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The Effect of Agricultural Price Policies On Intersectoral Income Transfers

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PREFACE

The literature of economic development has given considerable attention to the role of agriculture in economic development, the mechanisms of transfer of resources among sectors and the role of price in those transfers. There has however been little empirical measurement of the transfer effects of various price policies. In addition there has been essentially no recognition of the effects of price induced income transfers on the relative incomes of various socio-economic groups.

Roberto Echeverria makes a large contribution by seeing the allocative and distributive effects of relative price changes and by seeing the distributive effects as influencing not only relative rates of capital formation but also relative consumer welfare.

Echeverria defines a set of socio-economic groups which are a product of the historical environment of Chile. He emphasizes that such definition must be specific to each situation. He then develops a methodology for measuring the intersectoral flows induced by relative price changes and illustrates the use of this methodology with a carefully constructed set of data for the economy of Chile. The work is pioneering in all these respects and provides the basis for important related analysis in other countries and circumstances.

Roberto Echeverria's study of the relationship between price policy and intersectoral income transfers has formed part of a larger study of agricultural prices carried on at Cornell University. Much of the larger study has been financed under a contract with USAID. The early stages of Roberto Echeverria's work were carried on with the financial assistance of the Rockefeller Foundation, which also assisted with respect to a necessary trip to Chile. Most of the study was written while he belonged to the staff of the Institute of Economics and Planning of the University of Chile. The material facilities and the academic environment provided by this institution were most important to the conduct of the study. The final stages of the research and ancillary services were financed from a USAID research contract with Cornell University.

The broad program of study, of which this study is one part, covers three major areas of enquiry: (1) the role of prices in intersectoral income and capital transfers; (2) the effect of price relationships on agricultural production and marketing and; (3) the factors affecting urban prices of agricultural commodities. Thus, in total these studies are concerned with the effects of agricultural prices on the nonagricultural sectors of the economy, with their effects in the agricultural sector and with the manner in which agricultural prices are determined. Over the course of the larger study a substantial

number of studies are being carried on in various countries and dealing with various aspects of the processes. At the completion of these studies an effort will be made to pull them together into an integrated view of the role and functioning of agricultural prices in the development process.

A basic objective of the broad program of study for the conduct of this research is not only to produce useful research results but also to provide a structured research experience so as to enlarge the pool of trained manpower for the analysis of such problems. For this purpose, the research in this project is accomplished primarily by Ph.D. candidates at Cornell University who use the specific studies conducted as Ph.D. dissertations. The definition of the over-all project has purposefully been kept broad and flexible to facilitate the attainment of this additional objective. This study by Roberto P. Echeverria is part of that program and is drawn from his Ph.D. dissertation entitled "The Effect of Agricultural Price Policies on Intersectoral Income Transfers," completed at Cornell University in 1969.

This manuscript is an edited and abbreviated version of Roberto Echeverria's Ph.D. thesis presented at Cornell University. The initial editing and condensing were performed by Roger Montgomery.

John W. Mellor

Ithaca, New York

June, 1970

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Chapter 1

Introduction

The purpose of this study is to investigate the changes in income distribution provoked by fluctuations in the price system of an economy. These changes in income distribution have been related by development theorists to the availability of capital for investment in different productive sectors, as well as to the welfare of different groups of people. The view that we will try to substantiate in this study is that the way of dividing the economy (productive sectors, income strata, or groups of people), as well as the criteria used to make this division, are crucial if we want to make economic analysis relevant to policy decisions.

One of the mechanisms most frequently mentioned in literature on economic development, and which would make it possible to effect income transfers between different economic sectors, is fluctuations in the relative prices of the goods and services interchanged between sectors. The Preferred sectors or activities for the purposes of carrying out this analysis are agriculture and industry, and reference is usually made to the concept of intersectoral terms of trade as an instrument that would facilitate the adequate implementation of income redistribution policies in favor of one sector or another. If the prices of products sold by the industrial sector are allowed to increase faster than those of the products sold by the agricultural sector, this would be the cause of a real income transfer from the agricultural to the industrial sector, or vice versa.

Many authors have formulated theories and elaborated development models in which the terms of trade concept just described is used, and in which it is employed as a mechanism for the purpose of extracting--through changes in the relative prices--an economic surplus from the agricultural sector, and transferring it to the industrial sector. This income redistribution is said to allow an increase in the capital formation rate in the industrial sector, and would thus lead to economic development.

It appears to us that the use of the intersectoral terms of trade as a tool for economic development, in line with the concept described in the above paragraphs, is empirically ambiguous, theoretically inadequate, and politically inoperative. We shall propose in this study an alternative approach to the problem, elaborate an adequate set of theoretical tools with which to promote this new approach, and then verify it empirically with information taken from the Chilean economy.

Thus, our interest will be only in that part of income transfers effected by changes in the price system. Notwithstanding, in any monetary economy the price system has at the same time the function of serving as a guide for the efficient allocation of the resources existing in the economy, which are controlled by the different economic groups operating therein. These two functions of the price system are conflicting. If on the one hand the price system determines the proportion of income that will correspond to each economic group, on the other hand it will be orienting the producer groups so that they will use more of those factors whose price is relatively cheaper, and vice versa. Social justice would require that not too many inequalities will be generated in income distribution, while economic efficiency would require that a lower price be assigned to those factors that are most abundant, and a higher price to those that are scarcer. Although in practice any formulation of price policy should take account of both functions and achieve the best possible compromise between them, this study will concern itself mainly with the exploration of the distributive effects of price policies and their implications for economic development.

Our central hypothesis is that, in analyzing relative price policies as a mechanism for redistributing incomes in the economy, the sectoral division should be done in terms of groups of people, according to their economic power and their role in the productive process. It appears theoretically inadequate to carry out the sectoral division in terms of the type of products or services generated. Within each productive activity, those who experience increases or decreases in their real incomes are people, not products, and the way, sense and magnitude in which they are affected does <u>not</u> depend on the fact of their being classified as belonging to a given productive activity, but on the direct or indirect role that they perform in the productive process and intersectoral trade.

This is especially relevant to the agricultural sector in underdeveloped countries, which cannot by any means be treated as a homogeneous set of people faced by one and the same price system, and supposedly reacting and being affected similarly by relative price changes.

Within the agricultural activity (as also in some other activities) there are groups of people who are faced by one and the same change in relative prices from completely different angles, which determines the manner in which they are affected by the said change. Thus, for instance, and with reference to the Chilean case, it makes no sense to assert that the agricultural sector has been penalized or benefited by price policies if one single bracket is supposed to contain groups of people having economic roles and forms of market orientation so unlike as do the groups of small subsistence level producers ("Minifundistas"), small and medium producers who produce for the market, efficient large producers, inefficient large landowners, "inquilinos", "inquilinos"-sharecroppers, landless or outside

laborers, people settled by land reform, sharecroppers, etc. All of these groups are contemplated as having different roles in a process of development, some of which must be protected to subsist while others must be transformed or disappear. Assuming that it would be worthwhile to know that an income redistribution has been made from the agricultural sector as a whole to the industrial sector, this tells nothing unless we know whether or not these better relative prices have benefited the industrial producers (who "could" invest their increased profits as the economic development theorists suggest), have been passed on to the urban consumers, or have been channelled to the government (via taxation) or to the rest of the world. Hence, unless the interrelations of the different groups existing within each sector, and between sectors, are explicitly taken into account, the concept of intersectoral terms of trade is inoperative as an indicator that would allow any improvement in economic policy decisions.

In order to present more clearly the orientation of the present study, we make explicit some general considerations that have influenced the approach that we have taken.

First, the study is focused on the short-run implications of price policies. The reason for this is that in the long run substantial changes take place in the parameters and weights used for this type of analysis.

Second, a global approach has been adopted considering all groups of persons, sectors, and prices of the economy (including the influence of the foreign trade). This enables us to picture the income transfers in adequate perspective, from both their origin and their destination.

Third, while changes in the system of prices undoubtedly create income transfers, this knowledge is largely irrelevant for the formulation of price policies unless we know who is receiving that income and who is being deprived of it. Therefore, we will try to detect which groups of people are benefited and which groups are penalized by an induced or spontaneous change in the price system. It would seem that the biggest issue in economic development is not how to achieve just "development" but "development for whom." If we operate at a level of aggregation of productive sectors, we will be overlooking some of the most substantial income transfers, that is, those that occur within each productive sector.

