48,916	29.03	168,500

Source: Elaborated by the author based on INE (1969, 1976) ODEPA (1976, 1988) and CIREN/CORFO (1991)

Due to agroecological limitations, fruit production in the IX region is irrelevant, as its development over the studied period demonstrates (see table 19, above). However, it is important to underscore that, starting in 1985, there was growth in the production of berries targeted to international production. Nevertheless, in terms of land

use, the amount of land is still irrelevant.

Land used for annual crop production in the IX region went through three periods that correspond to the policy changes at the national level. During the agrarian reform, land use fluctuated little, and there was not much increase in the total cultivated land (see appendices 14a and 14b). After the 1973 crisis, cultivated land increased and reached the highest level for the entire period. It is important to recall that price bands for wheat were in place until 1979, when they were eliminated until 1983, when they were restored. Elimination of price supports was clearly reflected in the sharp drop in cultivated land during those years (see figure 16). That fall was also the result of the negative macroeconomic conditions the country experienced.

After 1983 and the restoration of the band system, a mild recovery took place. However, by the end of the regime, total cultivated land in the region was still below the agrarian reform levels. Direct price incentives had been surpassed by the macroeconomic conditions that generated a framework where annual crop production was disadvantaged. Further, producers in the IX region did not have many alternatives except to shift to other activities or to complement annual crop production with extensive livestock production, which was more profitable than annual crops but was severely constrained by depressed demand level

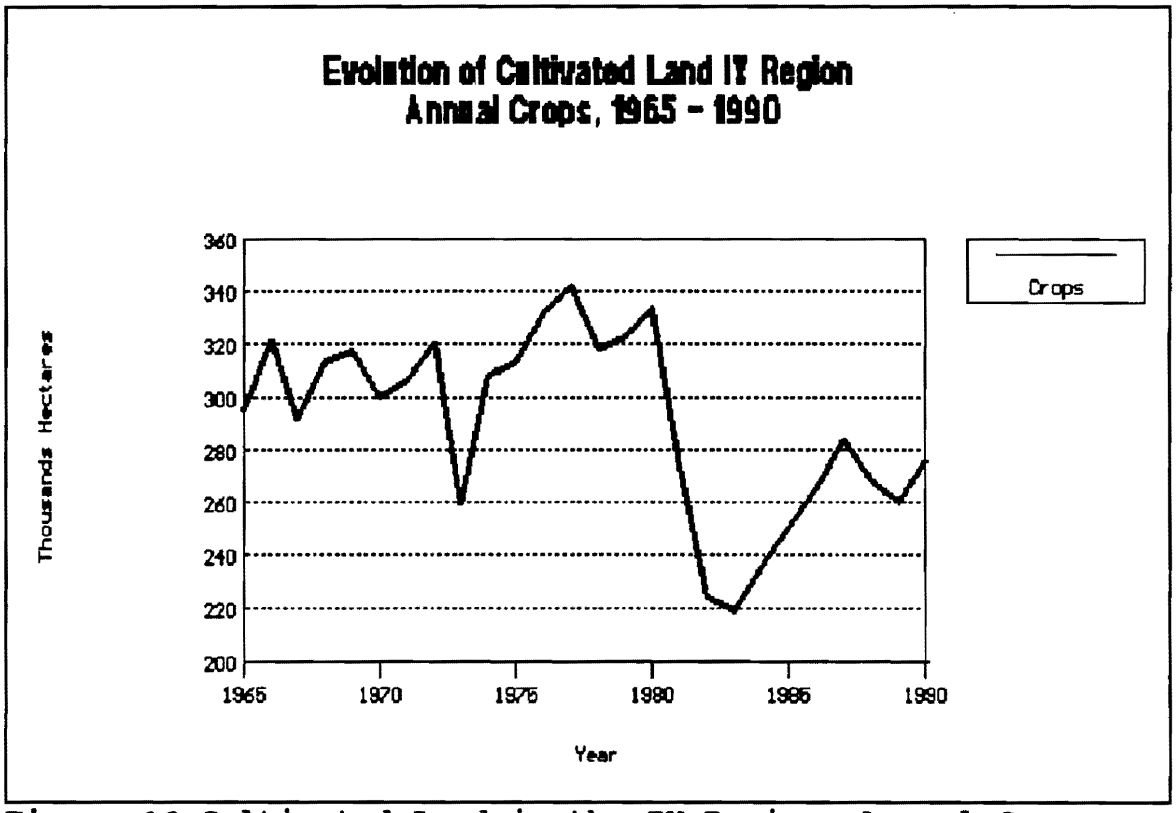

Figure 16 Cultivated Land in the IX Region, Annual Crops

at that time.

Most of the cultivated land (an average of over 65% for all years) was used for wheat production, followed by rapeseed (for edible oil), and oats. Sharp variations, associated with the liberalization of trade, occurred in the land used for these different crops. An extreme example was rapeseed. Its cultivation fluctuated from almost 42,000 hectares in 1965 to less than 2,000 in the climax of the 1982/3 crisis (see appendix 14a). In contrast, land used for potato production, mainly cultivated by small farmers remained almost constant, and the main change in production

levels came from the sharp increase in productivity (see table 21; and appendix 14a).

Table 21: Evolution of Annual Yields for Selected Annual Crops, IX Region, 1965-1988.

	Metric Quintals per Hectare			
	Wheat	Potatoes	Rapeseed	Oats
Year				
1965	14.3	37.7	10.0	12.2
1966	15.5	56.3	14.2	11.5
1967	15.1	49.7	14.7	14.2
1968	15.4	59.3	13.6	19.5
1969	14.8	40.5	10.0	11.2
1970	17.2	43.6	13.4	12.6
1971	19.1	47.4	12.9	14.8
1972	16.5	46.4	11.8	11.5
1973	15.4	47.3	13.3	10.9
1974	14.5	70.5	13.6	13.5
1975	12.9	64.0	12.5	14.2
1976	11.7	42.1	11.4	16.1
1977	17.5	78.3	15.6	14.4
1978	12.7	67.0	12.9	15.2
1979	16.6	58.4	19.7	13.2
1980	17.8	69.9	19.9	15.9
1981	14.3	74.0	13.4	10.9
1982	14.3	72.4	13.9	12.0
1983	14.4	50.9	14.6	10.9
1984	18.2	78.4	14.3	9.5
1985	18.9	118.1	16.7	15.7
1986	22.9	128.1	19.8	13.8
1987	23.0	127.3	24.0	18.3
1988	22.8	119.6	27.6	19.0

Source: Elaborated by the author based on ODEPA (1976, 1988).

These differences were due to distinct marketing chains and immediate consumers for these commodities. In the case of potatoes and other (non-tradeable) staple foods, the

internal market assured a minimum price. Further, production was concentrated mostly among small agricultural producers, while in the case of rapeseed and other tradeable commodities, prices were highly dependent on international markets and demand was concentrated in a few privately-owned companies highly sensitive to international prices.

Macroeconomic and sectoral policies had different consequences for the two regions. After 1973, agricultural commodities with comparative advantages increased production, while commodities for national consumption were abandoned by large agricultural producers. Prices for agricultural commodities targeted to the internal market decreased sharply, while export prices experienced a sustained increase (see table 22). At the same time, small agricultural producers had no other choices but to increase their production and seek off-farm income.

In summary, the profitability of annual crops decreased vis a vis agroexport and livestock production. This had various consequences for the agricultural producers in the two regions studied. From 1974 to 1983, annual crop production was increasingly abandoned by large agricultural producers, while small agricultural producers tended to increase the amount of land in annual crops. This was particularly true for the IX region, where proletarianization had a slower pace, and there were no

other alternatives for small producers but annual crop production.

Table 22: Change in Real Prices for Selected Agricultural Commodities, 1965-1986 (base 1965 = 100%).

Commodity	1965	1972	1979	1986
Wheat	100	141	117	79
Potatoes	100	70	51	52
Apples	100	345	457	536
Grapes	100	237	243	342

Source: Elaborated by the author based on ODEPA (1976, 1988).

After 1983, non-campesino agricultural producers again increased their annual crop production. However, the increase was based more on higher yields than on substantial increments in the amount of land allocated for annual crop production. The total value of annual crop production decreased, and, therefore, IX region agriculture became less important than agriculture in the VI region.

The VI region was always one of the richest agricultural regions. However, beyond the natural comparative advantages of this region (weather, access to water, soil quality, etc.), it became further differentiated from the IX region. These increasing differences were the result of differences in the transformation of the accumulation pattern and the unequal redistribution of the

wealth generated by the agricultural sectors.

The initial differences were accentuated, and an increasing income gap developed between the two regions. That progressive differentiation was inherent in the accumulation pattern and was a requisite for its growth. However, this is not to say that the development of export agriculture will be always in contradiction with a more sustainable agricultural development strategy aimed at achieving national food security. Rather, it indicates that a redistribution of the wealth generated by the more dynamic sectors must take place in order to decrease the disarticulation of the economy as a whole. A positive feed back among agricultural sub-sectors is essential to develop dynamic comparative advantages for the different types of agricultural producers.

Use of Wage Labor

All the transformations discussed before generated profound changes in the use of labor in the agricultural sector. However, these changes are difficult to illustrate, because there are no reliable data available at the regional level. Most of the studies previously done have been case studies. Data are not comparable across these studies, and official statistics are not disaggregated by region and productive sector systematically for the whole period.

In general, agricultural labor markets are characterized by their seasonality. Ordinarily, there are periods of high labor demand and seasons of low labor demand. However, these shifts in labor demand are sharper for some agricultural commodities than for others. Further, these differences are accentuated by particular modes of organizing the production systems. Also, state intervention (i.e. setting minimum wages, repressing strikes, etc.), modifies the behavior of the agricultural labor market (Gómez and Echenique 1988; Guglielmetti 1990; Mann 1990; Rodríguez 1985).

By and large it can be argued that the agrarian reform accelerated the proletarianization of the agricultural labor force (Díaz 1990; Gómez and Echenique 1988). However that process acquired specific characteristics that tended to create a "marginal proletariat exposed to permanent instability in rural labor markets" (Díaz 1990, p.128).

The rapid process of capitalist modernization that took place in Chilean agriculture during the last 25 years led to a progressive transformation of the agricultural labor force from permanent workers to seasonal workers (see table 23). Until the late 1960s, most of the labor force was permanent. However, with the agrarian reform the displaced peasantry increasingly became seasonal workers. This nationwide trend was particularly strong in those regions where the agrarian

reform had been more profound.

Table 23: Seasonal Labor Force as a Percentage of Total Agricultural Labor Force for Selected Years by Region and Nationwide.

	VI Region	IX Region	Nationwide
Years			
1964/5	47.3	34.2	41.4
1975/6	63.2	45.3	55.2
1986/7	86.5	51.7	71.4

Source: Gómez and Echenique (1988); Echenique and Rolando (1990).

At the same time, the state had set minimum wages and workers had political power to negotiate with their employers. As a result, unemployment decreased and real salaries rose (see appendix 5), but in different proportions. For agricultural workers salaries grew comparatively more in the fruit sector than in the wheat sector and consequently, agricultural salaries in the VI region increased more than in the XI region, at a rate greater than the national average (see table 24).

Table 24: Percentage Change in Real Wages for Agricultural Labor Force by Year, Region and Nationwide (1972 = 100).

Years	VI Region	IX Region	Nationwide
1965/6	82.3	72.8	77.0
1971/2	107.6	93.5	100.0
1975/6	87.5	68.8	80.5
1980/1	80.3	63.7	69.8
1987/8	88.6	69.4	76.1

Source: Gómez and Echenique (1988); Echenique and Rolando (1990).

After 1974, changes accelerated. Factor costs of labor were low under the new accumulation pattern. Hence, use of labor was encouraged vis a vis other factors. The repressive political context favored the imposition of a very restrictive labor policy. At the same time the transformation of the production strategies and the intensification of capitalist agriculture in the fruit-producing regions accelerated the use of seasonal workers. Seasonal workers in the VI region increased almost 37% between 1975 and 1988, while in the IX region the increase for the same time period was only about 15% (see table 24). Similarly the wage gap between agricultural workers in both regions had increased from less than 15 points in the period 1965-1972 to more than 25 points for the 1975-1988 period (see table 23, above).

Demand for labor changed according to the specific

agricultural commodity and the production strategy used. For the studied regions, the commodities that require more labor are wheat and maize among the annual crops. For export crops, grape production demands the most labor, followed by apple production. However, the labor intensity in each of these crops is very different. That is, in fruit production the labor demand is more intense and represents a higher percentage of total production costs than in annual crops which have a more extensive production strategy. Thus, although factor costs of labor decreased in both regions, the dominant type of farm and limitations on types of crops which could be grown in each region resulted in a greater expansion in use of hired seasonal labor in the VI region than in the IX region.

Analyzing the changes occurring in the use of labor in the two studied regions, it is possible to conclude that labor cost was one of the major advantages which fruit producers had after 1974 to expand their production[16]. Among the changes in the production strategies between the regions and in the agricultural sector as a whole, the increasing seasonality in the use of hired labor was one of

[16] Also, it is important to consider the changes in the composition of the labor force that took place during this period. According to the specialized literature, there was a progressive incorporation of women and teenagers to the seasonal labor force in the fruit producing regions (for a detailed account of these transformations see Guglielmetti (1990) and Rodríguez (1985), among others).

the most significant changes. Beyond the political context that supported transformation of the pattern of labor use, this process can be explained by the specialization that took place, particularly in the fruit industry (as well as in the timber industry, which is also export-oriented). A second factor, associated with the above, was the increasing technological modernization of agricultural activities, not only for export oriented crops but also for annual crops. A clear illustration of this process is the significant increase in yields. With the neoliberal polices, the trend toward semi-proletarianization and seasonality in labor use was accelerated. Finally, another important consequence of the change in labor-use patterns and transformation of the land tenure structure was the separation between the place of work and the residence of agricultural workers (Cruz 1986). Increasingly, small agricultural producers became semi-proletarians with not enough land to reproduce themselves over time. They were forced to seek off-farm employment. At the same time, agricultural workers became concentrated in small rural hamlets on land with no agricultural value. More importantly, they lost interest in owning agricultural lands, preferring to have permanent agricultural jobs (Derksen 1990; Korovkin 1990). Those fortunate enough to find permanent work became fully proletarianized.

CHAPTER VI

FOOD SECURITY THREATENED

Previous sections of this dissertation demonstrated that disarticulation is not an anomalous path of economic growth. Disarticulation has been an inherent part of capitalist development in Chile during the last 25 years, particularly in the agricultural sector. As a structural condition, disarticulation promotes regressive income distributions and asymmetrical flows of surplus between agricultural sub-sectors, producers, and regions.

Between 1965 and 1988 the Chilean economy moved along a path in which different degrees of disarticulation were associated with the dominant accumulation pattern of each period. In this context, state policies played a fundamental role, either ameliorating or exacerbating the degree of disarticulation the economy presented. The expression of this process in the agricultural sector was in the increasing productive specialization and differentiation between rich and poor regions. Chile's disarticulated agricultural modernization engendered a vicious cycle in which the earnings produced by the dynamic agricultural sector were not redistributed and did not contribute to developing other agricultural sub-sectors, increasing the gap between them.