Last, we shall take the position that the identification of what groups of people belong in each sector, as well as of their economic interrelations, depends on the characteristics that are peculiar to each underdeveloped country. These characteristics can only be evaluated within each country's historical and political context, for which reason it makes little sense to formulate theories

which postulate *a priori* income flows between given sectors or groups, or which attempt to repeat the experience of already developed countries out of context.

In order to verify empirically our hypothesis, we need to supply data for the different economic groups selected in accordance with the historical and political context of the Chilean economy. These data need to be elaborated to obtain two systems of weights and a group of price indexes for specific commodities. One of the systems of weights is required to differentiate the different components of income and expenditures of the economic groups, as well as the relative importance of each group with respect to the others. The second system of weights permits the aggregation of the various partial price indexes in order to obtain a measure of the change in the price of different baskets of goods transacted among the groups.

The proverbial lack of meaningful data in the developing countries became evident in this type of research approach, and on several occasions it has been necessary to complement the existing data with assumptions or personal judgments. Furthermore, even in cases where fairly complete statistical series are available, there are strong presumptions against the accuracy with which the figures reflect reality (such as in the Chilean consumer price index data). Nevertheless, and although empirical results are obtained that are fairly consistent with the economic events, and which take into consideration most of the price data available for the Chilean economy, the main purpose resides not in the numerical findings for a specific case that might be substantially different from most others, but on the methodology to approach this type of problem in underdeveloped countries.

Chapter 2 sets the framework for definition of sectors and the terms of trade. In the first part of Chapter 3 we base ourselves in historical evidence for the Chilean case, in order to define in a meaningful way the most important economic groups operating in the Chilean agriculture. In the second part of Chapter 3 a short historical review is provided of the past price policies and their relation with the process of inflation in Chile. The objective of this section is to give some insight as to how the Chilean economy operates with respect to price policies.

In the first part of Chapter 4 a model is formulated for the analysis and evaluation of relative price policies in the short run. This model is intended to show the changes in the economic welfare of different groups, as well as the composition of these changes. In the second part of Chapter 4, we make an attempt to the empirical quantification of the proposed model. In the last part of Chapter 4 an attempt is made to evaluate the most recent price policies, comparing those policies' objectives with the empirical results obtained with the analytical model. Finally, in Chapter 5 we explore implications of the analysis for Chile's economic development, and outline some of the general conclusions of the study.

Chapter 2

The Concept of Sectors and Terms of Trade

The area of interest in this study is that which circumscribes the analysis of the terms of trade as a tool of economic policy used for changing income distribution in an economic development process. It is therefore essential that the analysis shall consider different sectors or economic groups between which these income flows will occur. It is evident, too, that any income redistribution process can only be analyzed in connection with a given economic development strategy, designed to attain specific objectives (explicit or implicit), failing which it becomes a mere description of an historic-economic phenomenon having no normative implications.

Out of the several mechanisms that could produce income transfers, this study will only be concerned with those that are related with the price system ruling in the economy, for which reason the analysis must necessarily be oriented toward the set of productive and commercial relationships that decide the interchange of the goods and services of productive factors in the economy. The area covered is unquestionably full of political, social and cultural implications. The fact that the approach is of an economic nature, and aimed only at isolating the effect of the price variable, does not imply that these other aspects have been left aside, or that they lack importance. It is basically necessary that they be adequately considered as an institutional framework within which the economic variables operate, and which conditions the manner in which these variables are interrelated, as well as the economic results derived from them. In many underdeveloped areas it is possible that these non-economic factors may acquire so much importance as to affect seriously the empirical validity of the assumptions on which economic theory operates.

Agriculture and Economic Development

There is at present an almost unanimous consensus that economic development implies different growth rates in the various productive sectors of the economy. In this dynamic process the industrial sector will eventually grow faster than the agricultural sector with relation to population and the contribution to gross national product.

If it is admitted that one of the limiting factors in the economic development process and in the rate of sectoral growth is the availability of investment funds, the proportion of national income devoted to investment becomes a critical issue, the more so if it is realized that a serious development effort should be based mainly on internal savings. Many theoretical essays regarding economic development strategy emphasize the existence of a large but under-used capacity for saving in the agricultural sectors of most low income countries.

They furthermore suggest that this saving potential should be used to finance industrial development, and that the adequate mechanisms should be implemented to redistribute the farming sector's income in favor of the industrial one. Authors such as Mellor (21, 22), Fei and Ranis (11) and Nicholls (25) put the concept a little more precisely, making it clear that, if an economic development effort is to be successful, the net use of investment funds in the farming sector should be minimized, or, as far as possible, the farming sector should make a net income contribution toward industrial development, but with no implication that this should deprive the farming sector of investment capital entirely.

It is also assumed that most countries intend to distribute the benefits of their economic development as widely as possible, and this calls for a large income flow toward the farming sector to provide basic social capital, education, health, industrial consumer goods, etc., as well as certain nonagricultural inputs, such as fertilizers, insecticides, etc., which are required to increase agricultural productivity.

It can be seen that there are two theoretically opposed tendencies in connection with the destination of investment funds generated in the economy, and that more or less solid arguments are advanced on both sides.

Consequently, the most important development policies would include those which have to do with the mechanisms which might create income transfers from and to the farming sector. Among the general objectives of this study is the important one of supplying data that will make it possible to render these transfers adequate in the most efficient possible manner, in order to attain a self-supporting development process with the maximum welfare for the population.

Agriculture and Income Redistribution

There are three principal mechanisms that originate intersectoral income transfers:

1. Variations in the price system: Both price policies and inflationary pressures cause changes in relative prices over time, which is reflected in the intersectoral terms of trade. This is probably one of the main channels through which intersectoral income flows move, especially in a context of state intervention in price setting.

2. Volumes of goods and services of productive factors bought or sold by each sector: Another income redistribution mechanism via intersectoral transactions would be variations in the physical volume of goods and services of productive factors exchanged between the

different sectors. In a certain sense, this mechanism is also related to prices, depending on price elasticities of supply and demand, but with this classification we are trying to emphasize the physical flows.

3. Direct Income Transfers: Taxation constituted a fundamental mechanism for extracting income from different sectors. Taxation's relative importance in each sector, both with relation to other sectors and with respect to the population strata within each sector (e.g., measured with relation to each group's contribution to national income), will determine the magnitude of the income transfer to the government. On the other hand, direct subsidies would be equivalent to negative taxation, providing the receiving group with income. Among direct transfers it would also be relevant to consider inheritances, donations and other transfers that have no counterpart in goods or services of productive factors.

Sectoral Division

To analyze intersectoral income transfers with any mechanism (especially in the case of relative prices) it is essential to define the sectors to be included in the analysis in advance and in such a way as to leave no room for mistakes. It is unfortunate that one of the aspects of the pertinent literature displaying the greatest divergencies and most controversy is that of the sectoral division used to analyze problems of underdevelopment.

Most authors simply evade the problem and, although they specifically mention other sectors in their analyses of underdeveloped economies, they concentrate their arguments on the need for expanding the industrial sector as quickly as possible. According to them, this would be a necessary and sufficient condition for the attainment of economic development and there would be no need for explicit concern about a sector like the farming one, inasmuch as it would adapt itself almost automatically to the industrial sector's demands and requirements.

Nevertheless, experience has clearly shown the limitations of attaching importance only to industrialization, and at present the idea that technical progress and the creation of a farm surplus are decisive strategic factors in the development process is meeting with increasing acceptance (see 15, 25, 26, 23, 24).

It is unfortunate that, despite the foregoing, the framework of analysis continues to be confused. To bring other sectors into the analysis it must first be decided what part of the economy, or who will be included in each sector, and then it is necessary to determine the composition of the investment and the direction of the capital flows (incomes) between said sectors during the development process. It is precisely in those aspects that most authors fail through inability to offer an analytical framework important and useful enough for the formulation of concrete economic policies. We shall define a set of sectors appropriate to Chile and our analytical program in Chapter 3.

The Intersectoral Terms of Trade

The expression "terms of trade" is usually employed in referring to the ratio between the prices of products and services that are traded between two or more countries, sectors or socio-economic groups. Although the origin as well as the most extensive use of this concept have been related with international trade, they have recently been generalized to describe changes in the price system of goods generated in different productive sectors.