Instead of decreasing the levels of disarticulation in

Chilean agriculture, the accumulation pattern associated with neoliberal economic policies consolidated its disarticulated character. This section seeks to illustrate how the changes explained in the previous chapters affected food consumption and threatened national food security. Food security is understood as the capacity of a country to meet, by internal production and imports, the potential food demand of its inhabitants[17]. In the chapter on disarticulated agricultural growth, the various mechanisms through which disarticulation influences food consumption were analyzed. Those mechanisms can be summarized as 1) a shifts of capital, land, and technological resources which favor export crops over food production, and 2) income inequality, which depresses actual food demand and food consumption. Now, the discussion will focus on the changes observed in food consumption patterns of the Chilean population during the last 25 years.

Macroeconomic policies had a significant impact on the consumption patterns of the population (Cabezas 1991, 1992; Martner 1989). The shift from import substitution to a free trade, i.e., accumulation pattern based on comparative

[17] It is important to underscore that food security refers to potential food demand and not the actual, or effective, food demand. The potential demand is determined by the total caloric and protein requirements that the population of a country have, and it is expressed in the amounts of staple foods necessary to satisfy that demand. Therefore, a country could meet its actual demand and not achieve food security, because actual demand may be severely depressed.

advantages, changed not only the consumption levels but also the yardstick used to measure what constitutes adequate consumption[18]. According to Cabezas (1992), the changes in consumption patterns observed after 1975 reflected shifts in macroeconomic policy that led to a rapid concentration of income in a few hands (see appendix 5).

The income concentration associated with trade liberalization promoted rapid growth in consumer goods imports. This phenomenon transformed consumption patterns which came to be characterized by an expansion of the expenditures in non-food consumer goods and a relative decrease in the budget allocated for food consumption at all income levels. However, this shift was particularly strong in high income groups because orthodox neoliberal macroeconomic policies caused a sharp decrease in the minimum wage. Real wages for most of the population had dropped substantially (see appendix 5).

This shift was also reflected in the ratio between food imports and non-food consumer imports (see table 25). In all years but 1973, non-food consumer imports exceeded food imports. However, after 1973 and until the crisis of 1983, the relative weight of non-food imports increased

[18] Basic needs are susceptible to change, and they respond to specific historical, cultural, and social conditions that can change over time. Therefore, something that was previously not perceived as a basic need for a social group may become a basic need over time.

significantly. After that, all imports decreased, but non-food consumer goods dropped sharply.

Table 25: Ratio Between Food Imports and Non-Food Consumer Goods Imports for Selected Years.

Year	1965	1970	1973	1975	1980	1985
Ratio	0.90	0.56	1.34	0.89	0.21	0.28

Source: Cabezas (1991); and Banco Central (1989).

These ratios could be interpreted as if food security had improved over time. However, despite the increase of family expenditures in non-food consumption, calorie and protein intake did not improve, and national food security, was increasingly threatened, particularly after 1975 (see table 26). Although food imports decreased both in absolute and in relative terms, the potential demand was not satisfied. Further, according to Cabezas (1992), the reduction in food expenditures indicates that food consumption levels decreased while other items, such as public transport and housing, experienced large increases -- a shift explained by the higher costs of these items. Therefore, if the food available (national and imported) was enough to meet the apparent (actual) demand for food, the food crisis was not only a supply problem but also a consequence of income inequality.

Table 26: Daily Calorie and Protein Intake per Capita by Income Level for Selected Years.

	1969		1978		1988	
	Cal. (Kcal)	Prot. (Gr.)	Cal. (Kcal)	Prot. (Gr.)	Cal. (Kcal)	Prot. (Gr.)
Income level						
I Quintile	1,925	54	1,626	47	1,425	39
II Quintile	2,113	62	1,875	51	1,805	47
III Quintile	2,422	68	2,176	64	2,112	57
IV Quintile	2,830	84	2,504	77	2,259	60
V Quintile	3,160	100	3,186	106	2,805	81
Total	2,587	74	2,328	71	2,133	58

Source: Cabezas (1991, Pp.24 & 26)
1969 data are for the whole country while in 1978 and 1988 the data reflect only the metropolitan area[19].

Calorie consumption between 1969 and 1978 decreased for all income levels but the highest quintile. Average calorie consumption decreased; protein consumption followed a similar trend. From 1978 to 1988 both protein and calorie consumption decreased for all income brackets. Nevertheless, the drop was more acute for the lower income quintiles than for the higher ones. The fall in calorie and protein intake in the highest income bracket represents a shift toward a more balanced and nutritional diet rather than a reduction in the intake of essential nutrients. More importantly, the decrease for low-income sectors had a more

[19] There are no data available of food consumption by quintile for all the studied years and for the whole nation. From now on, the analyses will only focus on aggregate measures at the national level.

dramatic meaning, since it placed the low and middle-income population below the standards established for Chile by the World Health Organization. The progressive deterioration of food security and food consumption at the national level, particularly for the low income sectors, has been corroborated by several studies (Cortázar 1977; Lavados 1980; Schkolnik and Teitelboim 1985). This pattern confirms the demand-side component of the food crisis that Chile experienced. Also, it indicates the effects that a significant salary increase could have on the aggregate demand for food. Under such a scenario, current production levels plus food imports would not meet the demand increase that would result from a salary increase (Martner 1989).

Calorie and Protein Intake

Calorie and protein consumption are commonly used as measures of national food consumption (Gacitúa and Bello 1991; Wimberley 1989, 1990, 1991; Wimberley and Bello 1992). By and large it is assumed that an adequate calorie intake is followed by an adequate intake of other nutrients such as protein and vitamins (Svendberg 1984). However, caloric intake could be less sensitive to income changes among the poor than protein intake, due to the different income elasticities for caloric and protein sources (Gacitúa and Bello 1991; Svendberg 1984). The section that follows

analyzes the evolution of calorie and protein intake for the period under study. The data are taken from the Food and Agriculture Organization's (1991) AGROSTAT data base.

Calorie and protein consumption during the period under study experienced changes similar to those observed for real wages (see figure 17 and Appendix 5). This trend also confirms the demand side problem discussed above.

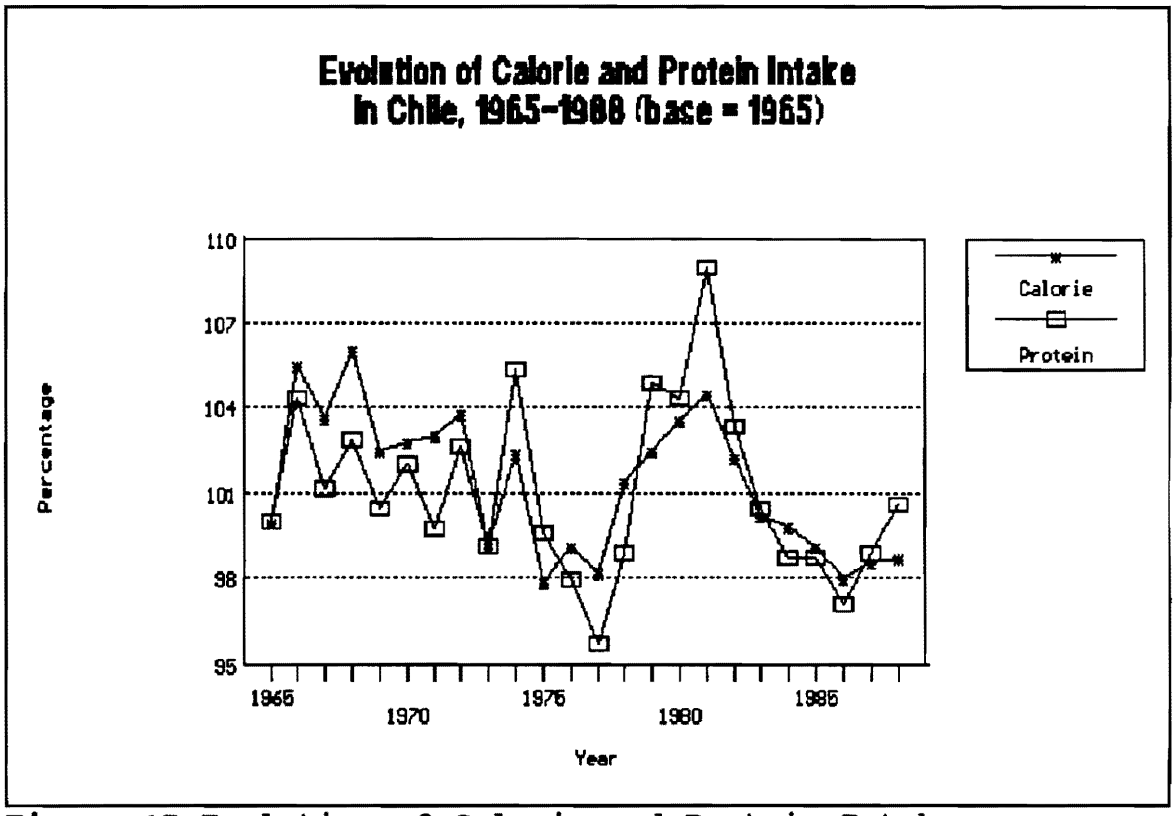

Figure 17 Evolution of Calorie and Protein Intake, 1965-1988 (1965 = 100) Source: FAO, 1991

As expected, fluctuations in protein and calorie intake during the Frei and Allende administrations were less dramatic than the fluctuations experienced after 1973.

Also, it is important to note that protein consumption suffered proportionately more extreme changes than calorie intake. The lowest consumption levels, during 1975-1977, result from the 1975 crisis and parallel the decrease in real wages during these years. After 1977, consumption levels recovered to reach a peak during the boom that preceded the 1982 crisis. At that time real wages had recovered to the 1970 level, and the Chilean currency was overvalued. This period also coincides with the highest agricultural and food imports during the whole period, while at the same time annual crop production was falling rapidly. The short boom of the early 1980s was followed by an abrupt fall in consumption. By the end of the military regime food consumption was below the level achieved during the 1965-1973 period.

The daily calorie intake per capita between 1965 and 1988 fluctuated from 2,500 to 2,700 (see figure 18). These figures are somewhat above the standard of 2,360 calories established by the FAO/WHO for Chile[20] in 73. However, these values do not take into account the distribution problem previously discussed (see table 26), which indicates

[20] These standards for calories and protein (60 grams per capita per day for the latter) are computed taking into account the age and sex composition of the population as well as the proportion of population in the labor force and the predominant economic activities. For a complete discussion of this methodology, see FAO/WHO 1973.

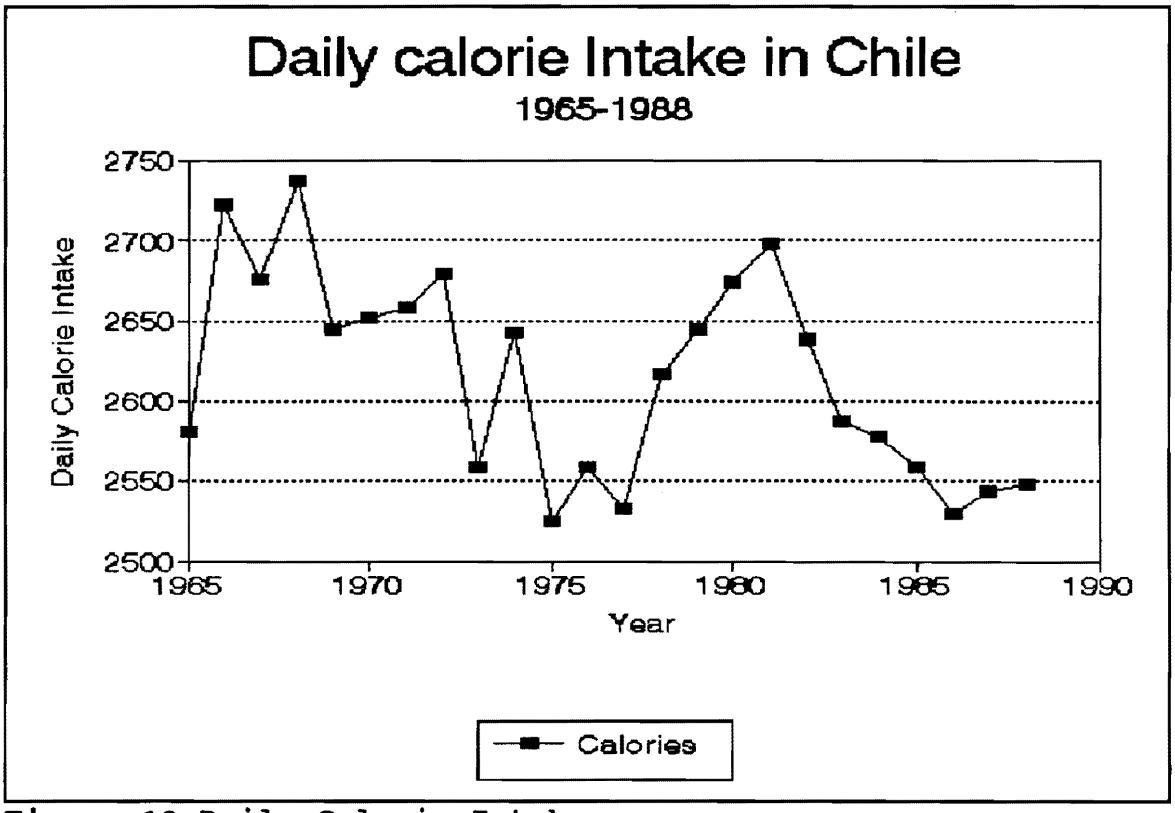

Figure 18 Daily Calorie Intake

significant differences in calorie intake among various income groups. Unfortunately, there are no data to trace change in food consumption of specific commodities by income groups over time. Nevertheless, the shifts in calorie consumption indicate that calorie intake suffered a slight decrease over time. This decline could be attributed to a more balanced diet. However, the composition of calorie intake over time (see figure 19 tables 26 and 27 and Appendix 15a) indicates that there was no major transformation in the composition of the diet. Rather, these figures confirm that there was a general decrease,

which most likely affected the poorest sectors.

Table 27: Percentages of Total Calories and Total Protein Intake by Source and Year.

	Calories		%	Protein		%
	Wheat	Animal	Total Calories	Wheat	Animal	Total Protein
Year						
1965	44.9	16.7	61.6	45.6	34.8	80.4
1966	42.8	16.7	59.5	44.1	35.0	79.1
1967	42.4	16.9	59.3	44.4	35.2	79.6
1968	41.3	17.5	58.8	43.5	36.3	79.8
1969	41.9	18.0	59.8	43.5	37.2	80.7
1970	41.2	18.4	59.7	42.3	37.6	79.9
1971	42.4	17.2	59.6	44.6	34.7	79.3
1972	42.1	16.9	58.9	43.3	35.4	78.8
1973	45.9	15.4	61.3	46.7	32.9	79.6
1974	43.9	18.3	62.2	43.6	37.1	80.7
1975	46.0	16.0	62.1	46.1	34.6	80.7
1976	45.7	15.0	60.7	47.0	33.3	80.3
1977	44.0	15.0	59.0	46.5	32.4	78.9
1978	41.9	15.4	57.3	44.4	35.2	79.6
1979	41.9	16.1	58.0	42.2	36.7	79.0
1980	41.8	16.3	58.1	42.9	36.7	79.5
1981	41.1	17.5	58.6	40.7	40.1	80.8
1982	41.4	16.6	58.0	42.2	37.3	79.5
1983	41.7	16.0	57.6	42.8	36.5	79.3
1984	41.7	15.3	57.0	43.6	34.9	78.5
1985	42.4	15.2	57.7	44.0	35.7	79.7
1986	42.9	15.2	58.1	44.7	35.7	80.4
1987	42.1	15.8	57.9	43.4	36.6	80.0
1988	41.6	16.6	58.2	42.0	38.7	80.8

Source: Derived by the author based on FAO (1991).