As a tool for analysis, the terms of trade have been used somewhat differently by the several authors. On the one hand there are those who paint them as a descriptive tool. In this sense, they would be dealing with a statistical coefficient or index calculated to describe long term trade tendencies via the historical behavior of the price relation of the goods being traded.1/ Another emphasis is that which considers the terms of trade as a tool for policy, which is a generic allusion to the fluctuations in the price system existing between two sectors, and the effects that those fluctuations (caused either by market forces or state intervention) would have on economic activity. This is the coloring with which they will be used in the present research project.

The role of the domestic terms of trade has only been analyzed in development literature with relation to the transactions that are effected between productive sectors (more specifically, between the agricultural and the industrial sectors). The present study will offer a somewhat different approach.

The role of intersectoral terms of trade as a tool of economic policy can only be interpreted in the light of that policy's objectives as well as of the results derived from its application. In this sense, one can concretely state several functions that can be performed by the intersectoral terms of trade.

In the first place, the use of intersectoral terms of trade has been described as a mechanism that would make it possible to increase national savings. This is a position taken by W. A. Lewis in referring to agriculture and industry as sectors that produce different goods and trade with each other. Assuming that only industrial profits are saved and subsequently reinvested, any mechanism that affects

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1/ The approaches of Prebisch, Singer, Colin Clark, et al., would fit within this position. For a summary of their statements, see M. K. Atallah's study on long term fluctuations in intersectoral terms of trade (2). Bellerby has given them another use in considering the relation between rural and urban retail prices as the cause of the differential between these sectors' incomes. See especially (4), Chapter XV: "Relative Retail Prices."

those profits will affect national savings if the agricultural sector increases its productivity, the economy's wage level will tend to increase, which in turn would reduce profits and savings. The only possible way out would therefore be for the terms of trade to change in such a manner that increases in productivity would be more than offset by reductions in real agricultural prices. If, in line with market conditions (e.g., with an elastic and growing demand for foodstuffs), the deterioration in agricultural terms of trade should not occur, it would be necessary to have resource to direct taxation to deprive agricultural producers of income derived from productivity increases and turn it into capital formation.

A second possibility, mentioned by Mellor (21, pp. 95-97 and 22, pp. 33-34), S. R. Lewis (17), R. Krishna (16), et al., is to use the terms of trade as an indirect tool for taxation. This postulation has the same foundation and objective as that formulated by W. A. Lewis. Inasmuch as there is a certain amount of skepticism about the likelihood of market forces leading to a deterioration of agricultural terms of trade in an underdeveloped country (21, p. 95), the possibility is suggested that the government intervene directly via price setting and control with the objective of keeping agricultural product (food and raw material) prices low, and thus transfer to the urban zones, for investment purposes, the benefits derived from a greater agricultural productivity. These measures, which in their final form are the equivalent of heavier taxation on the agricultural sector, have been profusely applied in underdeveloped countries, especially in those that have gone through long periods of inflation (Chile is an excellent instance of this), although they have not always had the desired effect.

A third use of the terms of trade, which is an open disagreement with the foregoing ones, is that postulated by T. W. Schultz. According to this author, the relative price system performs a most important and irreplaceable function, i.e., to generate incentives for orienting resources and production in an efficient manner.[1/] Schultz, who is a staunch upholder of a free and competitive market system as the conductor of economic activity and as a mechanism

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1/ Schultz states that "...there is as yet no known way of organizing and integrating the production activities of numerous farmers among each other and with the rest of the economy except by a system of prices..." "Moreover, in countries which have been pursuing a monolithic policy of rapid industrialization one finds, whether in Chile or India, farm product prices too low and badly distorted, agricultural input prices too high and also distorted, and the prices of the consumer goods and services that farm people buy rising relative to the products they sell and the goods declining in quality" (27, p. 62).

for efficient resource distribution, strongly criticizes any attempt to use the price system as a tool for indirect taxation or for transferring income between sectors. He states that the incentives to increase productivity are destroyed in this way, and that the development process would therefore be held back (28, p. 128).

> "In some low income countries in which economic growth has become a major goal, one of the aims is to transfer some income out of agriculture to provide, as noted earlier, a part of the capital required for industrialization." "But, regardless of the purpose of such income transfers, whenever they are made by means that either lower or raise farm product or factor prices, the allocative efficiency of such prices is impaired."

A fourth approach is that postulated by Fei and Ranis, who view changes in the terms of trade as a mechanism for orienting sectoral investment, which would generate incentives tending to maintain a "balanced development" process. In this case, in order to destine investment fund to both sectors in a balanced manner, the terms of trade should not be deteriorated (in the long run) against either of the two sectors (10, p. 545).

The mechanism would work as follows: If for any reason too much investment is put into the industrial sector and it expands faster than it should with relation to the agricultural sector's growth rate,

> "...the shortage of food will result in a deterioration of the terms of trade of the industrial sector and will cause an increase in the industrial real wage. This will tend to discourage investment in the industrial, and tend to encourage investment in the agricultural sector, thus causing the actual growth path to turn back toward the balanced-growth path. Government policy may be assumed to work in the same direction if the price system proves inadequate."

We are going to propose a fifth approach, which, while it has been neglected in development literature, seems to be the most adequate one for the purposes of this research project. While fluctuations in the terms of trade admittedly cause income flows, their use as an economic policy tool makes no sense if one is working on a level of sectoral aggregation. One and the same change in relative prices affects different economic groups within each sector in fundamentally opposite ways, altering income distribution and affecting its production incentives.

For the purposes of orienting economic policy, it is entirely irrelevant to know that more quintals of wheat are presently needed to buy a plough or a tractor if it is not known who is buying and who is selling these products, and in what proportions, as well as the inputs and factors needed to produce them, and who, in the last instance, within each sector, pays for or receives the benefits of these transactions.

If, as already proposed, we consider all of the transactions of products and factors, it is evident that what means more income for some people involves heavier outlay for others, and as a large part of the transactions are effected internally within each sector, one and the same over-all outcome can be arrived at via countless combinations of partial results. In other words, the fact of a productive sector being better or worse off than before in terms of real income can be attributed to multiple combinations (many of them entirely opposed and conflicting among themselves) of benefits and sacrifices on the part of the different groups of people of whom each sector is composed. This situation is especially valid in Latin America, where ethnical, social, cultural, political and economic heterogeneity within the agricultural sector of one and the same country is often far greater than in those of different countries. To consider the agricultural population as a relatively undifferentiated whole is not only inadequate but could also become dangerous because of the grave mistakes that could be made in economic policy.

The foregoing paragraphs have placed emphasis on the agricultural activity because, unlike others, it is a way of life rather than a way to make a living, and in the last instance productive and trading relations are those which determine the political and social roles and opportunities of the people who take part in them.

It therefore seems evident that an analysis of relative prices should be made at the level of the different groups that take part in the productive process, as measures that favorably affect the sectoral distribution of income may be affecting in an entirely undesirable and pernicious way the functional and personal distribution of the income of groups existing within each sector. Hence the analysis should be oriented toward ascertaining upon whom the cost falls, or who enjoys the benefits of a given decision of price policy.

At this breakdown level (groups of people instead of groups of products) the functions of the price system described by the above-mentioned authors become completely relevant. Via changes in relative prices, these groups' savings and investment can be oriented, incentives can be generated that would allow efficient resource distribution and production orientation, and income can be redistributed between groups and sectors for specific purposes, etc. If

this is done in the manner proposed, it leads to those measures not being applied blindly, as in the case of one single package deal including traditional large landowners and efficient agricultural entrepreneurs, community exploitations and individual properties, high and low income groups, native population and population descended from immigrants, "inquilinos"[1] and laborers, small (subsistence level) landowners and commercial producers, etc. With this approach there is no intention of artificially breaking down or splitting up populations that have already been disintegrated by historical causes, but which for (voluntary or involuntary) lack of knowledge as to how certain income redistribution mechanisms affect them, are assumed to be homogeneous and integrated. On the contrary, what this study is attempting is that the authority on which price policy decisions depend shall have adequate elements of judgment, as well as full public responsibility, as to whom those decisions penalize or benefit, and how.

[1] Chilean denomination for those individuals who have access to a certain area of land on which they act as small producers, but who, in exchange for their prevarious tenure, have to supply labor to the master's enterprise.

Chapter 3

Definition of Sectors for the Economy of Chile

As postulated in the preceding chapter, to develop a theoretical set of instruments to analyze realistically and consistently a given economic development problem together with its associated policies, one must go into the specific historical context in which those problems or situations were generated. A given historical fact which may lack importance when viewed by itself, becomes fully relevant when placed in a broader scene in which political, economic and social factors are interacting. This also applies to a given economic fact: its adequate interpretation requires an over-all understanding of the problem, of its historical perspective, of its economic and "non-economic" ramifications, and of the concrete implications that it may present for different socioeconomic groups. On the basis of a survey of the history of Chile's agrarian structure and analysis of the current situation, the economy of Chile has been divided into seven sectors.