Wheat consistently contributed more than 40% of the daily calorie intake. Wheat and its by-products constitute the single most important source of nutrients for the Chilean population. However, Cabezas (1991) states that according to consumption data by income level for the years

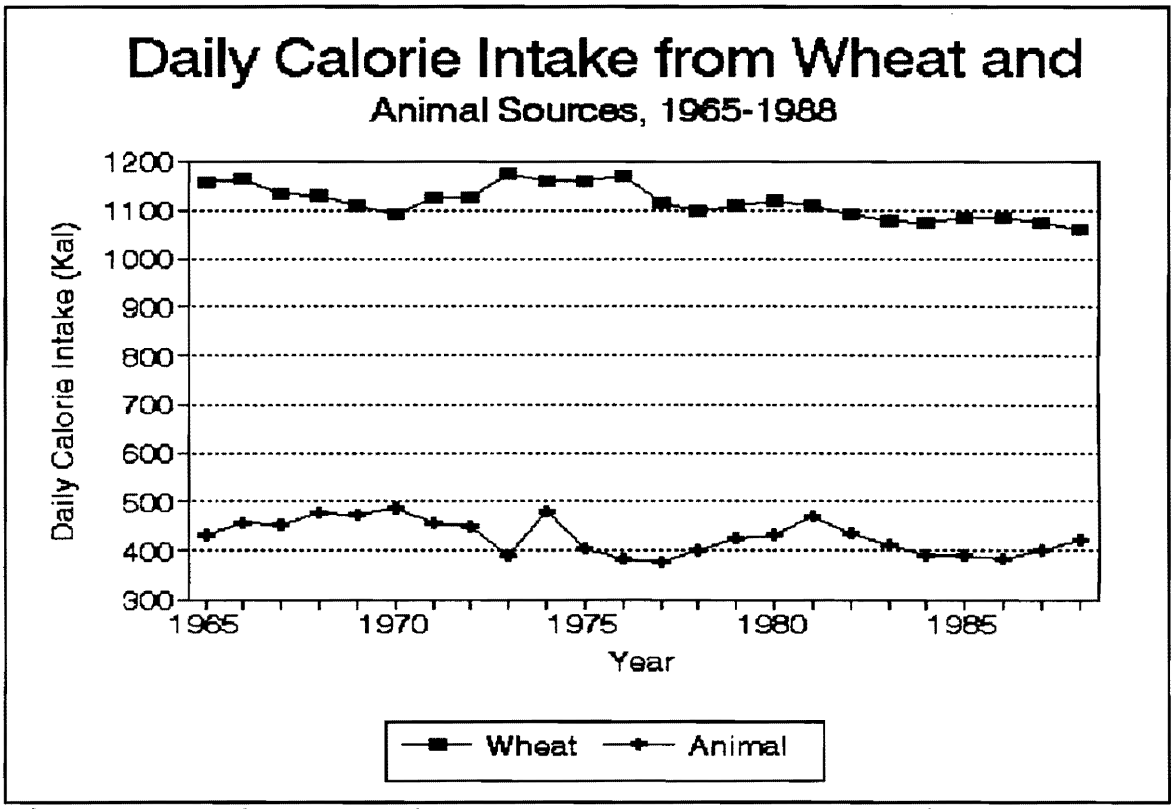

Figure 19 Daily Calorie Intake from Wheat and Animal Sources, 1965-1988

1969, 1978 and 1988, there are sharp differences between economic groups. While for low income sectors more than 50% of the calories come from cereals and derived products, in high income groups calorie intake from cereals is less than 40% (see table 28). These figures indicate that cereals (wheat) became increasingly important as a source of calories for the low income groups. At the same time, calories from cereal sources became less important in the daily per capita intake for the two highest income groups. Obviously, this change reflects the income inequality

between groups and the increase in the income gap over time.

Table 28: Calorie Intake by Source, Income Level and Year Cereals as a Percentage of Total Calorie Intake.

	1969 %	1978 %	1988
Income level			
I Quintile	51.01	57.06	58.50
II Quintile	50.54	50.57	54.32
III Quintile	48.24	47.96	51.01
IV Quintile	48.56	43.33	46.25
V Quintile	41.61	36.09	39.79

Source: Cabezas (1991, p.30)
* 1969 data are for the whole country while in 1978 and 1988 the data reflect only the Santiago metropolitan area.

Protein intake paralleled the shifts described above (see table 29 figure 20 and Appendix 15b). However, the changes were more drastic then for calories, particularly for the low income groups. While in the late 1960s only the first quintile was below the recommended daily protein intake of 60 grams per capita, in 1978 and 1988 the second quintile was also below standards, and in 1988 the third quintile did not meet the recommended level either (see table 26)[21]. In summary, a progressive gap associated with ongoing transformation of the accumulation pattern developed

[21] Also, if there is a caloric deficit in the diet, a certain amount of the protein intake would be used to cover that caloric deficit. Therefore, it is plausible to assume that in 1978 the third quintile was also deficient in protein intake, since part of those proteins were used as energy.

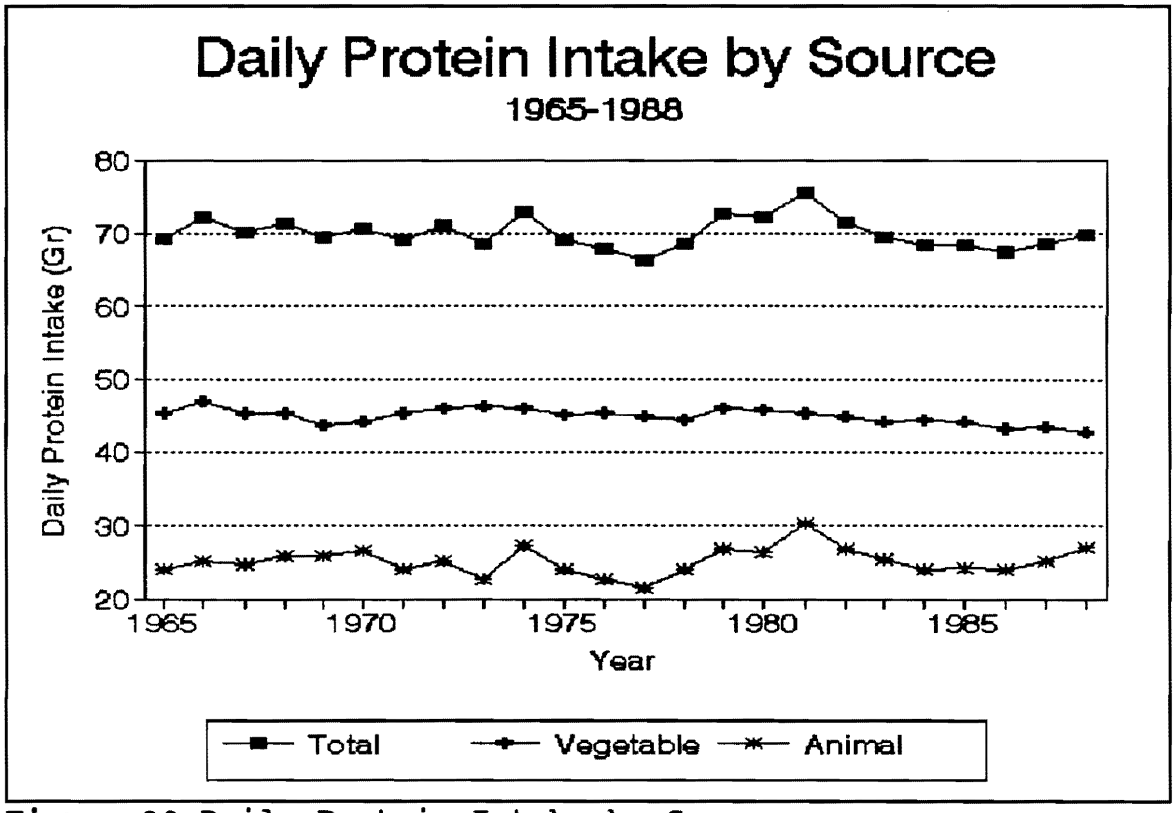

Figure 20 Daily Protein Intake by Source

between the different income groups. Further, in relative terms, the low income groups suffered even a larger fall in their consumption levels.

The composition of protein intake also changed over time and across income groups (see figure 20; table 29 below and Appendix 15b). While at the aggregate level animal protein experienced a slight increase, consumption actually increased only for high income groups. In fact, the first two quintiles experienced a dramatic decrease in their consumption of animal proteins (see table 29). These differences are explained by the different income

elasticities of animal and vegetable protein sources.

Table 29: Evolution of Protein Intake by Income level and Year (Percentage Animal Protein From Total Protein Intake).

	1969 %	1978 %	1988 %
Income level			
I Quintile	35.0	27.3	20.0
II Quintile	37.4	32.3	30.6
III Quintile	36.0	38.6	37.2
IV Quintile	39.6	43.2	43.8
V Quintile	47.1	50.6	49.4

Source: Cabezas (1991, p.36)
* 1969 data are for the whole country while 1978 and 1988 the data reflect only the metropolitan area.

In conclusion, the transformation of the accumulation pattern threatened food security through two mechanisms. First, there was a progressive fall in real income that had devastating effects among the poorest sectors. In the agricultural sector, this drop was expressed in the increasing proportion of seasonal workers and the worsening of the urban/rural wage ratio associated with the development of export agriculture and stagnation of the annual crops. Second, agricultural sector changes constrained the production of annual crops that constitute the basis of the Chilean diet. These processes generated a scenario in which food security, understood as the capacity of the country to meet its potential demand, progressively

deteriorated. The persistence of depressed effective food demand implies the weakness of the economic model favored in Chile in recent times and reflects the disarticulated character of this model, since it has been unable to link growth in export production to expansion of internal demand and growth of the staple food sector.

CHAPTER VII

CONCLUSIONS

The purpose of this dissertation was to demonstrate through historical analysis of the last 25 years that Chilean agricultural growth has been disarticulated, and that such disarticulation has increased the differences between regions, production strategies, and agricultural producers in the Chilean countryside. Understanding the effects that disarticulated agricultural growth has had in Chilean agriculture is a first step toward the development of alternative policy options striving to approach sustainability and equity. This concluding section offers principles to reduce the disarticulation of Chilean agriculture.

The initial industrial development accumulation pattern emphasized policy instruments that subordinated agriculture to the demands of infant industries. Surplus was extracted from the agricultural sector to develop the industrial sector and to expand urban demand. Nevertheless, there was a linkage between the demand of the urban popular sectors with the development of the agricultural sector and with the rest of the economy. After the transformation of the accumulation pattern, a reallocation of resources within the economy occurred, favoring the development of export-oriented production activities. This shift was marked by

the relatively weak backward and forward linkages between agricultural sub-sectors (annual crops and exports), and by weak linkages between agriculture and the rest of the Chilean economy. The importance of the annual crop sector decreased, as reflected in the decrease in land used for annual crop production, and in the intensity of production factors used by annual crop producers compared to export producers and by small campesino producers compared to non-campesino producers.

The parallel between the different responses to policy instruments by region and sub-sector helps to clarify the different priorities assigned to these sub-sectors. That analysis underscores some important conclusions for the behavior of the agricultural sector from the supply side. State intervention was essential for the development of annual crops such as wheat. State policies had a clear impact on the production levels of annual crops, because producers knew what to expect from the market. In the long term, the consolidation of some protectionist measures for national wheat producers was and remains essential for the achievement of a minimum production level independent of fluctuations in the international markets.

In the case of maize, national production levels are somewhat independent from state market intervention. This is due to the comparative advantages maize production has

because of its linkages with hog and poultry production, associated with the development of a high-end national market and with an international market. That situation led to the concentration of maize production in the Metropolitan and VI regions and to the consolidation of a stratum of highly capitalized monocrop maize producers. The technological leap achieved by these producers constituted a severe restriction on the establishment of new maize producers and forced several small producers out of business (the effects of treadmill and cannibalism among agricultural producers of different sizes that incorporate capital and technology at varying rates). The contradiction between a growing emphasis on meat production and the sharp decline in animal protein consumption by low income groups is another indicator that certainly suggests disarticulation.

Bean production performed differently. Beans were neither protected by state policies nor limited to internal consumption. Bean production was strongly influenced by international market fluctuations. Small agricultural producers maintained a basic production level. Beyond that level, they increased their production when prices from previous seasons were favorable. This is corroborated by the large increases in the 1977-1979 and 1981-1982 periods, when there were large increases in production through expansion of land used rather than through improved yields,

which remained comparatively low.

At the same time, the parallel established between regions and productive sub-sectors in terms of imports, exports, and value of the agricultural production contributed to profound contradictions that undermined Chilean agriculture during the period studied. The trend in the value of agricultural production (see appendices 11a and 11b) by type of agricultural producers and sub-sectors shows the effects of the different policy instruments associated with the dominant accumulation pattern for each period. During the Frei administration all three sub-sectors (annual crops, livestock, and fruits) grew both among campesino and non-campesino agricultural producers (see table 30). However, the value of the agricultural production from the non-campesino sector grew more than the campesino sector. It is important to underscore the similar growth of the fruit sub-sector in both types of producers, although the growth rate for the non-campesino sector was higher than that for the campesino sector.

Table 30: Percentage Growth in the Value of Agricultural production by Type of Agricultural Producers and Agricultural Sub-sectors.

	Campesino				Non-Campesino			
	Annual Crops	Lives-tock	Fruit Prod.	Total	Annual Crops	Lives-tock	Fruit Prod.	Total
Years								
1965/70	11.0	15.4	30.2	14.6	17.3	27.6	30.5	23.8
1970/72	-0.1	-9.1	9.0	-4.0	-0.1	-15.0	9.8	-8.4
1974/83	9.4	5.7	44.6	9.1	15.1	11.3	42.2	15.3
1984/88	14.2	9.3	58.3	18.8	13.0	36.1	100.0	35.4

Source: Derived by the author based on ODEPA (1976, 1918) and Banco Central (1989); see also Appendices 11a and 11b.

During the Allende administration, the transformations introduced led to a decline in all sub-sectors except fruit production, indicating the advantages the fruit sub-sector already had. More importantly, the decline in value of non-campesino agricultural production was twice as large as the decline in campesino production, mainly due to the sharp decrease in livestock production in the non-campesino sector. It is important to underscore that after 1974 the growth was concentrated in the non-campesino sector, particularly in the fruit sub-sector.

During the 1965-1970 period, the total value of fruit exports was similar to the total value of livestock products and represented less than a third of the total value of agricultural exports. However, the increase in the value of fruit exports was larger than that for any other sub-sector

(see Appendix 2c). By 1978, fruit exports represented almost 50 percent of the total value of agricultural exports and reached more than 70 percent of the total value by 1988. From 1974 to 1983, the outward-oriented character of the economy promoted a progressive decline in the value of annual crops and livestock exports, with the exception of 1975 and 1982, when sugar exports increased dramatically due to fluctuations in the international market. The modifications introduced after the crisis of the orthodox neoliberal model in 1982-1983 favored the expansion of annual crops and livestock exports. However, the most important conclusion to be drawn is that growth in the total value of agricultural exports has been based mainly in the expansion of fruit exports, which resulted from macroeconomic policy favoring export-related activities. Though prior to 1970 annual crop exports were the leading indicators for agricultural exports, after 1975 it was replaced by fruit exports. It is important to underscore the sharp fluctuations that annual crops exports and, to a lesser degree, livestock exports, had over time, while at the same time the internal composition of each sub-sector was almost constant. That irregular evolution, associated with the increasing gap between sub-sectors throughout the whole period indicates that the performance of the annual crop and livestock sub-sectors was the result of a

progressive differentiation between regions and agricultural producers due to different degrees of capital intensity and different market linkages.

The value of agricultural imports progressively increased until 1973. After 1974, with the exception of a few years, agricultural imports decreased substantially until 1988 (see Appendix 2d). During this whole period, annual crops fluctuated between 35% and 70% of the total value of agricultural imports. The most important crops imported were wheat and rice, followed by beef and dairy products. The modification of trade policies during the orthodox neoliberal phase represented a boost for annual crops imports, a severe impediment for national producers. After the policy changes in 1983-1984, the profitability of annual crops increased, and annual crop imports fell sharply.

It is crucial to emphasize that production increases were not enough to restore historical production levels. Food imports fell from almost US $500 million in 1981 to less than US $120 million in 1988, a trend that evinces the acute decline in demand. That is, effective demand was far from the food requirements of the Chilean population. The market equilibrium achieved during that time was based on depressed demand. At the same time that staple food imports declined there was an increase in tropical food and luxury

food imports targeted at a very small but affluent market.

Agricultural producers that could not shift toward crops with comparative advantages (because they were located in unsuitable agroecological areas or because they did not have capital and state support) were trapped. The only alternative they had was to rely on the internal market for their products, which accelerated social differentiation among agricultural producers and regions.

Along with this differentiation a distinct process of capital and land concentration took place in the agricultural sector, particularly in the fruit and forestry industries. Concentration has been even stronger at the agroindustry and marketing levels, where a few firms control the market and set prices for most producers. Further, the overlap and vertical integration among agroindustries, marketing firms, and producers is increasing, providing one of the main barriers to agricultural producers entering the export sector. Although there are no reliable data available, existing information indicates that foreign investment associated with the fruit and timber industry has grown significantly (Gómez and Echenique 1988). At a more general level, the final outcome of the transformation of the accumulation pattern was that the agricultural sector became increasingly integrated into the global food and agricultural system.

That integration contributed to the modernization of the agricultural sector, and, due to the characteristics of that process, to the disarticulation of Chilean agriculture and to increasing social and economic differences. The power of the state to redistribute resources among different agricultural sub-sectors and producers to attain a more balanced and sustainable development decreased. The vulnerability of the agricultural sector to the fluctuations in the international markets threatened national food security.

Policy Options

The development of the agricultural export sector does not prevent achievement of sustainability and equity. In fact, the expansion of the export sector could contribute to economic articulation. That is, trade could be used as an instrument to foster domestic growth and to expand internal demand. Within that context, agricultural exports could become a source of dynamism for the whole agricultural sector, establishing forward and backward linkages with other agricultural sub-sectors.

From a food security perspective, the issue is to increase the food available to meet the potential demand. This requires establishing links among exports, annual crops, and livestock sub-sectors at two different levels.

First, it is necessary to expand domestic demand by increasing income. Second, it is necessary to increase production and productivity of the annual crop and livestock sub-sectors. Since the campesino sector mainly produces annual crops for the internal market, it would be necessary to expand their productivity, which is far below than that of non-campesino producers. This would require a shift in investment priorities and increased state support to the annual crop and livestock sub-sectors, especially to the campesino producers. At the same time investment in the agroexport sector would have to shift from expanding production via incorporation of new lands to increasing both productivity and overall value of the products. That is, investment would have to be geared toward agroindustrial processes that would add value to the unprocessed agricultural commodities that are currently exported. This would also provide more employment opportunities to complement the seasonal jobs associated with the fruit sector. These general policy criteria would help expand internal demand and develop strong linkages between the export sub-sector and the rest of the agricultural sector.

Decreasing disarticulation in the agricultural sector in the coming years will require determination from policy-makers. The rapid changes taking place in the world economy will soon obstruct even maintenance of growth in the modern

and dynamic agroexport sector. Protectionism is a sword that developed countries still use at their convenience. At the same time, multilateral and bilateral free trade agreements will increase the obstacles for those productive sectors with no comparative advantages, forcing them to rely on the last advantage they will have: cheap labor. Decreasing terms of trade for commodities that incorporate less capital and technology will progressively bleed dependent economies. In the not-too-distant future, the internal sustainability of the model will be impaired.

Affirmative macroeconomic and sectoral policies are required to assure economic growth and to increase equity. Due to the heterogeneity of agricultural producers, regions, and problems, specific policies should be developed for annual crop production, particularly among the campesino producers. However, it is not the purpose of this concluding section to delve deeply into the discussion of specific policies. Rather, the objective is to advance some general policy principles that could help in the design of sectoral policy, from the standpoint of decreasing Chilean agricultural disarticulation. By and large, these principles imply at least a restructuring of the prevalent accumulation pattern. Otherwise, they will become futile exercises and would not accomplish the goals of growth, equity, and sustainability.

First, any sectoral policy aimed at decreasing the degree of disarticulation must recognize that the modernization of the agricultural (export) sector has been uneven and is not sustainable in the long term. Based on those premises, sectoral policies should strive to minimize the biases against agricultural producers and agricultural sub-sectors without comparative advantages in the international markets. That is, policies must give specific support through marketing, credit, and technical assistance programs to annual crop and livestock producers. Special care should be taken to target these programs to the campesino producers who have the potential to increase their productivity and generate a surplus that could be retained and reinvested in the agricultural sector.

At the producer level, programs must take into account at least four specific issues:

1) Expansion of extension services and technical assistance programs. These programs should emphasize the development of food crops and livestock production geared initially toward internal markets. They must be formulated according to the specific characteristics of different agroecological regions to contribute to developing productive strategies compatible with the conditions of small agricultural producers. Until recently there has been a tendency toward a commodity-oriented approach that is

inconsistent with small producers production strategies. A new approach must consider the articulation of the commodity approach with more comprehensive farming system research and extension. Within that framework, special emphasis should be given to increasing food production in the campesino sector.

2) Increasing investment in small agricultural producers at two complementary levels. First, there must be a clear state investment policy toward the sector. Small producers cannot be asked to fully assume the costs of the infrastructure (e.g., services, roads, grain elevators, storage facilities), and state support at this level could contribute to increasing the efficiency of small producers. One of the main difficulties small campesino producers face is fragmentation. State investment support programs could decrease that fragmentation and make more efficient use of the existing resources. At the farm level, investment policies should aim at increasing productivity and improving the quality of life of the family. Campesino producers have been cut off from financing sources that would contribute to increasing agricultural productivity. At this level, legal reforms to facilitate small producers' access to the banking system are required (such as the type and amount of collateral required, establishment of collective revolving credit funds, and so on). Finally, special investment

programs should be designed to improve the quality of life at the farm level. Housing and related infrastructure investment programs are crucial to decreasing existing inequalities in rural areas and to increasing the efficiency of the producers. Until now, investment in this area has been conceived as a social policy with no productive effects. However, it is evident that improving the quality of life at the farm level will yield increased efficiency and productivity.

3) Consolidation of price supports and expansion of marketing programs. To expand their production, agricultural producers, particularly in the small campesino sector, need to know in advance at least the minimum price they will obtain for their products. The band price system introduced after the 1983 crises demonstrated the positive effect of such systems on production of certain commodities deemed important for national food security. However, price supports are insufficient for small producers if no appropriate marketing mechanisms are established. State policy should contribute to the development of private and/or cooperative purchasing capacity for campesino production. This is particularly true for wheat and legumes. Fragmentation of the supply of these crops has contributed to the low profitability producers obtain, since intermediaries and small merchants appropriate the price

differentials.

Another related issue for sectoral policies would be development of alternative markets for campesino production. There are several agricultural products for which campesino producers have comparative advantages which have not been developed. Organic products targeted to high-end specialty markets, whether national or international, could become a very profitable activity for some small campesino producers. However, there is no technical, financial, or managerial support for these activities.

4) Implementing a support program for small campesino agroindustries. Campesino producers have the potential to develop small agroindustries that will increase their profitability. However, they lack technological and financial support to establish and develop those enterprises. Sectoral policies should contribute to the identification and implementation of these potential agroindustries. Market studies are required to establish the technical and economic feasibility of such agroindustries, as well as to define the most appropriate management structures.

Sectoral policies targeted to the agroexport sector must seek to increase the dynamic comparative advantages of the sector. It is essential to expand and consolidate existing agroindustries. Sectoral policies must help expand

industrial processing of the commodities being exported. Although new markets can be developed, the fresh fruit market will be soon saturated, and Chilean fruit exports will lose competitiveness. More importantly, industrial processing will add value to the products and will generate local jobs. The generation of productive employment in the agricultural sector and in rural areas should become a key policy priority. Even considering the possible beneficial effects that the above-enunciated measures could have for small producers, specific policies should be implemented for the growing number of semi-proletarian and agricultural workers. Sectoral and macro policies should favor the development of off-farm, agriculturally-related employment opportunities in the rural areas.

Along with these sectoral policy programs must be an effective decentralization of policy-making and empowerment of local governments. Despite the administrative decentralization that has taken place in Chile during the last ten years, local governments still do not have enough power to assign, redistribute, and manage productive resources. What is more important, popular participation in the local government is very limited -- a severe threat to real decentralization. If popular participation is not assured, decentralization will in fact remove the little power rural workers and small agricultural producers have in

terms of central government and other social actors.

Finally, at a more general level, macroeconomic and sectoral policies should also consider the consumer. Achieving equity and sustainability requires a profound transformation of the structural causes of disarticulation that have been increased by the current accumulation pattern. Among these, income redistribution is an urgent task. A programmed expansion of aggregate demand would also have a significant positive impact within the agricultural sector, particularly for the more depressed regions and commodity systems, such as those annual crops used for mass consumption.

Implications for Theory and Future Research

The results presented in this dissertation indicate that the ongoing changes in Chilean agriculture are rooted in the transformations of the accumulation pattern initiated 30 years ago. However, they also suggest that the transformation of the accumulation pattern after 1973 accelerated a process of social and regional differentiation, increasing the already disarticulated character of the agricultural sector. The time periods used in this study were helpful for illuminating the shifts in policy and their more immediate effects on the predominant production strategies developed by the different groups of

agricultural producers.

To conclude, the theoretical framework used to analyze the transformations of Chilean agriculture during the last 25 years was appropriate. The Chilean economy and agricultural sector experienced varying degrees of disarticulation that were identified through changes in agricultural productivity by sub-sector and by changes in food consumption. The methodological approach used was useful as an exploratory tool to develop more precise hypotheses in the future and to attempt to measure the net impact of disarticulation on some of the variables discussed in this study. An important contribution of the methodological approach taken in this study was to incorporate the political dimension of disarticulation. That is, previous quantitative studies on disarticulation had analyzed it in terms of sectoral and social dimensions as separated phenomena.

However, future research should attempt to develop a quantitative methodology for measuring disarticulation over time and relating it to policy indicators. Such an approach would contribute to a better measurement of the intervening factors that mediate the effects of disarticulation on quality of life. Of course, this would require the development of a comprehensive indicator of disarticulation that would include the three dimensions discussed above. In

this vein, any composite measure should consider the ratio of labor productivity across economic sectors as an indicator of sectoral disarticulation. To assess disarticulation in the agricultural sector, labor productivity could be measured as the ratio between labor productivity in the manufacturing sector and labor productivity in the agricultural sector. It might also be useful to calculate the ratio between the agricultural sector and service sector.

At the same time, final destination of products should be incorporated to assess the location of demand for the commodities generated by each sector of the economy. A proxy for this variable could be the ratio between the total value of agricultural production and the value of agricultural production for export markets.

At the social level, any attempt to measure disarticulation should consider the demand side. A composite indicator minimally including total aggregated food consumption and a measurement of income distribution should be used. Finally, the index should include the political dimension. This would be probably the most difficult to measure and would have to be in the form of scores assigned to some variables such as marketing programs and price supports. The possibility of using an indicator of public expenditures in a specific sector could be

explored.

Finally, confronting disarticulation is a political issue. It has become commonplace to talk about growth, equity, and sustainability. While growth with equity has been incorporated into the development discourse, no real policy instruments have been devised to achieve it. The reason is not a lack of policymakers' imagination. Rather, it seems that in the name of political realism and pragmatism, policymakers are not willing to accept that the structural character of poverty will not change unless specific measures to reduce the disarticulated character of the Chilean economy are taken. Achieving social, economic, and environmental sustainability requires political determination to use foreign exchange generated by the export sector to strengthen the less advantaged sectors of the economy and to expand internal consumption. From this perspective, development and modernization of the agricultural sector cannot be based only on international markets but must also be based on internal demand, consolidating Chilean food security.

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Appendix 1a

Land Reform Results by year

Number of units expropriated, Total Hectares and Number of Beneficiaries (families), 1964-1973

Year	No of Units expropriated	Irrigated Land (Ha)	Total Land (Ha)	Beneficiaries Families
1965	99	41,260	541,183	3,606
1966	264	57,695	526,276	3,320
1967	217	50,585	285,026	2,851
1968	220	40,681	657,247	2,820
1969	315	54,557	870,208	4,815
1970	293	41,557	684,613	3,878
1971	1,378	177,481	2,555,506	15,596
1972	2,189	211,977	3,012,688	17,606
1973	834	49,401	833,121	5,312
Total	5,809	725,194	9,965,868	59,804

Source:Garrido et al. (1988, p.174) and Gómez (1986)

Appendix 1b

Relocation of Land After the Counter Reform

Final Destination of Expropriated Land
1973-1980

	No of Units	Total Hectares
Apportioned Land		
Cooperatives	265	1,087,144
Family Farm Units (UAF)	37,500	2,031,590
Arid Lands Societies	99	393,129
Residential	6,185	9,278
Total	44,049	3,521,141
Transferred Land		
Philanthropic Institutions	233	835,995
Land Reserves Auctioned	1,278	480,042
Arid Lands Units Auctioned	76	323,738
Total	1,587	1,639,775
Lands to be Assigned		
Family Farm Units (UAF)	35	30,104
Arid Lands Societies	65	284,614
Arid Lands to Auction	138	675,676
Expropriated Land to Auction	733	427,249
Philanthropic Institutions	31	132,377
Undecided	14	7,229
Total	1,016	1,557,249

Source: Gómez (1986, Pp.15-17)

Appendix 1c

Land Reform Beneficiaries and Land Sales

Land Sales and Land Reform Beneficiaries by Region
Number of Dispossessed Farmers and Total Hectares
(March 1983)

	Reformed Sector		Total Sales		Percentage	
	Number of Units	Land (Ha)	Number of Units	Land (Ha)	Number of Units	Land (Ha)
Region						
I	283	4,268	72	1,279	25.4	29.9
II	28	595	-	-	-	-
III	205	7,951	132	5,340	64.4	67.2
IV	2,967	527,890	887	167,033	29.9	31.7
V	4,216	186,312	1,898	35,396	45.0	19.0
M.R.	6,500	133,648	4,059	63,696	62.4	47.7
VI	7,600	132,182	3,896	54,139	51.3	40.9
VII	9,750	225,465	3,965	99,054	40.7	43.9
VIII	4,551	194,597	2,303	73,287	50.6	37.7
IX	3,819	211,993	1,083	55,753	28.4	26.3
X	2,990	236,168	1,379	80,523	46.1	34.1
XI	66	42,399	-	-	-	-
XII	372	1,218,705	53	274,927	14.2	22.6
Total	43,347	3,122,173	19,727	910,427	45.5	29.2