The "Plural" Structure of Chilean Agriculture

Carrying on from the historical data given in the preceding sections, we can attempt a first approach to the most important economic groups operating in the agricultural activity. These would be:

A. Large Producers (Group 1): Included in this category are the exploitations called "fundos," "hijuelas" and "haciendas." In accordance with the typology established in the Inter-American Committee for Agricultural Development (CIDA) study,[1] these

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[1] CIDA's study (8) defines four large groups of farm exploitations according to size, expressed as the number of men that each exploitation requires per year. The Sub-Family Group includes very small farms on which there are less than two active people and usually have less than five hectares of total area. The Family Group takes in all those exploitations that have an active population of from two to four people, and in the Central Zone vary between five and fifty hectares, depending on the quality of the soil. The Medium Multifamily Group covers farms that employ from four to twelve active people per year, and in the Central Zone are exploitations of from 20 to 200 hectares, according to the quality of the soil. Finally, there are classified in the Large Multifamily Group all exploitations that employ over twelve permanent workers in the year, as well as farms having a total area of 200 hectares and over (8, p. 283).

correspond to the large and medium multifamily exploitations. In all, the said exploitations accounted in 1955 for 11.7 percent of the exploitation units, had 78.9 percent of the arable land at their disposal, and generated 60.3 percent of the total value of agricultural and livestock production (8, p. 206). As a whole (considering owners, renters, occupants and concessionaires, besides managers, professionals and technicians), these exploitations were controlled by 9.5 percent of the total agricultural population (8, p. 294).

Several authors have described these exploitations (see 3, 5, 12, 19 and 20). Among the most recent ones there is CIDA's study which, referring to the large multifamily exploitations, stresses the following:

> "These exploitations are connected with banking, business and industrial interests, and many minifundia exploitations, towns, villages, hamlets and some family-sized exploitations depend on them. The person who directs the exploitation is the owner or renter (the master), or a delegate of his, who count on obedience from a sizeable number of permanent workers, mostly 'inquilinos' and outsiders (transients), with the establishment between them of highly dependent living and working relations" (8, p. 48). "The labor structure is in the form of a pyramid. At the top there is a 'master', owner of the exploitation or not, who often delegates his producer functions to a 'manager,' who is seconded by a series of supervisors (stewards, strawbosses, helpers, etc.), clerks and employees who take orders directly from him (keyholders, warehousemen, stable-hands, etc.) or from the supervisors. The last named give orders to a whole range of workmen, resident or not, permanent or not, called 'inquilinos' and obligatory laborers, volunteers, outsiders, laborers, etc., of whom the first named are the fundamental base for recruiting the exploitations' labor force, as most of the volunteers depend on them." "Producers in the large exploitations of Central Chile keep closely in touch with the country's business or industrial elite, through socioeconomic, political and family connections" (8, p. 49).

With regard to medium multifamily exploitations, that same study states:

> "It cannot be said that a different tenure system from that of the large exploitations corresponds to the medium ones. In Central Chile the aspects of tenure shown by the medium group are very similar, on a smaller scale, to those of the large one's: they imply the same worker classifications; have similar efficiency levels and, excepting a more intensive average land use, have the same production models" (8, pp. 61 and 62).

Hence one can assume that, in those aspects that are of interest for this study, there is enough similarity between these two types of exploitations to justify considering them as a single group, that of Large Producers. These producers apparently face the market under quite favorable conditions (with relation to the rest of the agricultural groups), and through relatively well developed marketing channels (they have access to foreign trade, private banking, the sources of input supplies, etc.). Due to their considerable economic power within the sector, they are in a position to negotiate to their own advantage many of the economic policy decisions that might affect them, as well as to bring considerable pressure to bear on the making of those decisions.

It must be made clear that, on the strength of the most recent processes of change in the agricultural sector, it would appear that there is a beginning within this group of exploitations to produce a transition from a relatively traditional productive structure to a more businesslike and technically endowed one, managed under similar efficiency and labor relations principles to those of industrial enterprises.

B. Small Producers (Group 2): This category would include the family and sub-family exploitation groups of the classification elaborated by CIDA. This group would also include the small producers in farming communities (native and hereditary). In 1955 the small producers group comprised 44.1 percent of the total agricultural population, with a breakdown of: producers on family exploitations, 19.1 percent; producers on sub-family exploitations, 7.7 percent; Indian community members, 13.6 percent; and hereditary community members, 3.7 percent (8, p. 294).

According to CIDA's study, in 1955 the small producers represented 40.4 percent of the exploitation units, controlled 11.6 percent of the arable land area, and generated 16.0 percent of the total value of agricultural and livestock production (8, p. 206).

With reference to the majority of the small producers (the most traditional ones), CIDA's study states:

> "The small exploitation's tenure system is managed by a proprietor, renter, concessionaire, occupant, sharecropper, or an eventual combination of those types, who work the land with their families' help, taking on groups of temporary workers (nearly always outsiders) in the case of slightly larger exploitations. This system's traditional form is characterized by the semi-extensive use of the land resource (cereals, truck-gardening and some cattle crop combination), low technical levels, lack of credit and capital, and no technical advice" (8, p. 65). "They imitate the cultivation methods of their neighbors large or small. But, in contrast with the large producers who have motorized farm machinery at their disposal, the small ones have a couple of oxen, and sometimes just manpower. They are ignorant about or have no facilities

> for using fertilizers, improved seeds, or other inputs. Neither do they have technical advice nor--in many cases--the will to take or use it. The said characteristics--lack of prestige in contemporary agricultural work, scarcity of land and capital, ignorance of good techniques, want of credit and technical advice, and problems in the marketing of their products--exemplify the small producer's traditional form of tenure" (8, p. 66).

With regard to the marketing of their production, a study carried out in the Navidad region shows that most of their gross product is consumed by the family; another part of it is bartered (with other small producers) for farm goods that they did not produce in their exploitation, or that they did not harvest in a large enough quantity to meet their needs; another part is kept as seed for the next sowing; and the remainder is sold to traders to obtain cash to purchase non-agricultural goods (14, p. 24).

It appears that the balance of labor supply and demand is attained to a large extent through the interchange of labor among the small producers themselves. In this respect, the study on the Navidad region states:

> "When a family has more land than it can cultivate with its own labor and haulage power, it has to seek another family with surplus labor and haulage power in order to exploit their surplus land between them." "One family enterprise will supply the animals and the manpower, and the other the land. They split the remaining elements (e.g., fertilizer, seed, tools and the expenses of harvesting and threshing) between them. The product and the risk is divided between the two parties to the arrangement." "The fact that he who has no land but does have manpower and animals is on an equal footing with the man who does have land but lacks animals and manpower prevents the lack of land from being an element of economic dependency on the proprietor. On the contrary, he who has animals possesses mobile capital which can be more easily traded, whereas the proprietor is subject to the location of his land and the risks that go with it" (14, pp. 50-51).

Although sharecropping makes it possible to balance the size of the property with the availability of family manpower, at times of peak seasonal demand for manpower (sowing, cutting, threshing) the head of the family convokes friendly farmers, relatives and neighbors and asks them for help. This mechanism, called "returning the hand" (mano devuelta), is of a reciprocal nature, as when the others need help they will not hesitate to ask for it. There is another practice,

called "mingaco," in which all of the small farmers in a neighborhood join forces to do a job of work together (usually threshing), and then indulge in a feast-for-all (14, pp. 51-54).

The introduction of agricultural machinery and its rental in exchange for part of the product harvested (which practice is called "maquila") makes the unpaid exchange of labor tend to disappear, although the demonetarization and marginal trading position of important groups of small producers persist. In a way, all of these practices (the exchange of different surplus products, mingacos, maquilas, etc.) reflect the lack of currency and the relatively autarchic structure of some small producer communities.

A minority within the small producers group is made up of very dynamic entrepreneurs. These people use land in a highly intensive and specialized way, and have a great sense of entrepreneurship. They are located near the main consumer centers (Santiago's truck-garden belt for instance), and produce fundamentally for the market. Although they know their business quite well, they are usually exploited by middlemen, as, due to the generally perishable and seasonal nature of their products (vegetables), their bargaining position is a very weak one. Thanks to improved transportation media, to the penetration of government institutions that give small producers technical advice and credit (INDAP), to the opening of new markets, etc., this type of market-oriented small producer has recently tended to increase rapidly.