Source: Garrido et al. (1988, p.199)

Appendix 2a

Evolution of Agricultural Exports

Total Value (US$ 1988) of Agricultural Exports and Percentage Participation of Agricultural Exports in Total Exports, 1965-1988

Year	Total Exports (Million US$ Dic 1988)	Agricultural Exports	Percentage Participation (%)
1965	2,175.65	101.52	4.67
1966	2,697.63	97.40	3.61
1967	2,796.56	98.02	3.50
1968	2,803.17	133.19	4.75
1969	3,360.09	107.52	3.20
1970	3,081.40	125.01	4.06
1971	2,585.08	131.11	5.07
1972	2,150.76	94.65	4.40
1973	2,833.61	76.77	2.71
1974	4,109.96	149.12	3.63
1975	2,714.62	276.87	10.20
1976	3,482.28	269.37	7.74
1977	3,451.20	325.96	9.44
1978	3,641.59	349.66	9.60
1979	5,056.39	406.23	8.03
1980	5,318.39	448.46	8.43
1981	4,126.07	399.39	9.68
1982	3,789.67	382.90	10.10
1983	3,870.91	336.68	8.70
1984	3,603.63	433.75	12.04
1985	3,786.10	513.81	13.57
1986	4,306.11	722.44	16.78
1987	5,104.82	800.86	15.69
1988	6,442.50	926.70	14.38

Source: Elaborated by the author based on ODEPA 1976, 1988 and Banco Central 1989

Appendix 2b

Agricultural Trade Balance

Total Exports - Imports, and Agricultural Exports - Imports by Year (Millions US$ 1988)

Year	Total Exports	Agricultural Exports	Total Imports	Agricultural Imports
1965	2,175.65	101.52	1,909.04	411.16
1966	2,697.63	97.40	2,318.42	447.20
1967	2,796.56	98.02	2,212.75	422.39
1968	2,803.17	133.19	2,159.29	419.22
1969	3,360.09	107.52	2,600.85	470.51
1970	3,081.40	125.01	2,628.21	397.20
1971	2,585.08	131.11	3,131.54	584.61
1972	2,150.76	94.65	3,630.46	863.18
1973	2,833.61	76.77	3,819.18	1,378.76
1974	4,109.96	149.12	4,607.16	1,151.36
1975	2,714.62	276.87	2,340.51	892.34
1976	3,482.28	269.37	2,969.29	715.32
1977	3,451.20	325.96	3,804.15	684.79
1978	3,641.59	349.66	4,412.77	746.04
1979	5,056.39	406.23	5,476.30	666.88
1980	5,318.39	448.46	5,834.21	1,092.56
1981	4,126.07	399.39	6,644.95	799.84
1982	3,789.67	382.90	3,604.76	576.70
1983	3,870.91	336.68	2,779.43	515.52
1984	3,603.63	433.75	3,143.86	456.12
1985	3,786.10	513.81	2,716.20	247.99
1986	4,306.11	722.44	2,972.18	181.94
1987	5,104.82	800.86	3,795.47	216.82
1988	6,442.50	926.70	4,356.20	279.50

Source: Elaborated by the author based on ODEPA 1976, 1988 and Banco Central 1989

Appendix 2c

Evolution of Agricultural Exports by Sub-sector and Total Agricultural Exports, 1965-1988

Millions of US$ (1988)

Year	Fresh Fruit	Annual Crops	Livestock & assoc	Others*	Total
1965	30.03	14.45	24.38	32.67	101.52
1966	26.02	7.05	27.87	36.46	97.40
1967	22.96	9.32	23.92	41.81	98.02
1968	30.97	22.30	23.84	56.08	133.19
1969	28.94	11.17	29.02	38.39	107.52
1970	44.05	17.86	21.90	41.20	125.01
1971	45.11	29.63	13.97	42.40	131.11
1972	37.79	15.55	2.57	38.74	94.65
1973	34.73	8.90	5.22	27.91	76.77
1974	42.94	51.00	12.98	42.20	149.12
1975	76.91	96.73	32.85	70.38	276.87
1976	100.60	30.23	37.24	101.31	269.37
1977	111.49	77.65	40.84	95.97	325.96
1978	163.11	92.39	46.58	47.59	349.66
1979	187.39	92.41	58.12	68.32	406.23
1980	217.93	112.98	51.72	65.83	448.46
1981	230.32	93.11	38.23	37.73	399.39
1982	259.24	42.70	39.63	41.33	382.90
1983	241.17	41.64	29.83	24.03	336.68
1984	309.81	50.59	31.17	42.18	433.75
1985	380.68	63.81	30.66	38.65	513.81
1986	539.48	67.86	52.40	62.70	722.44
1987	598.90	58.69	65.35	77.92	800.86
1988	659.80	63.91	56.98	146.01	926.70

Source: Elaborated by the author based on ODEPA (1976, 1988 and Banco Central (1989)

* Includes (Fresh vegetables, agricultural subproducts and residues.

Appendix 2d

Evolution of Agricultural Imports by Sub-sector and Total Agricultural Imports, 1965-1988

Millions of US$ (1988)

	Annual Crops	Fresh Fruits	Livestock & Dairy	Others*	Total
1965	156.12	13.46	158.95	82.63	411,16
1966	187.32	14.78	176.05	69.10	447,20
1967	157.41	21.77	188.77	54.44	422,39
1968	156.29	27.75	154.58	80.61	419,22
1969	245.78	32.62	135.26	56.85	470,51
1970	165.72	22.64	150.99	57.85	397,20
1971	211.11	22.32	211.82	139.35	584,61
1972	179.47	24.53	321.04	338.14	863,18
1973	386.24	12.50	145.30	834.71	1.378,76
1974	748.04	14.17	241.54	147.61	1.151,36
1975	365.46	15.69	18.73	492.46	892,34
1976	593.90	13.56	29.73	78.12	715,32
1977	203.79	18.83	77.90	384.28	684,79
1978	392.23	20.36	77.89	255.56	746,04
1979	396.01	39.11	82.08	149.67	666,88
1980	773.70	27.40	93.22	198.23	1.092,56
1981	480.05	34.56	99.57	185.65	799,84
1982	375.83	22.68	72.74	105.45	576,70
1983	350.86	12.41	55.81	96.43	515,52
1984	272.08	11.33	53.70	119.01	456,12
1985	126.55	9.61	18.42	93.41	247,99
1986	51.26	11.83	8.87	109.27	181,94
1987	55.01	13.51	36.82	111.48	216,82
1988	83.76	15.60	23.56	156.58	279,50

Source: Elaborated by the author based on ODEPA (1976, 1988); and Banco Central (1989).

* Includes fresh vegetables, alcohols, cotton, coffee, cacao, tea, and other fresh and processed tropical products

Appendix 3a (continued next page)

Evolution of Annual Crops Production

Annual Crop Production by Year, National Level
(Metric Tons.)

Crop	1965	1966	1967	1968	1969	1970	1971	1972
Rice	80,386	76,700	84,150	93,488	36,719	73,234	67,063	86,284
Oats	82,233	107,358	115,210	162,873	95,224	110,572	111,984	111,255
Barley	73,996	88,039	117,540	157,155	80,119	97,401	113,648	138,990
Corn	259,871	285,327	362,22	320,810	153,792	239,052	258,326	282,990
Wheat	1,115,834	1,346,410	1,203,450	1,219,733	1,214,206	1,306,910	1,367,974	1,195,135
Sweet peas	5,275	10,919	8,900	11,520	6,744	7,414	8,512	10,667
Beans	58,896	68,799	89,760	65,055	46,750	65,584	72,178	82,901
Chick peas	5,074	4,309	8,000	7,650	3,478	5,403	7,166	9,329
Lentils	9,330	4,598	3,940	4,004	7,813	11,157	11,968	10,707
Potatoes	703,266	802,999	716,550	725,156	602,494	683,804	835,827	733,051
Sugarbeet	709,647	767,613	1,047,926	1,193,713	1,237,566	1,466,130	1,248,418	1,056,908

	1973	1974	1975	1976	1977	1978	1979	1980
Rice	54,953	34,351	76,379	97,645	120,005	104,792	181,174	95,441
Oats	109,073	149,899	131,054	95,912	123,677	92,634	150,210	172,587
Barley	107,449	149,599	120,560	88,982	143,076	125,521	112,082	104,982
Corn	294,016	366,299	328,987	247,945	355,316	256,875	489,270	405,185
Wheat	746,864	733,824	1,003,070	866,468	1,219,320	892,601	995,119	965,983
Sweet peas	8,842	12,500	6,324	7,119	13,709	15,650	14,578	13,593
Beans	64,970	74,835	74,052	70,319	112,381	112,060	116,287	84,237
Chick peas	4,112	4,997	4,932	2,743	4,992	5,466	9,377	11,595
Lentils	9,750	12,783	12,062	13,540	23,765	18,963	31,688	26,842
Potatoes	623,583	1,011,987	737,926	538,917	928,388	980,710	770,458	903,100
Sugarbeet	592,434	833,231	1,481,021	2,013,022	2,159,473	880,468	661,538	452,133

Appendix 3a (continued)

	1981	1982	1983	1984	1985	1986	1987	1988
Rice	99,735	131,181	115,555	165,011	156,649	126,667	147,033	162,251
Oats	130,656	117,623	146,328	163,036	170,361	124,354	127,541	156,934
Barley	91,367	117,849	73,243	73,513	84,960	68,077	48,331	81,619
Corn	518,142	484,049	511,547	721,389	771,776	721,289	617,226	660,855
Wheat	685,953	650,452	585,946	988,283	1,164,691	1,625,809	1,874,117	1,734,199
Sweet peas	10,956	7,409	5,698	6,264	6,325	4,753	5,238	4,842
Beans	138,239	162,461	84,391	94,109	100,671	89,218	81,169	99,774
Chick peas	6,428	4,086	3,230	6,942	9,207	8,906	14,836	7,590
Lentils	17,693	15,819	13,842	16,016	24,674	29,026	24,742	20,100
Potatoes	1,007,234	841,553	683,632	1,036,153	908,645	791,122	726,934	928,117
Sugarbeet	1,795,605	1,080,818	1,379,938	1,842,952	1,784,514	2,216,232	2,649,508	2,487,293

Source: Elaborated by the author based on ODEPA 1976, 1988

Appendix 3b

Annual Crops Yields, National Average (qq/Ha)

Crop	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
Wheat	15.3	17.3	16.7	17.4	16.3	17.7	18.8	16.8	14.0	12.4	14.6	12.4
Oats	11.7	16.2	16.9	15.0	11.8	15.2	14.9	13.3	14.4	15.5	13.9	12.1
Barley	19.3	22.7	23.3	51.1	18.1	20.6	21.6	20.7	16.8	18.7	18.2	15.4
Ray	11.9	16.1	13.0	11.4	12.1	12.9	13.8	13.5	13.5	13.8	12.7	9.7
Maize	29.7	35.4	39.3	36.2	26.3	32.4	33.5	33.5	34.0	34.1	35.9	25.8
Rice	29.2	20.8	25.5	28.8	22.7	29.0	24.6	33.6	29.6	26.1	33.4	34.2
Beans	10.1	10.6	13.1	12.2	9.9	11.5	10.3	10.4	9.6	10.1	10.9	8.6
Lentils	3.9	4.4	5.8	5.4	5.7	6.5	6.6	5.9	6.1	6.5	5.9	6.0
Chick Peas	6.1	5.0	8.6	4.7	4.0	4.8	4.5	4.6	2.7	3.6	6.3	3.9
Sweet Peas	7.3	10.2	10.5	6.8	6.2	6.9	8.4	8.1	7.5	8.1	7.3	8.4
Peas												
Potatoes	77.2	105.3	92.9	90.6	79.0	95.4	104	92.6	93.5	108.5	103.2	78.7
Sunflower	13.6	12.8	14.3	14.3	11	13.4	12.8	13	10.9	11.9	13.4	12.5
Rapeseed	11.4	11.4	12.3	11.7	12	11.9	15.2	12.7	11.9	12.7	13.5	17.6
Sugar Beet	385.6	364.8	365.6	387.8	452.8	359.6	347.1	318.4	247.9	317.2	363.7	330.4
Lupine												
Tobacco	21.8	21.4	20	20.2	20.7	21.2	21.1	18.2	16.1	19	18.8	20.6

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Wheat	19.4	15.4	17.8	17.7	15.9	17.4	16.3	21.0	23.0	28.6	27.7	30.1
Oats	16.5	12.4	19.1	18.7	16.3	17.2	17.2	16.9	20.1	19.5	23.0	25.8
Barley	22.7	19.7	18.8	21.6	19.9	20.5	19.2	22.2	24.2	30.0	29.5	33.9
Ray	14.4	9.6	12.2	12.6	10.5	11.0	9.1	12.9	22.8	18.4	20.2	21.5
Maize	30.7	27.5	37.5	34.9	41.3	45.2	43.4	52.1	59.1	68.9	71.2	73.2
Rice	33.8	32.1	38.5	23.4	31.8	35.5	38.0	41.4	40.7	39.6	39.5	41.7
Beans	11.5	10.0	10.6	7.6	11.7	13.4	9.8	11.1	12.1	9.9	9.5	13.2
Lentils	7.7	6.0	6.3	5.1	3.7	4.1	6.0	6.7	6.8	7.8	5.3	6.1
Chick Peas	6.0	5.0	5.6	5.6	4.0	4.0	4.1	5.8	8.1	7.1	10.0	5.4
Sweet Peas	8.8	9.1	8.8	7.5	6.2	6.1	5.9	6.5	9.8	5.9	8.6	7.8
Peas									6.2	6.5	6.5	6.5
Potatoes	108.1	108.0	95.2	101.7	112.0	108.7	101.8	127.3	144.5	150.3	126.0	149.8
Sunflower	14.8	14.4	15.4	11.8	14.5	15.8	16.0	15.1	16.3	18.1	21.0	19.5
Rapeseed	15.4	15.1	12	14.6	11.3	12.8	10.8	9.7	16.7	17.0	20.3	21.2
Sugar Beet	393.9	410.8	406.4	408.8	488.6	492.4	408.1	493.2	534.3	616.0	538.3	578.6
Lupine									20.2	13.0	18.6	19.2
Tobacco	22.1	22.6	25.2	24.2	26.2	28.9	31.0	32.5	31.4	33.4	33.8	32.4

Source: Elaborated by the author based on ODEPA 1976, 1988

Appendix 3c

Evolution of Hectares for Annual Crop Production and Fruit Production

Year	Annual Crops (Ha)	(%)	Commercial Orchards (Ha)	(%)	Total Cultivated Land
1965	1,247,780	95.93	52,920	4.07	1,300,700
1966	1,294,450	95.96	54,500	4.04	1,348,950
1967	1,226,660	95.63	56,080	4.37	1,282,740
1968	1,262,520	95.63	57,660	4.37	1,320,180
1969	1,197,346	95.29	59,240	4.71	1,256,586
1970	1,239,890	95.32	60,820	4.68	1,300,710
1971	1,253,100	95.26	62,400	4.74	1,315,500
1972	1,283,390	95.25	63,980	4.75	1,347,370
1973	1,016,940	93.95	65,530	6.05	1,082,470
1974	1,158,785	94.64	65,670	5.36	1,224,455
1975	1,237,415	94.80	67,935	5.20	1,305,350
1976	1,290,737	94.84	70,200	5.16	1,360,937
1977	1,269,743	94.54	73,350	5.46	1,343,093
1978	1,177,552	93.90	76,500	6.10	1,254,052
1979	1,233,738	93.84	80,950	6.16	1,314,688
1980	1,218,842	93.45	85,400	6.55	1,304,242
1981	1,061,220	91.89	93,650	8.11	1,154,870
1982	932,780	90.15	101,900	9.85	1,034,680
1983	861,357	88.85	108,080	11.15	969,437
1984	1,040,987	89.92	116,680	10.08	1,157,667
1985	1,075,285	89.45	126,850	10.55	1,202,135
1986	1,128,075	89.12	137,700	10.88	1,265,775
1987	1,201,729	88.90	150,100	11.10	1,351,829
1988	1,110,161	87.12	164,200	12.88	1,274,361

Source: Elaborated by the author based on ODEPA 1976, 1988

Appendix 4a

Evolution of Gross Domestic Product and Agricultural Product by Region, Nationwide and Year

(continued next page)

Gross Domestic Product (GDP), Regional Product and Agricultural product
(Millions of Chilean pesos 1977)

Year	GDP	National Agric. Product	Regional Product VI	Regional Ag. Prod. VI	Regional Product IX	Regional Ag. Prod. IX
1965	224,990	19,302				
1966	250,079	23,386				
1967	258,198	24,091				
1968	267,442	25,223				
1969	277,393	22,313				
1970	283,097	23,113	13,291	2,766	8,197	2,975
1971	308,449	22,693	14,049	2,747	9,011	3,001
1972	304,707	21,017	14,814	2,620	8,999	2,727
1973	287,750	18,856	13,753	2,246	8,220	2,363
1974	290,554	23,893	16,921	2,787	8,975	3,035
1975	253,043	25,050	15,433	2,979	8,867	3,189
1976	261,945	24,314	14,912	2,907	9,012	3,069
1977	287,770	26,837	15,997	3,266	9,748	3,492
1978	311,417	25,529	16,550	3,370	9,573	3,051
1979	337,207	26,966	18,392	3,640	10,028	3,419
1980	363,446	27,927	19,011	3,789	10,852	3,674

Appendix 4a (continued)

Year	GDP	National Agric. Product	Regional Product VI	Regional Ag. Prod. VI	Regional Product IX	Regional Ag. Prod. IX
1981	383,551	28,683	20,033	4,101	10,900	3,180
1982	329,523	28,084	20,584	4,575	9,879	2,834
1983	327,180	27,062	18,887	4,031	10,347	2,872
1984	347,926	28,988	19,756	4,361	11,056	2,905
1985	356,447	30,612	21,246	4,594	11,576	3,141
1986	376,627	33,275	22,110	5,176	11,977	3,555
1987	398,230	34,781				
1988	425,207	36,405				

Source: Elaborated by the author based on ODEPA (1976, 1988), and Banco Central (1989)

Appendix 4b

Accumulated (1965 = 100), Annual Gross Domestic Product and Agricultural Product Growth Rates, 1966-1988.

	Gross Domestic Product		Agricultural Product	
	Accumulated Rate	Annual Rate	Accumulated Rate	Annual Rate
Year				
1966	111.2	11.2	121.2	21.2
1967	114.8	3.2	124.8	3.0
1968	118.9	3.6	130.7	4.7
1969	123.3	3.7	115.6	-11.5
1970	126.2	2.4	119.7	3.6
1971	137.1	8.6	117.6	-1.8
1972	135.4	-1.2	108.9	-7.4
1973	127.9	-5.6	97.7	-10.3
1974	129.1	1.0	123.8	26.7
1975	112.5	-12.9	129.8	4.8
1976	116.4	3.5	126.0	-2.9
1977	127.9	9.9	139.0	10.4
1978	138.4	8.2	132.3	-4.9
1979	149.9	8.3	139.7	5.6
1980	161.5	7.8	144.7	3.6
1981	170.5	5.5	148.6	2.7
1982	146.5	-14.1	145.5	-2.1
1983	145.4	-0.7	140.2	-3.6
1984	154.6	6.3	150.2	7.1
1985	158.4	2.4	158.6	5.6
1986	167.4	5.7	172.4	8.7
1987	177.0	5.7	180.2	4.5
1988	189.0	6.8	188.6	4.7

Source: Elaborated by the Author based on Banco Central (1989).

Appendix 4c

Regional Products and Regional Agricultural Products

IV Region

Year	Regional Product	% of GDP	Growth Rate	Agricultural Product	Growth Rate	% of Regional Product	% of National Ag. Product
1970	13,291	4.7		2,766		20.8	12.0
1971	14,049	4.6	5.7	2,747	-0.7	19.5	12.1
1972	14,814	4.9	5.5	2,620	-4.6	17.7	12.5
1973	13,753	4.8	-7.2	2,246	-14.3	16.3	11.9
1974	16,921	5.8	23.0	2,787	24.1	16.5	11.7
1975	15,433	6.1	-8.8	2,979	6.9	19.3	11.9
1976	14,912	5.7	-3.4	2,907	-2.4	19.5	11.9
1977	15,997	5.6	7.3	3,266	12.4	20.4	12.1
1978	16,550	5.3	3.5	3,370	3.2	20.4	13.2
1979	18,392	5.5	11.1	3,640	8.0	19.8	13.5
1980	19,011	5.3	3.4	3,789	4.1	19.9	13.6
1981	20,033	5.2	5.4	4,101	8.2	20.5	14.3
1982	20,584	6.3	2.8	4,575	11.6	22.3	16.3
1983	18,887	5.7	-8.2	4,031	-11.9	21.3	14.9
1984	19,756	5.7	4.6	4,361	8.2	22.1	15.0
1985	21,246	5.9	7.5	4,594	5.3	21.6	15.0
1986	22,110	5.9	4.1	5,176	12.7	23.4	15.6

Source: Elaborated by the Author based on Banco Central (1989).

Appendix 4d

Regional Products and Regional Agricultural Products

IX Region

Year	Regional Product	% of GDP	Growth Rate	Agricultural Product	Growth Rate	% of Regional Product	% of National Ag. Product
1970	8,197	2.9		2,975		36.3	12.9
1971	9,011	2.9	9.9	3,001	0.9	33.3	13.2
1972	8,999	2.9	-0.1	2,727	-9.1	30.3	13.0
1973	8,220	2.9	-8.7	2,363	-13.4	28.8	12.5
1974	8,975	3.0	9.2	3,035	28.4	33.8	12.7
1975	8,867	3.5	-1.2	3,189	5.0	35.9	12.7
1976	9,012	3.4	1.6	3,069	-3.8	34.1	12.6
1977	9,748	3.4	8.2	3,492	13.8	35.8	13.0
1978	9,573	3.0	-1.8	3,051	-12.6	31.9	11.9
1979	10,028	3.0	4.8	3,419	12.1	34.1	12.7
1980	10,852	3.0	8.2	3,674	7.5	33.9	13.2
1981	10,900	2.9	0.4	3,180	-13.5	29.2	11.1
1982	9,879	3.0	-9.4	2,834	-10.9	28.7	10.1
1983	10,347	3.2	4.7	2,872	1.4	27.8	10.6
1984	11,056	3.2	6.9	2,905	1.2	26.3	10.0
1985	11,576	3.3	4.7	3,141	8.1	27.1	10.3
1986	11,977	3.2	3.5	3,555	13.2	29.7	10.7

Source: Elaborated by the Author based on Banco Central (1989).

Appendix 5

Employment, Wages and Income Distribution

Wage Index, Gini Coefficient and Unemployment Rates
National and Regional Level, 1965-1989

Year	Real Wages Index (1970 = 100)	Gini Coefficient	National Unemployment Rate	Regional Unemploy VI	Regional Unemploy IX
1965	63.8	51	6.4	6.2	5.2
1966	71.5	51	6.1	5.8	5.0
1967	82.5	50	4.7	4.2	3.9
1968	83.2	50	4.9	4.4	4.0
1969	90.6	51	5.5	5.1	4.5
1970	100	50	5.7	5.4	4.7
1971	125.3	47	3.8	3.2	3.2
1972	126.6	45	3.1	2.3	2.7
1973	94.5	45	4.8	4.3	4.0
1974	64.1	45	9.2	9.5	7.4
1975	62.1	47	14.5	15.7	11.5
1976	65.4	54	12.9	16.4	11.5
1977	70.7	53	11.8	10.0	9.4
1978	75.1	52	14.1	15.2	13.0
1979	81.4	52	13.6	17.4	10.0
1980	88.5	53	10.4	12.0	9.2
1981	96.4	52	11.2	13.4	9.5
1982	96.1	54	19.4	21.3	14.6
1983	85.8	54	15.1	18.5	13.4
1984	85.9	55	15.5	14.3	11.7
1985	82.2	55	12.2	8.8	7.1
1986	83.8	54	8.8	7.1	7.1
1987	83.6	54	7.9	6.6	6.3
1988	89.1	53	6.3	5.7	4.6
1989	90.8	52	5.3	6.3	3.7

Source: Elaborated by the Author based on Banco Central (1989).

Appendix 6

Nominal Import Tariff for Competing Industries (Average Percentages for each sector)

Year	Agricul-ture	Food proce-ssing	Textiles	Chemical industries	Non metallic and basic metals	Machinery and equipment
1965	25	57	146	51	45	127
1966	16	40	109	37	31	113
1967	1	33	99	33	25	123
1968	-2	33	99	33	25	123
1969	-3	17	50	17	13	62
1970	19	17	50	17	13	62
1971	4	24	74	24	19	91
1972	-11	48	144	48	37	179
1973	-23	78	237	78	60	293
1974	-8	83	141	18	60	150
1975	10	56	84	18	42	99
1976	8	30	47	16	32	60
1977	18	18	31	3	20	36
1978	16	12	18	0	13	19
1979	24	10	11	21	10	11
1980	13	10	10	12	10	10
1981	3	10	10	10	10	10
1982	4	10	10	6	10	10
1983	7	18	18	15	18	18
1984	35	25	25	21	25	

Source: Hurtado et al. (1990, vol II, p.79)

Appendix 7

Use of Fertilizers, 1965-1988

Metric Tons of Nitrogen (N), Phosphorus (P2O5), and Potassium (K2O)

Year	N	P2O5	K2O	Total
1965	31,638	41,982	13,666	87,286
1966	36,289	57,139	18,168	111,596
1967	36,766	50,713	10,952	98,431
1968	30,307	61,757	7,352	99,416
1969	34,213	64,913	7,147	106,273
1970	38,496	77,024	13,967	129,487
1971	45,102	67,945	15,158	128,205
1972	52,527	56,932	17,120	126,579
1973	59,301	97,312	14,667	171,280
1974	52,080	90,640	16,065	158,785
1975	36,693	45,801	8,065	90,559
1976	48,545	55,224	14,022	117,791
1977	37,105	55,523	9,104	101,732
1978	49,336	64,608	12,945	126,889
1979	56,722	70,908	12,582	140,212
1980	50,836	68,808	13,092	132,736
1981	47,733	54,605	12,037	114,375
1982	48,056	47,268	11,450	106,774
1983	64,871	60,924	11,303	137,098
1984	86,290	79,957	13,810	180,057
1985	104,465	85,959	14,228	204,652
1986	135,978	108,768	16,820	261,566
1987	156,820	122,345	17,130	296,295
1988	178,416	135,264	18,560	332,240

Source: Elaborated by the author based on ODEPA (1976, 1988)

Appendix 8

Sectoral Export Growth Rates, 1965-1988

Sectoral Export Growth Rates by Year (base 1977=100)

Year	Mining	Agric.	Indus.	Total
1965	-3.3	-2.6	0.0	-2.0
1966	6.8	-15.8	-3.3	4.1
1967	6.3	12.5	-20.7	2.0
1968	-1.5	16.7	43.5	3.8
1969	0.0	-2.4	0.0	1.9
1970	-1.5	4.9	18.2	1.8
1971	3.1	4.7	-7.7	1.8
1972	-10.4	-55.6	-30.6	-17.5
1973	8.3	5.0	-12.0	6.4
1974	43.1	81.0	77.3	48.0
1975	-15.1	47.4	53.8	2.7
1976	19.0	35.7	51.7	27.8
1977	6.4	31.6	9.9	8.7
1978	3.0	27.0	12.0	7.0
1979	-3.9	23.6	38.4	11.2
1980	12.1	0.0	2.6	7.6
1981	0.0	2.5	-20.1	-7.0
1982	10.8	17.4	20.5	14.3
1983	2.4	10.6	-3.9	0.7
1984	2.4	13.4	8.8	5.8
1985	8.5	25.3	12.5	11.7
1986	0.4	16.0	21.5	7.8
1987	-0.2	16.5	11.2	5.5
1988	-8.8	19.4	17.8	1.7

Source: Ossa (1988, p.47) and Banco Central 1992

Appendix 9

Percentual Allocation of Public Expenditures in Agriculture by Agency

Year	MINISTRY	ODEPA	INDAP	SAG	CONAF	ECA	CORA	OTROS*	TOTAL
1965	0.4	0.4	30.4	9.7		7.7	17.0	34.4	100.0
1966	1.3	0.1	25.2	7.4		11.4	25.4	29.1	100.0
1967	1.3	0.2	25.8	10.7		7.5	35.9	18.6	100.0
1968	2.9	0.3	20.0	8.5		21.8	32.6	13.9	100.0
1969	2.5	0.4	17.8	9.6		16.8	41.7	11.3	100.0
1970	1.5	0.4	15.8	11.8		13.3	45.3	11.9	100.0
1971	3.1	0.4	17.0	12.3	1.3	15.0	39.9	11.0	100.0
1972	2.7	0.4	18.0	9.4	4.1	14.0	38.3	13.1	100.0
1973	0.3	0.2	9.5	3.5	3.1	66.4	10.1	7.0	100.0
1974	1.6	0.9	19.5	12.5	12.8		19.9	32.8	100.0
1975	0.1	0.2	3.6	3.3	3.1	80.9	3.8	5.0	100.0
1976	0.1	0.2	4.0	2.2	2.5	82.9	4.2	3.8	100.0
1977	0.4	0.9	9.6	5.4	5.9	53.2	16.6	8.2	100.0
1978	2.0	1.0	17.7	7.5	10.6	25.0	20.0	16.2	100.0
1979	1.2	0.8	21.1	6.7	9.5	25.9	17.4	17.5	100.0
1980	2.4	7.3	26.0	5.7	16.8	30.2		11.6	100.0
1981	2.3	4.6	25.0	7.8	8.4	51.9			100.0
1982	2.5	7.6	53.2	22.6	14.0				100.0
1983	2.1	6.3	52.9	17.0	21.6				100.0
1984	1.4	6.2	57.3	15.9	19.1				100.0
1985	2.4	4.9	61.9	16.5	14.4				100.0
1986	1.6	7.0	65.0	13.2	13.2				100.0
1987	1.7	8.6	60.4	14.6	14.7				100.0
1988	2.1	8.3	59.3	15.2	15.2				100.0

Source: Elaborated by the author based on ODEPA (1976, 1988); Banco Central 1989)

* Includes ICIRA, IDI, IER, ODENA

Appendix 10

Price Structure used to Compute the Value of Agricultural production by Sectors (in Pesos $ 1987/metric Ton.)