Generally speaking, one might say that the small producers group is weakly oriented toward the market, as it keeps a great deal of its production for its own consumption. Its production is effected at relatively low levels of efficiency, so that any marketable surpluses, as well as income derived therefrom, tend to be quite small. Most of its income goes to meet its own most elementary consumption needs, and the investment corresponds mainly to capital goods generated within its own exploitation (cattle breeding, light building construction, fencing, ditches, etc.). The small producers often obtain additional income from the sale of handicraft products (woven fabrics, basketwork, pottery, etc.), or from acting as small middlemen or traders when they are located near urban centers (free markets). As to income and living conditions, their situation is very much like those of many "inquilinos" who enjoy productive fringe-benefits, but they differ from those people in that they are (and feel) incomparably more free and independent, so much so that most inquilinos' ambition is to become small proprietors.

C. Tenant Laborers (Group 3): With this denomination, and following the nomenclature adopted in CIDA's study, we wish specifically to designate those individuals who have access to a certain area of land on which they act as small producers, but who, in exchange for this precarious tenure, have to supply labor to the master's enterprise

(or, if they are sharecroppers, have to deliver part of the product generated by the sub-tenure). This economic group covers 40.2 percent of the total agricultural population, and is composed of inquilinos and inquilino-sharecroppers (25.6 percent), strawbosses and skilled workmen enjoying productive fringe-benefits (7.6 percent) and sharecroppers (7.0 percent), all of whom enjoy, as part of their income, the right to cultivate a certain area of land (8, p. 294). In 1955 sub-tenures constituted 47.9 percent of the country's exploitation units, had access to 9.5 percent of the arable land area, and generated 23.7 percent of the total value of agricultural and cattle-raising production (8, pp. 162-206).

Inasmuch as the inquilinos are a majority group, we shall specially refer to them, assimilating the rest of the tenant laborers into their situation.

The tenant laborer, in its traditional form, is described quite thoroughly by Gene Ellis Martin:

> "In exchange for their labor they receive the owner's patriarchal protection, a house for their family, a small plot of land of from 1/4 to 1 hectare ("cerco") adjacent to the house, or, if there is too little space there, they are given an area in one of the farm's field ("racion"). They also have a right to pasture for animals on the owner's land ("talaje"). This is usually valid for two animals, but the figure varies from one property to another according to the amount of pasture that the owner has available for this purpose. The inquilinos' animals are almost invariably cows. On their small plots of land they cultivate mainly maize, beans, potatoes and vegetables for their own consumption. Close to the house they usually have a grapevine and one or two fruit trees. The inquilino generally obtains two crops a year from his share of field, as this last area falls within the owner's crop rotation. In some cases the inquilino receives a ration of foodstuffs for every day's work, but this custom is being practiced decreasingly. The ration is invariably bread, sometimes augmented with beans or lentils. He also receives a daily wage of a few pesos... It is perfectly legitimate, however, for the owner to take benefits like a house, land, and pasture into account when he calculates the minimum wage."1/ "In exchange for the benefits and rights, the

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1/ Martin's description is based on observations made in 1954, when it was legally authorized that up to 75 percent of the minimum wage could correspond to the value imputed to the fringe-benefits.

> head of the family has to fulfill his labor contract with the owner. In addition, there are usually one or two men--sons, sons-in-law, or nephews--who work on the farm as volunteers, and who are paid the minimum wage set by the government for farm workers. It is not obligatory for every inquilino's home to supply volunteers, but many proprietors prefer those families who can obtain extra hands when they are needed. This lessens dependency on outside workers at times when work becomes intensive" (19, pp. 100 and 102).

Tenant laborer's market orientation is similar to that of the poorest small producers. Generally speaking, they sell enough to buy the goods that they cannot produce. Their productive efficiency is relatively low, when consideration is given to the large amounts of family labor used. Also, their inputs are few and primitive (seeds from the last crop are supplied by the master, some cultivating implements and tools, and occasionally animal haulage power). Capital for exploitation is practically non-existent; recourse is often had to the master to obtain credits or advances, which are discounted from the crop.

Their situation of dependency on the master enterprise (slight price bargaining power), and their dual role of obligatory worker (part of their income comes from the sale of labor) and small producer (part of their income comes from real or imputed sale of products) causes them as a group to face a characteristic price system. In keeping with the present study's objectives, this fact justifies their inclusion in a separate group.

D. Agricultural Workers (Group 4): This group heading refers specifically to landless farm laborers. According to estimates by CIDA, in 1955 these people represented 6.3 percent of the total agricultural population (8, p. 294). They include Volunteers, or permanent farm laborers, and Outsiders, or transient or seasonal farm laborers.

These workmen's general characteristics have already been described (see also 20, p. 140 and 8, pp. 50-52), and their net-wage earning status (all of their income is derived from the sale of labor), as well as their increasing importance, justify their inclusion in a separate group.

To have squeezed all of the different fractions that make up the agricultural sector into four economic categories or groups is an evident oversimplification, as quite strong contradictions probably still exist within these groups (e.g., between traditional small producers and commercial small producers; between inefficient landowners who are unresponsive to economic stimuli and dynamic, progressive agricultural entrepreneurs, etc.). Nevertheless,

these four categories enable us to make a first approximation to the problem, and quite adequately represent most of the Chilean agricultural sector.

In addition, inasmuch as this study is especially concerned with the farming sector, when we come to consider the rest of the Chilean economy we shall fall into a still greater oversimplification. In this connection, the rest of the economy would be represented by Non-Agricultural Producers, Non-Agricultural Workers, and by the Rest of the World (in that part having to do with Chile's foreign trade).

E. Non-Agricultural Producers (Group 5): would be all of those individuals whose income (profit) is derived from the sale of non-agricultural products and services, as well as from capital rents and interests. In terms of occupational classification they would be employers and workers for their own account (9, pp. 253-280).

F. Non-Agricultural Workers (Group 6): include the people who supply the non-agricultural producers with labor, i.e., employees and workers in other productive activities whose income is fundamentally attributable to salaries and wages.

G. Finally, the Rest of the World (Group 7): would correspond to the group of nations with which Chile maintains commercial relations. Chile's imports would be income for the rest of the world, whereas Chilean exports would be expenditure for the rest of the world.

This level of aggregation seems adequate for the purpose of setting forth the set of analytical tools that we wish to propose. This does not mean that in trying to break down the agricultural sector we have fallen into the error of aggregating the rest of the economy excessively. It seems obvious that if it is desired to view the rest of the economy analytically, it would be necessary to consider several additional economic groups. Nevertheless, just as when we discussed the agricultural sector, it would be a mistake to determine these groups according to the type of products that they generate. In order to have data that would be operationally useful for the formulation of economic policies, it would be essential to define the said groups with respect to the role they perform in the economy and in a development process. In this sense, a fundamental group which should be handled separately, would be the government, thus to analyze the transfers that are made from and to other economic groups and have an essentially redistributive effect. Another group, which would approximately correspond to the wholesale and retail trade activity, would represent middlemen in the marketing process, which would allow us to analyze the manner in which marketing margins (and this group's income) are affected by changes in the price system.

In the same way, it might be interesting to isolate those groups that obtain their income from the sale of personal services, which groups are extraordinarily important in Chile, not because the population's income level makes them feasible (as they are in more developed countries), but basically due to the industrial sector's inability to provide productive employment for the growing active urban population.

Another interesting group would be made up of exporters and importers, who would be the middlemen in foreign trade. These people would face different price systems from those of the rest of the population (tariffs, preferential exchange rates, quotas, etc.), which would have a differential effect on their income as well as on their decisions.

In many of these cases it would be important to see whether income is derived from property (land and capital) or from labor, as a fluctuation in the price system usually causes changes in the proportion of income corresponding to each productive factor, affecting the economic welfare of those who control it, as well as the proportion on which the said factors combine in the productive process.

Finally, it must be pointed out that the rapid process of change that the Chilean agricultural sector is going through makes any relative price analysis other than a short-run one operatively redundant. The parameters and weights calculated for a given period change very rapidly, hence altering the results of the analysis. Thus, new economic groups are appearing, which perform new roles and figure differently in the development process. Urban-rural relations are no longer the same due to the growing penetration of mass communication media (political and commercial propaganda, elementary idealogical and cultural education, etc.). The traditional agrarian structure is disintegrating, and a large part of agricultural activity is being adapted to the needs of the urban areas: less use of the labor force, increasing monetarization of the peasantry, signs of the town's effect on clothing, customs, consumption, etc. Whereas in the past century and the beginning of the present one the cities lived on the countryside, it can now be said that the countryside has started to live on the cities and will continue to do so progressively. Many new roles are being created which, although they are performed in the rural scene, are of a non-agricultural nature. The new economic roles are at the same time cause and effect of the new social roles, and contribute toward the creation of a highly dynamic situation of change in the agricultural sector. As we have seen, this situation is reflected in the large producers who are using modern technology, are generally speaking well organized among themselves, and are responding quickly to economic stimuli; in that small producers, although weakly organized, are becoming more numerous through agrarian reform; in strong union organizations

which strengthen the workers' bargaining power; in a growing proletarianization of agricultural labor, based on wage relations and the disappearance of payment in kind or in precarious tenures; in the linking of the wage figure with the economic result (piecework and sharing); and in the emergence of a medium and small rural bourgeoisie based on non-agricultural occupations and roles (trade, transportation, services, etc.), etc.

The fact that many of these roles are of a transitional nature gives all of the economic and social variables tremendous dynamism. This, which forms a part of the essence of a modernization and development process, obliges one to reconsider and constantly correct any projection or estimate based on static parameters.

Chapter 4

Relative Price Policies

It is extremely difficult to identify in Chile any set of economic measures that can be rightly called a "relative price policy." The chronic inflation that has been every government's main problem for nearly a century (and especially in the last two decades) has led to most of the changes in the price system being direct or indirect by-products of the inflation process and of the attempts at stabilization. For this reason, in making a brief summary of agricultural product price policies, it is practically impossible to avoid frequent references to the inflationary process.1/

We have arbitrarily divided this section in somewhat loosely defined periods, trying to stress some changes in the gross orientation of price policies among these periods. Thus, in the period from the colony to the early thirties, during most of which agriculture was the main economic activity of the country, we can recognize a set of economic events that were generally favorable to agriculture, and more specifically, to the large landowners. From the mid-thirties on, with the increased emphasis on industrialization and the growing political importance of urban consumers, the agricultural activity did not maintain its position of predominance, neither was it penalized by economic policies. From the mid-fifties to the early sixties, with the aggravation of inflation, price policies were oriented mainly to keep down the urban cost of living, with the consequence that relative prices moved against agricultural products. In the last part of this period, agricultural laborers started gaining importance as a pressure group, demanding increases in wages and living conditions, which up to then had been extremely depressed. This, together with some structural changes (agrarian reform, peasant unionization, tax reform, etc.), reached full expression during the mid-sixties, with the arrival into power of a political group endorsing some of the ideas of the "Structuralist School of economic thought." The following pages will reveal price policies in more detail for the period following 1958.

Alessandri and the second battle against inflation (1958-1964).

The population's general discontent with this chaotic situation

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1/ For an excellent and entertaining historical economic study of the inflation process in Chile from its inception until 1962, see Hirschman (13).

was reflected in the presidential election of 1958. Jorge Alessandri, backed by the Rightist parties and with an austerity program, won the presidential election of 1958 by a very narrow margin (he only obtained 31 percent of the total votes for four candidates), thus beating Salvador Allende, the candidate who was backed by the Socialist and Communist Parties and had a program of drastic reforms in the social and economic structure.

Alessandri's government, postulating a free competition policy, initiated its attack on inflation in mid-1959. It imposed a severe control on credit expansion and set a single exchange rate. It created a new monetary unit (1 escudo = 1,000 pesos), valued at par with the dollar, and used it as an image of stability.

In order to eliminate the obstacles to foreign trade, the list of allowed imports was broadened to the point where it included practically all of those contemplated in the customs tariff. Moreover, the amounts of deposits for imports were reduced, as also were several tax rates. All of these measures led to a considerable increase in imports during 1960 and 1961, which inundated the domestic market with products and, naturally, reduced the inflationary pressures. On the other hand, helped by the image of stability provided by the exchange rate and the abundance of products, early in 1960 Alessandri's government succeeded in imposing a wage adjustment which varied on the average between 10 and 20 percent (the rate of inflation in 1959 had been 33 percent). Thereafter, through its influence on the industrial entrepreneurs, it brought pressure to bear for most of this wage increase to be absorbed by the enterprises' profits, and not to be reflected in prices. In the domestic market it kept its control over certain key farm products (rice, sugar, sunflower seed, wheat and milk), and completed the image of stabilization with an austerity program in fiscal expenditures.

Thus under attack from all sides, inflation gave way to it, and only a 5 percent price increase was recorded in 1960, the lowest since 1938.

At the beginning of his term, Alessandri made it clear that one of his primary interests would be

> "...to promote an agrarian policy the objective of which would be to increase production and gradually recover farm products' purchase value" (6, 1959, p. 81).

He stated, however, that, having regard to the urgent need to adopt general measures that would make it possible to halt the inflation, it would be necessary to withdraw attention for the moment from the problems that were troubling the agrarian sector. Although those "sacrifices" were supposed to be transitory, circumstances turned them into permanent ones. Thus, in May 1960 a violent earthquake

occurred, which seriously affected nearly one-third of Chile, especially the farming areas in the South. Against its will (and ideology) the government had to declare the prices of all articles of prime necessity frozen at the levels that had existed on the day of the earthquake, in order to avoid speculation.

Notwithstanding, although inflation had been considerably diminished, it could by no means be considered defeated, and consequently freezing of the main farm product prices remained in force through 1961. In order to offset this impact in part, input bonuses were continued and an attempt was made to increase agricultural yields through technical advice, but without much effect. In any case, the rate of inflation only reached 10 percent through 1961.

Unfortunately, this great victory over inflation seems to have been a sandcastle. The demand for imported goods, unsatisfied after long years of controls, and favored by a single fixed exchange rate (which had soon substantially overvalued the escudo), only took two years to exhaust the Central Bank's foreign exchange reserves completely. Even though the government had received large foreign credits (the level of the foreign debt doubled itself between 1958 and 1962) in addition to important foreign exchange donations on the strength of the earthquake, the monetary authorities "realized" in December 1961 that their foreign currency had come to an end. This was the beginning of the end. Several restrictive measures tending to control the situation were taken immediately: operations with foreign exchange were suspended and a double exchange area was implanted (a banking one for official operations and another very limited one for brokers, destined to satisfy in part the needs of invisible trade); importation of a large number of products was prohibited, and those that were permitted could only be imported subject to the Central Bank's prior authorization; taxes were established on trips abroad, etc.

These measures were not sufficient, however, and the government was forced to devaluate the escudo in October 1962, thus giving inflation a loose rein. The sudden increase of the dollar made its first repercussion on prices of the essential products which have to be imported (food, raw material, spare parts, fuel, etc.), and the effect of these raises quickly expanded to the rest of the economy, increasing production costs and forcing prices up. This, plus detention of the flow of imported products, fanned the flame of inflation which rose to 28 percent in 1962 and culminated with 45 percent in 1963 (which rate had only been exceeded by Ibanez' three worst years). Another group had had the opportunity to fight inflation, and another battle had been lost.

Frei and the "Structuralists" (Post 1964).

As from the mid-1950's, and stimulated by Ibanez' and Alessandri's frustrated attempts to halt inflation through orthodox economic

policies, a strong leftward shift of both economists and voters began to take place.

The economists' leftist tendency was expressed through the structuralist doctrine,[1] which emphasizes that the traditional measures of economic policy, such as reduction of the money supply through credit control, taxes, the freezing of salaries and wages, price control, etc. are merely a palliative which attacks the symptoms of a far more serious disorder, originated by certain structural imbalances or pressures within the economy. Among the main structural factors there are mentioned agriculture's low productivity, unequal income distribution, the small importing capacity, and the instability, inflexibility and regressivity of the taxation system. These structural factors originate ascendant pressures on the prices of specific and important groups of goods, eventually affecting the general price level. This leads to salary and wage adjustments as well as to consequent fiscal deficits, which factors in turn contribute to the acceleration of inflation. Traditional economic measures (credit control, the reduction of fiscal expenditures, taxes, etc.), while they are very important and should not be discarded, only help to mask the fundamental problem that creates inflation. In this way these measures can be more prejudicial than beneficial, since, if they do not affect the structural factors, a reduction of the effective demand creates strong social pressures, reduces production, and leads to unemployment, seriously compromising any possibility of development. That is to say, we have here a theory in which, within its policies for action to overcome inflation, a drastic change is vitally important in both the production structure and in that of agriculture's incomes. The guilt for the low farm productivity rests with the land tenure structure and the large landowners' lack of entrepreneurial initiative, factors which do not let the food supply respond adequately to the technological opportunities and to the greater demand, and consequently create a constant pressure for higher food prices as well as the need to import more food.