Annual Crops	$/Ton	Fruits	$/Ton
Rice	33,729	Almonds	1,316,000
Oats	27,125	Cherries	174,000
Barley	32,712	Plums	55,800
Corn	25,462	Peaches	53,800
Wheat	36,254	Apricot	48,620
Sweet peas	89,381	Nectarines	80,650
Beans	178,333	Lemons	32,440
Chick peas	87,292	Apples	33,210
Lentils	124,458	Oranges	29,200
Tobacco	125,637	Nuts	428,000
Potatoes	35,467	Kiwis	568,000
Sugar beet	10,334	Avocados	68,800
Sunflower	54,596	Pears	47,130
Rapeseed	52,375	Grapes (table)	121,000

Animal Products	$/TON
Eggs (1)	7,558
Poultry	220,000
Milk (2)	58,555
Cattle	337,500
Hogs	248,125
Lambs	264,861
Wool	384,115

(1) 1.000 Units
(2) 1.000 Liters

Source: Elaborated by the author based on ODEPA (1976, 1988). See appendix 10.

Appendix 11a

Value of Agricultural Production by sectors
(Millions of 1988 pesos)

Campesino Sector

Year	Annual Crops	Livestock Dairy & Poultry	Fruits	Total Peasant Sector
1965	32,244,516	34,809,475	3,068,368	70,122,359
1966	35,946,594	36,476,596	3,139,795	75,562,985
1967	35,932,857	38,003,782	3,253,925	77,190,563
1968	35,932,290	39,302,984	3,469,470	78,704,744
1969	31,845,155	39,430,625	3,773,724	75,049,504
1970	35,780,228	40,012,564	4,003,053	79,795,845
1971	37,353,143	39,203,582	4,154,970	80,711,695
1972	35,724,063	36,415,633	4,370,808	76,510,504
1973	27,962,228	33,885,651	4,710,097	66,557,976
1974	33,214,487	39,931,350	5,367,239	78,513,076
1975	34,856,339	41,131,053	5,508,174	81,495,567
1976	31,713,146	42,815,190	5,538,500	80,066,835
1977	44,427,634	40,761,202	5,780,689	90,969,525
1978	38,562,738	38,596,682	6,155,297	83,314,716
1979	36,796,194	38,684,943	6,515,272	81,996,409
1980	35,076,848	38,772,744	7,022,780	80,872,372
1981	41,379,415	44,235,499	8,529,343	94,144,256
1982	36,881,940	42,997,700	10,194,068	90,073,708
1983	36,347,664	42,055,848	7,724,240	86,127,753
1984	39,838,554	43,749,919	8,845,433	92,433,907
1985	41,387,947	45,110,331	10,888,003	97,386,282
1986	43,433,655	47,548,799	12,050,723	103,033,177
1987	43,395,769	46,255,967	13,656,267	103,308,002
1988	45,532,508	47,750,163	14,014,584	108,897,255

Source: Elaborated by the author based on ODEPA (1976, 1988) and appendices 3a, 3b, 3c and 10

Appendix 11b

Value of Agricultural Production by sectors (Millions of 1988 pesos)

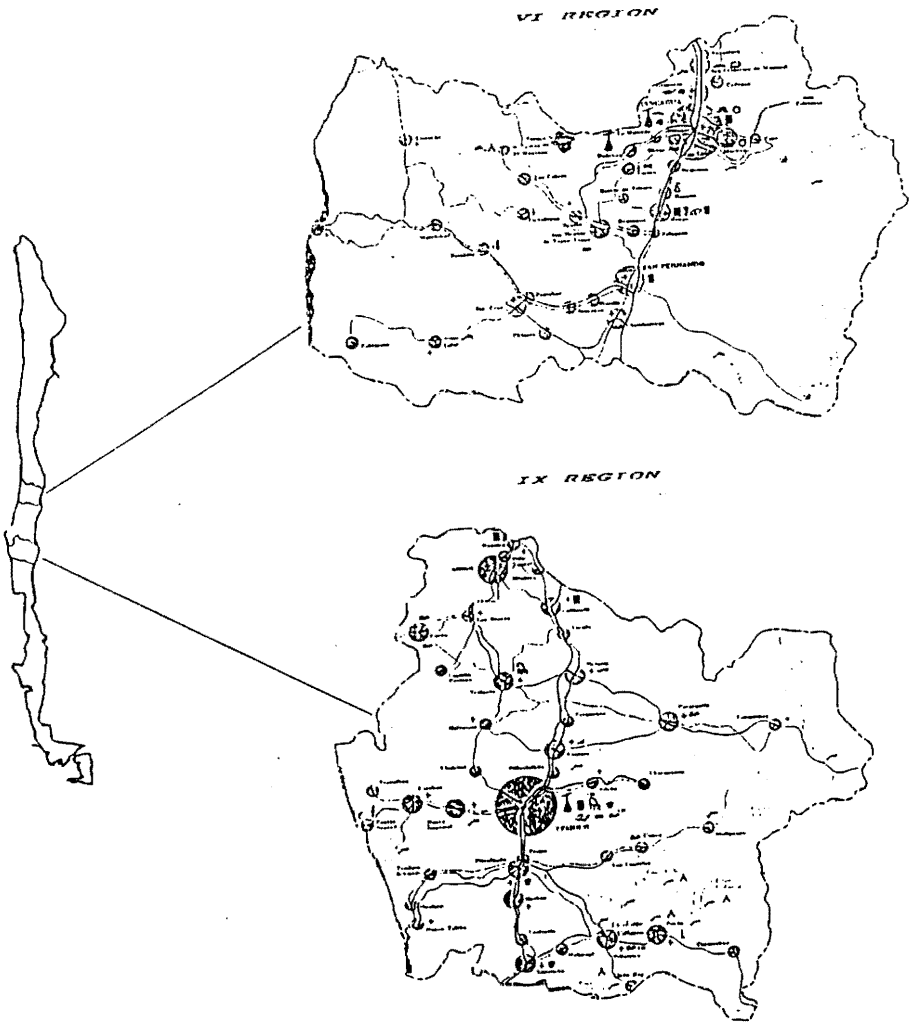
Non-campesino Sector

Year	Annual Crops	Livestock Dairy & Poultry	Fruits	Total Commercial Sector
1965	73,401,166	94,085,880	11,200,014	178,687,061
1966	86,384,072	101,440,510	11,460,761	199,285,344
1967	86,332,567	108,701,484	11,877,404	206,911,454
1968	86,330,443	115,351,921	12,664,280	214,346,643
1969	72,096,822	116,032,059	13,775,022	201,903,904
1970	85,762,168	119,199,803	14,612,250	219,574,220
1971	91,810,057	114,825,762	15,166,872	221,802,691
1972	85,553,113	101,161,699	15,954,867	202,669,679
1973	60,215,165	90,231,017	17,193,593	167,639,775
1974	76,641,528	118,750,924	19,592,863	214,985,315
1975	82,379,335	125,627,831	20,107,446	228,114,611
1976	77,763,506	117,823,534	20,217,125	215,804,165
1977	107,070,739	113,474,359	21,105,119	241,650,218
1978	84,171,579	115,802,834	22,476,160	222,450,573
1979	92,700,730	122,153,635	23,761,580	238,615,946
1980	85,481,741	135,325,188	25,646,382	246,453,312
1981	91,808,650	151,120,375	31,166,768	274,095,792
1982	85,168,464	144,430,081	37,195,916	266,794,461
1983	88,451,203	131,350,297	27,848,532	247,650,031
1984	96,845,658	150,997,061	33,466,983	281,309,702
1985	91,533,039	166,043,368	36,702,068	294,278,475
1986	101,275,637	176,799,973	45,000,137	323,075,747
1987	106,778,121	187,690,967	51,975,096	346,444,183
1988	109,269,598	205,654,769	66,760,776	381,085,142

Source: Elaborated by the author based on ODEPA (1976, 1988) and appendices 3a, 3b, 3c and 10

Appendix 12

Geographic Location of the VI and IX Regions



Appendix 13a (continued next page)

Land Used for Annual Crops Production VI region (Ha)

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Wheat	61,097	71,290	65,670	66,190	75,160	74,610	72,670	71,480	32,400	42,300	67,100	68,720	45,780
Oats	295	530	550	980	890	950	990	2,050	410	1,360	1,090	30	230
Barley	6,145	6,570	8,560	12,260	8,660	5,270	6,240	6,720	5,560	5,670	7,160	5,560	5,440
Ray				10		50	10		50	30	10		190
Maize	23,845	21,490	24,550	27,410	12,390	22,080	25,710	31,990	37,320	38,110	34,940	35,970	42,790
Rice	5,473	7,350	6,580	8,520	1,290	5,560	5,130	7,530	6,770	1,730	4,550	8,010	8,740
Beans	14,193	14,410	15,220	13,940	7,340	14,230	16,600	19,380	13,250	11,030	10,620	15,740	18,000
Lentils	300	170	110	110	350	730	730	800	880	970	610	180	190
Chick Peas	1,409	1,010	1,080	1,520	730	1,000	1,780	2,290	1,250	1,120	950	1,380	1,540
Sweet Peas	192	360	290	740	310	370	280	740	260	550	290	170	310
Peas													
Potato	9,196	6,880	6,960	7,720	4,760	3,900	5,400	6,000	3,750	5,590	4,570	3,750	4,670
Sunflower	7,872	10,240	5,330	6,710	4,830	3,490	2,590	3,630	2,720	1,190	2,850	4,110	2,350
Rapeseed	241	170	70	50	110	220	340	380	230	30	30	19	0
Sugar Beet	16	310	710	940	400	370	310	550	930	1,610	3,540	4,240	2,200
Lupine													
Tobacco													
Total Ha.	130,274	140,780	135,680	147,100	117,220	132,830	138,780	153,540	105,780	111,290	138,310	147,879	132,430

Appendix 13a (continued)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Wheat	50,410	50,530	39,710	27,700	28,110	27,180	37,410	44,560	55,830	69,850	62,610	47,490	55,490
Oats	690	270	640	80	390	330	890	410	440	530	410	390	180
Barley	4,010	2,720	1,000	870	1,120	1,190	1,760	1,330	1,660	900	900	570	910
Ray		60	20		10	10	10						
Maize	33,330	40,520	45,090	55,080	52,330	49,850	63,990	60,290	57,970	50,240	48,510	69,420	61,130
Rice	9,490	13,920	11,630	8,290	10,350	7,300	7,650	5,230	2,470	5,730	6,960	6,880	5,650
Beans	23,220	19,040	18,540	19,990	21,720	12,130	8,270	9,450	8,620	10,240	8,900	5,920	5,300
Lentils	40	110	220	230	280	190	430	1,280	1,490	880	850	140	204
Chick Pea	1,340	2,610	3,810	4,550	4,000	2,720	4,920	4,090	4,780	5,650	5,170	2,780	3,220
Sweet Pea	290	470	540	390	140	310	670	670	630	450	260	890	410
Peas								1,120	1,320	970	1,500	690	520
Potato	3,830	2,380	2,850	2,550	3,620	2,370	3,010	3,930	2,310	2,490	4,240	3,380	2,240
Sunflower	5,630	2,120	6,730	770	220	100	1,280	1,780	5,200	4,650	4,360	2,090	2,380
Rapeseed	60												
Sugar Beet	800	550	154	2,020	1,550	2,280	3,256	2,829	3,809	4,065	3,047	3,713	3,010
Lupine													
Tobacco		1,424	1,486	1,383	1,334	1,298	1,244	1,214	1,342	1,519	1,501	1,629	
Total Ha.	133,140	135,300	132,358	124,006	125,223	107,294	134,844	138,213	147,743	157,987	149,236	145,854	142,489

Source: Elaborated by the author based on ODEPA (1976, 1988)

Appendix 13b (continued next page)

Evolution of Annual Crops Production VI region

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Wheat	130,371	165,205	147,663	154,058	169,112	168,660	161,320	145,849	34,996	77,163	104,250	89,233	105,196
Oats	562	1,010	1,083	1,733	1,042	1,318	1,177	2,473	678	1,742	1,722	46	264
Barley	14,868	18,048	24,096	32,103	17,606	14,183	16,022	16,735	14,585	14,717	15,728	8,391	11,754
Ray				12		52	100		19	23	23		217
Maize	90,670	99,465	126,270	126,018	44,362	99,978	127,428	164,612	188,993	187,095	155,696	121,940	174,730
Rice	20,738	21,622	23,722	35,837	3,927	22,869	14,983	27,650	25,025	6,690	18,283	34,696	32,991
Beans	20,443	20,515	26,766	21,501	8,308	21,279	19,646	28,360	19,069	16,955	16,101	20,745	26,750
Lentils	119	61	52	67	101	314	305	464	449	562	365	117	99
Chick Peas	918	552	1,024	899	890	911	1,264	1,746	613	840	912	635	1,201
Sweet Pea	127	439	357	652	217	255	328	851	294	483	241	93	297
Peas													
Potato	110,704	108,164	96,519	94,538	52,487	46,198	72,782	72,784	35,155	77,320	50,028	30,042	54,454
Sunflower	12,511	14,629	8,371	10,349	5,759	5,898	3,676	5,183	3,198	2,155	4,448	6,156	3,166
Rapeseed	398	302	129	105	71	298	435	496	238	30	300	279	
Sugar Beet	5,600	10,922	22,553	34,851	13,970	14,480	10,497	19,009	33,038	59,610	138,510	165,752	85,706
Lupine													
Tobacco													

Appendix 13b (continued)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Wheat	104,092	94,699	81,227	40,921	53,971	43,776	90,204	113,701	195,979	224,987	199,931	163,166	230,296
Oats	1,187	289	656	85	495	284	1,004	468	372	733	737	665	376
Barley	7,383	3,927	1,697	1,187	1,826	3,267	4,506	4,370	5,499	3,231	2,824	1,987	3,768
Ray	0	44	15	0	7	7	10	0	0	0	0	0	0
Maize	23,665	188,496	185,786	280,209	293,048	322,668	433,411	443,534	482,129	436,176	440,956	615,842	590,372
Rice	40,515	69,393	37,130	35,897	47,093	32,668	34,682	24,007	14,930	29,512	35,829	35,208	28,494
Beans	30,461	24,315	19,524	30,146	37,793	16,020	12,159	13,359	12,485	14,022	16,281	7,795	7,636
Lentils	57	45	128	120	174	109	235	939	721	337	422	50	206
Chick Peas	536	940	2,895	1,707	1,400	893	2,301	2,570	2,834	5,271	2,260	1,248	2,058
Sweet Pea	222	445	340	237	85	116	579	448	468	143	136	493	197
Peas				498	551	396	671	162	173				
Potato	36,569	24,850	30,291	28,783	38,843	20,695	34,904	60,701	35,264	32,929	78,468	61,792	32,472
Sunflower	7,457	3,617	6,385	784	337	250	2,330	2,287	10,801	13,774	10,894	4,908	4,333
Rapeseed													
Sugar Beet	31,000	19,771	6,701	94,039	80,022	96,635	176,739	216,954	249,751	232,803	215,150	240,335	194,572
Lupine													
Tobacco			3,735	4,188	4,170	4,269	4,530	4,091	4,178	4,601	5,015	5,015	5,538

Source: Elaborated by the author based on ODEPA (1976, 1988)