The voter's leftist tendency was expressed in the presidential election of 1964 when over 90 percent of the total votes were obtained by the two candidates whose programs offered drastic structural, social and economic reforms.

An important feature of the new battle against inflation was that no attempt would be made to defeat it out of hand, but that it would be fought by following a gradual process. As and when the

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1/ For a fairly complete bibliography on the "Structuralist School," see Hirschman (13, footnotes on pp. 282 and 283).

structural changes advocated by the government had effect, the price growth rate was to be reduced slowly until it reached zero after a lapse of four years.

In line with this study's interest, however, what constituted a real innovation compared with what had happened under former governments was that the agricultural sector became crucially important in the development process.

The key features of the government's economic program can be summarized as follows: (a) decreasing the rate of inflation; (b) redistribution of income in favor of the most neglected sectors; and (c) economic development, based substantially on the increase of farming and cattle production and on the promotion of exports.

Out of these, decreasing the rate of inflation, and those income redistribution features having to do with changes in the prices of products and factors, are those that are of most interest for the present study.

In order to retard inflation, in addition to the usual controls over foreign trade (import restrictions, fixing of the exchange rate, etc.) and over the amount of money (standbys, credit and issue restrictions, etc.), the struggle against inflation was to be based on a rigid price control, through both state inspectors and a campaign to educate the consumer. These prices were not supposed to exceed certain growth goals established beforehand. Very briefly, the general targets were as follows: During 1965, with the object of reducing the rate of inflation to 25 percent, price increases of about 28 percent would be allowed for agricultural products and 22 percent for industrial products; during 1966, in order to reduce the rate of inflation to 15 percent, increases of 17.5 percent would be authorized for farm products and of 12.5 percent for industrial ones; during 1967, in order to reach a target of 12 percent of inflation, all products (agricultural and industrial) would be allowed an average maximum price increase of 12 percent, and from then onward minimum rates of inflation would be achieved, with the intention of only adjusting prices to maintain the real value of the different products.

As it can be seen, a substantial improvement in average farm prices compared with the rest of the economy was contemplated for the first two years. For certain strategic products, such as milk, wheat and meat, much higher price increases were to be authorized. In order to avoid the farm price adjustments having a very strong repercussion on consumers, marketing margins were to be reduced by trying to eliminate unproductive middlemen as much as possible. After 1967 the policy of stimulating farmers was to continue, but increasing their real income not through better prices for their products but by reducing the prices of inputs, increasing productivity, and rationalizing marketing through the creation of cooperatives (7, 1966 and 1967).

Given the importance attributed to the gradual stabilization program and to the concrete targets for increases in the price level announced by the government at the outset, the consumer price index became the image or indicator of the results of the government's action, a similar role to that which the fixed exchange rate had had under the previous government.

The policy regarding remuneration was based on the granting of wage adjustments equivalent to 100 percent of the increase in the cost of living during the previous period for everyone, seeking the collaboration of the strongest and best organized guilds so that they would not press for larger adjustments. The exception within this scheme was to be farm workers, for whom substantial increases were contemplated to the point where they would be level with urban workers in terms of minimum wage and family allowances, together with legislation for all of their minimum wage to be paid in cash.

In addition to the redistribution of incomes via price and wage systems, a strong redistribution was to be provoked through the tax system, by increasing taxes and making them more progressive, introducing a tax on personal assets, and severely checking evasion. Moreover, fiscal expenditures were to be reoriented toward the most neglected groups, by initiating housing, education, health and agrarian reform programs.

The redistributive effects of the price and wage policies announced are clear. On the one hand, the intention was to transfer to the agricultural sector, via better prices for its products and lower ones for the inputs, part of the non-agricultural sectors' incomes. But at the same time, through the wage policy, which was intended to conserve the non-agricultural workers' buying power and substantially increase farm laborers' real incomes, this redistribution was being forced to come out of non-agricultural producers (or the rest of the world) and, passing through the agricultural producers' hands, finally to reach the agricultural laborers.

The government initiated this program under the best of auspices: it counted on a strong majority backing and a revolutionary mysticism regarding individual liberties (the presidential campaign slogan was "revolution in liberty"); soon after being elected it achieved an absolute majority in the Chamber of Deputies, thus counting on a better parliamentary backing than any previous government, although it did have some problems in the Senate; copper prices reached the highest levels in history (a by-product of the Vietnam War); it had a team of professionals and economists of the highest quality; and furthermore, being a new political departure that could provide the solution for eradicating communism in Latin America, it could count on the financial support (renegotiations of the foreign debt) and sympathy (the sending of material assistance and many experts) of important countries and international credit organisms.

During the first two years results as regards the price policy were fairly acceptable: with a target of 25 percent increase in 1965, the end of December was reached with an effective increase of 26 percent. In 1966 the effective price increase was 17 percent, whereas the target had been 15 percent. In 1966, however, and still more so in 1967, the stabilization program began to run into difficulties. In the agricultural sector, although it was within the government's policy to favor wage increases exceeding the increase in the cost of living, the explosive growth of unions was of such magnitude and their bargaining power so great that early in 1968 the government admitted that "the average (agricultural) wages, measured by the same monetary value, have doubled" (7, 1968, p. 35). Union pressures had similar effects in the rest of the economy, although on a much smaller scale. The result was that, on the average, considerably higher wage increases were obtained in the private sector than those anticipated (the stabilization projections had been made on the basis of an average wage increase equal to the increase in the consumer price index), and although it was possible to keep adjustments within the public sector close to the projected limits, the fact that a deceleration of inflation occurred in 1965 and 1966 implies a substantial increase in the cost of labor in all types of activities.

The problem became more serious in 1967, in that, in line with the projected rate of inflation, price adjustments of 12 percent only were permitted. The rise in labor costs, increased demand due to some groups' larger buying power, periodical increases of the exchange rate (every fortnight) and the extraordinary increase in public expenditures, led to loss of control over many prices, and the rate of inflation again soared up to 22 percent in 1967, measured by the consumer price index. Furthermore, since this index represented the government's major anti-inflationary measure, the government exercised rigid control over the prices of the products figured therein, which tended to cause an underestimation of the price level's real rise, while also affecting the prices of agricultural products more seriously (in the present index, items coming under the heading of foodstuffs represent nearly 50 percent of the total weight).

Although the government reiterated its decision to improve farm prices, the outlook for 1968 was not very promising. In the face of an acceleration of inflation in 1967, and with prospects of larger price increases in 1968, the different guilds, the strong agricultural unions among them, were pressing for the highest possible wage adjustments. On the other hand, the prices of farm products were subjected to strict controls to avoid a rise in the consumer price index as far as possible. And, as if all of the foregoing were not enough, it was aggravated by an extraordinary drought, auguring losses of crops and animals, a decrease in the marketable surplus, a scarcity of food for agriculture's own consumption, and unemployment for farm laborers. That is to say, it was foreseeable that the

shift of incomes via changes in the relative prices of productive goods and factors would turn against the agricultural economic groups, so that part or all of the ground gained in 1965 and 1966 would be lost.

With this brief description of the different governments' farm price policies' most relevant features, there has been no intention to judge those governments' administrative action, as this would require the analysis and statistical confirmation of a large amount of economic and social policy decisions, many of which are of no direct interest for the present study's objectives (although in one way or another any economic policy decision is indirectly reflected in the product and factor price system and level). The intention has been rather to provide some over-all information that will make it possible to understand better the tentative empirical results that will be obtained in the following chapter.

Chapter 5

The Analytical Model

In this chapter we aim to develop and empirically verify a set of theoretical instruments to isolate the effect of the price variable, and to detect quantitatively what influence it may have on the economic welfare of the different groups that participate in economic activity. In other words, it is intended to determine who benefits and to what extent, and who are prejudiced and to what extent when spontaneous or directed changes occur in relative prices.