Appendix 14a

Land Used for Annual Crops Production IX region (Metric tons/Ha)

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Wheat	197,979	222,450	204,920	204,800	218,810	211,390	208,340	203,260	159,250	186,430	194,640	200,390	197,080
Oats	29,109	28,440	29,390	47,870	35,970	30,750	30,330	35,720	32,030	39,700	38,140	34,640	33,780
Barley	2,428	6,830	8,900	20,010	9,860	10,750	16,170	24,690	26,290	38,520	24,750	24,900	31,820
Ray	2,773	3,200	3,020	3,660	4,380	2,970	4,140	3,250	2,580	4,380	3,810	4,000	4,700
Maize	1,604	2,400	2,740	3,410	3,080	4,850	3,330	3,960	4,370	4,290	2,000	2,240	1,900
Rice													
Beans	2,385	2,530	2,670	1,320	2,000	3,110	4,100	3,700	3,650	5,330	5,700	7,010	5,820
Lentils	669	1,710	1,100	830	2,490	1,000	1,890	2,130	1,380	2,840	2,460	3,490	7,170
Chick Peas	479	0	0	130	0	0	250	0	0	140	400	510	730
Sweet Peas	1,979	2,310	1,840	2,930	2,160	2,920	2,660	2,550	3,120	4,750	1,350	2,540	6,590
Peas													
Potato	12,717	10,100	10,210	9,230	10,410	8,530	9,880	12,230	8,470	11,260	10,190	10,360	15,500
Sunflower	167	190	110	130	80	100	60	0	0	130	170	80	0
Rapeseed	41,977	40,720	26,060	18,230	27,500	22,290	24,340	28,000	17,540	9,240	27,560	37,170	33,290
Sugar Beet	344	410	570	610	730	1,010	1,200	1,060	600	1,430	2,000	4,460	3,260
Lupine													
Tobacco													
Total Ha.	294,610	321,290	291,530	313,160	317,470	299,670	306,690	320,550	259,280	308,440	313,170	331,790	341,640

Appendix 14a (continued)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Wheat	182,300	177,290	175,600	140,010	105,990	116,490	133,810	142,450	156,380	189,400	171,250	160,160	177,620
Oats	28,080	32,210	37,580	32,390	29,740	36,730	44,290	37,890	23,940	24,410	26,590	26,220	32,810
Barley	37,420	40,340	33,830	31,900	38,640	23,750	15,670	15,450	6,690	6,080	9,540	10,960	12,030
Ray	5,110	2,930	4,630	4,310	2,570	2,620	2,350	2,520	3,310	1,320	1,130	2,260	1,570
Maize	1,390	1,810	2,060	1,560	1,570	3,540	780	1,540	380	250	300	230	280
Rice													
Beans	7,790	9,160	9,580	9,910	12,450	12,590	8,400	9,280	8,550	7,380	4,680	6,130	6,240
Lentils	6,600	8,720	10,660	11,870	8,170	4,290	6,190	7,740	9,050	11,870	7,800	3,400	3,490
Chick Peas	800	1,270	1,530	680	60	60	270	60	80	130	220	30	10
Sweet Peas	7,060	7,700	7,880	8,210	6,220	5,390	3,720	880	1,830	1,560	1,770	1,720	2,480
Peas								70	60	70	110	280	120
Potato	16,990	13,130	14,270	14,730	10,410	9,880	12,410	11,260	9,900	9,080	9,280	9,540	9,400
Sunflower		140	290			70	120		480	420	410	490	540
Rapeseed	23,220	26,320	34,530	15,860	5,140	1,800	3,670	10,460	33,520	22,240	25,370	26,200	17,210
Sugar Beet	1,200	1,230	682	1,790	2,590	1,637	2,646	2,554	3,119	2,413	2,863	3,393	2,293
Lupine								7,940	7,370	7,130	6,720	8,630	9,460
Tobacco													
Total Ha.	317,960	322,250	333,122	273,220	223,550	218,847	234,326	250,094	264,659	283,753	268,033	259,643	275,553

Source: Elaborated by the author based on ODEPA (1976, 1988)

Appendix 14b (cont. next page)

Evolution of Annual Crops Production IX region (Metric tons/Ha)

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Wheat	284,152	346,835	310,008	316,018	324,945	63,793	397,929	336,628	245,458	270,859	251,906	235,016	345,964
Oats	29,295	40,485	43,446	65,431	36,018	41,397	39,281	42,250	42,865	54,310	47,831	39,479	52,808
Barley	4,669	13,426	17,925	36,024	15,704	21,162	31,425	50,461	43,867	66,789	40,613	41,600	69,329
Ray	3,213	5,183	3,906	4,265	5,827	4,616	6,007	5,172	4,290	6,773	5,516	5,217	5,505
Maize	2,309	3,966	5,035	5,168	5,074	5,769	4,637	5,798	6,699	4,412	1,747	2,713	1,710
Rice													
Beans	1,892	1,857	2,424	877	1,607	2,282	3,635	2,831	3,216	4,326	3,290	2,953	4,660
Lentils	1,634	894	770	439	1,685	744	1,447	1,384	1,182	1,991	1,583	2,296	5,516
Chick Peas	448	0	0	112	99	242	222	374	60	123	271	384	546
Sweet Peas	1,465	2,746	2,238	2,565	1,734	2,114	2,333	2,321	2,340	3,922	1,108	2,023	4,909
Peas													
Potato	48,056	56,932	50,804	54,740	42,211	37,213	46,836	56,790	40,102	79,483	65,276	43,629	121,380
Sunflower	248	294	179	207	163	118	59	255	172	380	228	77	0
Rapeseed	51,353	47,051	37,043	35,585	31,049	28,160	36,193	32,245	19,169	12,494	39,348	60,054	48,011
Sugar Beet	74,459	17,615	26,295	29,517	39,658	47,138	61,117	45,811	26,321	54,510	71,123	94,463	125,234
Lupine													
Tobacco													

Appendix 14b (continued)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Wheat	231,595	294,948	313,773	201,374	151,566	168,542	243,721	269,718	358,437	437,199	479,766	492,685	422,759
Oats	36,330	63,535	74,770	43,490	41,339	53,935	63,556	63,630	47,497	58,773	73,534	66,585	85,872
Barley	76,239	79,388	74,629	63,331	73,030	42,061	29,516	33,142	17,753	11,827	30,510	34,736	41,554
Ray	6,267	4,011	6,295	4,810	2,878	2,203	3,158	6,040	6,546	3,323	2,330	7,604	5,347
Maize	1,096	1,619	2,436	1,647	1,492	1,331	337	1,476	452	597	399	834	523
Rice													
Beans	5,030	8,458	5,731	7,075	8,840	6,169	4,405	7,584	5,721	3,677	3,930	4,120	5,341
Lentils	4,985	6,269	6,173	4,430	3,350	2,811	3,879	4,102	6,197	9,457	6,337	2,475	1,626
Chick Peas	715	825	977	304	25	25	82	24	51	42	183	13	9
Sweet Peas	5,273	6,357	4,534	4,012	2,923	2,502	1,963	571	538	1,151	1,188	1,246	2,850
Peas								58	17	29	54	271	42
Potato	113,852	76,735	99,741	109,020	75,368	50,317	97,359	133,003	126,861	115,667	111,006	95,489	104,788
Sunflower		133	229			23	112		672	592	785	588	1,231
Rapeseed	35,294	34,797	55,025	17,327	6,168	1,962	3,512	16,439	46,375	40,742	48,203	52,583	26,064
Sugar Beet	41,911	35,090	30,469	82,350	101,738	71,151	95,264	98,488	184,478	124,656	145,400	161,513	114,807
Lupine								16,095	9,531	13,272	12,468	15,661	20,932
Tobacco													

Source: Elaborated by the author based on ODEPA (1976, 1988)

Appendix 15a (cont. next page)

Calorie Consumption per Person per Day, by Commodity Groups

Year	Cereals, Excl. Beer	Starchy Roots	Vegetables	Pulses	Vegetable Oils	Fruit	Sweeteners	Alcoholic Beverages	Other Vegetable	VEGETABLE TOTAL
1965	1282	105	70	51	139	68	294	133	7	2149
1966	1302	113	72	62	152	69	356	133	8	2267
1967	1274	100	64	58	149	74	364	134	6	2223
1968	1270	99	61	61	183	75	380	127	2	2258
1969	1241	83	62	52	163	82	369	114	4	2170
1970	1236	92	63	59	160	75	361	116	1	2163
1971	1268	96	59	61	129	76	384	125	5	2203
1972	1273	96	62	72	130	71	397	124	2	2227
1973	1318	94	59	59	129	64	317	124	2	2166
1974	1316	92	59	55	125	70	319	121	2	2159
1975	1313	93	64	47	119	62	299	119	3	2119
1976	1314	87	58	52	144	53	338	122	7	2175
1977	1266	95	56	59	145	56	355	120	2	2154
1978	1243	98	80	46	189	58	372	121	6	2213
1979	1250	98	90	55	159	68	370	120	10	2220
1980	1250	100	83	58	184	61	373	118	11	2238
1981	1250	102	89	51	179	66	365	115	9	2226
1982	1241	104	84	50	185	71	343	113	10	2201
1983	1228	104	86	45	202	65	329	106	9	2174
1984	1231	105	87	51	184	60	353	106	6	2183
1985	1247	107	64	50	204	58	326	104	8	2168
1986	1243	105	65	45	195	53	352	83	5	2146
1987	1231	105	66	48	189	53	368	76	8	2144
1988	1210	111	74	41	186	53	359	81	10	2125

Source: Elaborated by the author based on FAO (1991)

Appendix 15a (continued)

Year	Meat	Milk, Excl. Butter	Animal Fats	Eggs	Fish, Seafood	Other Animal	ANIMAL TOTAL	GRAND TOTAL
1965	161	160	61	21	19	9	431	2581
1966	177	163	64	21	20	11	456	2723
1967	185	141	75	21	20	11	453	2676
1968	203	144	81	20	20	11	479	2737
1969	195	152	77	20	20	11	475	2645
1970	199	163	75	20	18	14	489	2652
1971	184	143	80	21	16	12	456	2658
1972	178	156	65	21	21	11	452	2679
1973	135	152	51	23	23	9	393	2558
1974	217	159	55	22	18	12	483	2642
1975	183	140	35	19	18	10	405	2525
1976	162	146	30	16	18	11	383	2558
1977	152	147	38	17	14	11	379	2533
1978	159	150	40	17	28	9	403	2616
1979	166	149	46	17	38	9	425	2644
1980	176	156	48	18	28	9	435	2674
1981	199	160	45	18	40	10	472	2698
1982	197	153	38	19	22	8	437	2638
1983	187	142	34	17	24	9	413	2587
1984	174	138	32	18	20	11	393	2577
1985	163	147	27	20	25	8	390	2559
1986	164	139	29	20	23	9	384	2530
1987	174	144	29	19	24	11	401	2544
1988	191	145	31	19	28	9	423	2548

Source: Elaborated by the author based on FAO (1991)

Appendix 15b (cont. next page)

Protein Consumption (grams) per Person per Day, by Commodity Groups

Year	Cereals, Excl. Beer	Starchy Roots	Vegetables	Pulses	Fruit	Alcoholic Beverages	Other	VEGETABLE Vegetable	VEGETABLE TOTAL
1965	34.5	2.7	2.9	3.2	0.8	0.2		0.9	45.2
1966	35.1	2.9	3.0	4.0	0.8	0.2		0.9	46.9
1967	34.4	2.6	2.8	3.7	0.9	0.2		0.8	45.4
1968	34.3	2.5	2.7	3.9	0.9	0.2		0.8	45.3
1969	33.4	2.1	2.7	3.4	1.0	0.1		1.0	43.7
1970	33.3	2.3	2.7	3.8	0.9	0.2		0.9	44.1
1971	34.1	2.5	2.6	3.9	0.9	0.2		1.0	45.2
1972	34.3	2.5	2.7	4.6	0.9	0.1		0.8	45.9
1973	35.7	2.4	2.5	3.8	0.8	0.2		0.7	46.1
1974	35.6	2.4	2.6	3.5	0.9	0.1		0.8	45.9
1975	35.3	2.4	2.8	3.0	0.8	0.1		0.7	45.1
1976	35.4	2.2	2.6	3.4	0.7	0.1		0.8	45.2
1977	34.4	2.5	2.6	3.9	0.7	0.1		0.6	44.8
1978	33.9	2.5	3.4	3.0	0.8	0.1		0.7	44.4
1979	34.1	2.5	3.8	3.6	0.9	0.1		1.0	46.0
1980	34.1	2.6	3.5	3.7	0.8	0.1		1.0	45.8
1981	34.0	2.6	3.7	3.3	0.8	0.1		0.8	45.3
1982	33.7	2.7	3.5	3.3	0.9	0.1		0.7	44.9
1983	33.3	2.7	3.5	3.0	0.8	0.1		0.8	44.2
1984	33.4	2.7	3.5	3.3	0.7	0.1		0.8	44.5
1985	33.8	2.8	2.6	3.2	0.6	0.1		0.9	44.0
1986	33.6	2.7	2.6	2.9	0.6	0.1		0.8	43.3
1987	33.3	2.7	2.7	3.1	0.6	0.1		0.9	43.4
1988	32.7	2.9	2.9	2.7	0.6	0.1		0.8	2.7

Source: Elaborated by the author based on FAO (1991)

Appendix 15b (continued)

Year	Meat	Milk, Excl. Butter	Eggs	Fish, Seafood	Other Animal	ANIMAL TOTAL	GRAND TOTAL
1965	9.4	9.3	1.6	2.9	0.9	24.1	69.3
1966	10.4	9.3	1.6	3.0	1.0	25.3	72.3
1967	10.8	8.1	1.6	3.1	1.1	24.7	70.1
1968	11.8	8.2	1.5	3.2	1.2	25.9	71.3
1969	11.5	8.7	1.5	3.0	1.2	25.9	69.6
1970	11.7	9.4	1.5	2.9	1.1	26.6	70.7
1971	10.8	8.1	1.6	2.4	1.1	24.0	69.1
1972	10.6	8.8	1.6	3.3	0.9	25.2	71.1
1973	8.1	8.5	1.7	3.6	0.7	22.6	68.7
1974	12.7	8.9	1.7	2.7	1.1	27.1	73.0
1975	10.5	8.1	1.4	2.8	1.1	23.9	69.0
1976	9.3	8.4	1.2	2.7	1.0	22.6	67.9
1977	8.8	8.4	1.3	2.0	1.0	21.5	66.3
1978	9.4	8.6	1.3	4.0	0.8	24.1	68.5
1979	10.0	8.8	1.3	5.7	0.9	26.7	72.7
1980	10.8	9.3	1.3	4.2	0.9	26.5	72.3
1981	12.1	9.6	1.4	6.1	1.1	30.3	75.5
1982	11.9	9.0	1.4	3.3	1.1	26.7	71.6
1983	11.1	8.2	1.3	3.7	1.1	25.4	69.6
1984	10.3	8.0	1.4	3.1	1.1	23.9	68.4
1985	9.7	8.5	1.5	3.7	1.0	24.4	68.4
1986	9.7	8.3	1.5	3.4	1.1	24.0	67.3
1987	10.5	8.5	1.5	3.5	1.1	25.1	68.5
1988	11.5	8.6	1.5	4.3	1.1	27.0	69.7

Source: Elaborated by the author based on FAO (1991)

Vita

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