Theoretical Formulation

In a monetary economy, the economic welfare of a person or a group of persons will be determined (at least to a great extent) by the possibility of purchasing a larger or smaller amount of goods and services with the available income. The magnitude of its monetary income may vary either because the quantity and composition of the products and/or services of productive factors that the said group delivers to the economy (and for which it receives income) vary, or because the price that it receives for them varies. In the same way, the expense is determined and varies in line with changes in the amount and composition of the products and services of productive factors that it acquires, as well as due to variations in the prices that it has to pay for them: A change in any of these variables can affect the welfare of a given individual or group, in relation to other economic groups. That is to say, the connection between monetary income and welfare can only be analyzed as a relative concept, as it will depend on the quantity of goods that can be obtained with that income, or, in other words, on the buying power (or acquisitive capacity) of said income. In this study we concern ourselves fundamentally with the effect that variations in the prices of goods bought and sold have on the economic welfare of different groups of people.

If we consider all of the goods and services of productive factors generated by a given group (including consumer goods as well as capital goods) as <u>income</u>, and the destination of this income to the purchase of consumer and capital goods (including savings, which can be considered as income not consumed at present, but which will make it possible to finance future consumption or investment) as <u>expenditure</u>, what will happen will be that, permanently and by definition, the said group's income will be equal to its expenditure.

Relating income to expenditure in period "1," we shall have

$$Y_1 = \frac{\text{Income}_1}{\text{Expenditure}_1}$$

where Y_1 will be equal to 1.

However, if upon comparing two time periods we assume that the quantities and composition of the goods and services of the productive factors that make up the income and expenditure remain constant with relation to any base period, and we let only the prices vary, we shall have $Y_1 \gtreqless 1$, depending whether income $\gtreqless$ expenditure.

This is evident as if, keeping the physical quantities between the two time periods constant, the prices of the products or productive factors that constitute income increase more than those that make up expenditure, the "package" of products that constitute income will be worth more than the "package" that constitute expenditure, and consequently $Y_1 > 1$. On another hand, if the (constant) "package" of goods and services of productive factors that constitute the expenditure increases in value, because of changes in the price system, in a larger proportion than that which constitutes income, $Y_1 < 1$.

Now, variations in the quantity and composition of the products and of the services of productive factors that generate income will be reflecting, in addition to the economic group's preferences or tastes, changes in their productivity, as well as variations in the quantities of productive factors at the group's disposal, and which allow it to generate its income. On another hand, for a given income, the quantity and composition of the products and services of productive factors that are acquired depend fundamentally on the economic groups' preferences, and also on the substitution elasticity between the different components of expenditure.

Hence, the assumption that the quantity and composition of the products and services of productive factors that constitute income and expenditure remain constant would imply assuming that:

(a) in the short run the technology (the proportion in which the factors that generate a given product combine) does not change much.

(b) in the short run there are no important changes in the productivity (quantity of product per unit of factor) of the factors belonging to each economic group and that allow it to generate its income.

(c) in the short run there are no meaningful changes in the producers' and consumers' tastes or preferences.

(d) the substitution elasticity between the different goods produced or consumed is zero.

The first assumption is usual in short run economic analysis, as the introduction of technological changes that may modify the relative use of factors meaningfully calls for longer periods of time.

For the second assumption to be satisfied, it is not essential that there be no increases of productivity, but rather it would suffice if these increases were proportionately equal in all of the economic groups. That is to say, it does not matter if the total income increases in size provided the proportion of it attributable to each group remains constant. Should some important change be detected in the productivity of the factors in the hands of a given economic group, it would be necessary to quantify it and eliminate its influence, deflating by a production index of the said factors.

The third assumption is inevitable in that up to now there are no analytical tools that would make it possible to isolate the effect that changes in tastes have on purchases or sales made by the different economic groups. This is an obligatory assumption in empirical economic analysis, inasmuch as lifting it would imply knowledge of each economic group's indifference map.

The fourth assumption is the strongest of all, for it implies that, even when variations in relative prices occur, the "package" of goods and services of productive factors that constitute a given economic group's income or expenditure remains unchanged. This assumption should be adopted, however, in any analysis in which price index numbers are used.1/

1/The need for this assumption causes Laspeyres' index to tend to over-estimate the actual price increase, as a greater than real weight is attributed to the products which become relatively more expensive. On another hand, Paasche's index (which uses each period's quantities as weights) would tend to under-estimate the price increase, as it would give too much weight to goods whose relative price has decreased. This will depend, however, on the real substitution elasticity between the different goods: if it is zero, both indices (Laspeyres' and Paasche's) would give the same estimate: if it is negative (which is unlikely, as the good whose price has gone up should be an inferior one), Paasche would overestimate more than Laspeyres; if it is positive, Paasche's estimate would be below Laspeyres', but not necessarily below the real value. For an interesting discussion of these aspects, see (18, pp. 502-536, especially section 3). For a complete summarized exposition of the economic theory of price indices, see the works of Staehle (29) and R. G. D. Allen (1).

On the basis of these assumptions, i.e., keeping constant the physical quantities of goods and services of productive factors bought and sold in accord with a given base period, we shall define "Y_i" as the Relative Income of group "i," and it will be reflecting a given welfare situation that could be compared with other situations over time.

As savings and investment are considered included, it is evident that in the base period income will be equal to expenditure, and the relative income index will be equal to 1. However, when variations in relative prices occur, the initial composition of income and expenditure remaining constant, both magnitudes could change, causing positive or negative variations in the index, and that would only be reflecting the effect that changes in the price system have on the economic welfare of the group in question. If Y_i increases from one period to another, group "i" has possibilities of raising its consumption level (keeping its composition constant) and hence its welfare.

If we consider the economy as a whole, we shall have savings "ex post" always equal to investment; but while this is applicable to all of the economic groups in the aggregate, it is not necessarily valid for each group, in that expenditure might be greater than income in a given group (so that there would be negative saving). For this to happen, however, another group must have received income in excess of expenditure, and would consequently have a surplus saving that would allow financing of the first group's larger consumption. These transfers will be considered a source of income coming from the group having surplus savings, which will charge for the use of these transfers a price equal to the commercial interest rate for short term loans. On the other hand, for the groups that receive savings transfers, these will constitute a component of expenditure whose cost will be equal to the interest rate just mentioned.

Like the goods and services of productive factors, of course, investment and savings are also subject to our assumptions of substitution elasticity being equal to zero (i.e., there will be no variation in the percentages saved and invested although the interest rate changes) and of constant tastes of preferences in the short run.

As this model is intended to quantify income transfers caused by the interchange of goods and services of productive factors, the hoarding of both income and products and services of productive factors will be excluded from the analysis.

Expressing the variables in physical terms, we would have:

$$Y_i = \frac{\sum_j X_{ij} V_{ij}}{\sum_j W_{ij} Z_{ij}}$$

where V_{ij} = goods and services of productive factors which, when sold to group "j", generate income for group "i".

Z_{ij} = goods and services of productive factors bought from group "j" and which consequently constitute expenditure for group "i".

X_{ij} = price of V_{ij}.

W_{ij} = price of Z_{ij}.

If we consider the rates of change of the variable set forth above, we have

(I) $$y_i = \sum_j a_{ij} (x_{ij} + v_{ij}) - \sum_j b_{ij} (w_{ij} + z_{ij})$$

complying with $\sum_j a_{ij} = 1$ and $\sum_j b_{ij} = 1$

where y_i = rate of variation of Y_i

x_{ij} = rate of variation of X_{ij}

v_{ij} = rate of variation of V_{ij}

w_{ij} = rate of variation of W_{ij}

z_{ij} = rate of variation of Z_{ij}

a_{ij} = proportion of income of group "i" that comes from group "J".

b_{ij} = proportion of expenditure of group "i" that is destined to group "j".

Assuming that the quantities of goods and services of productive factors bought and sold stay constant in accord with a base period "0", we shall be able to detect changes in the rate of change of the relative income of group "i" (y_i) originated by price variations. Consequently, if V_{ij} and Z_{ij} are considered constant at a known level, their growth rates would be equal to zero ($v_{ij} = z_{ij} = 0$), leaving expression (I) as

(II) $$y_i = \sum_j a_{ij} x_{ij} - \sum_j b_{ij} w_{ij}$$

or else

(III) $y_i = \sum_j (a_{ij}\, x_{ij} - b_{ij}\, w_{ij})$

Both "x_{ij}" and "w_{ij}" correspond to rates of variation, between two periods, of price indices of goods and services of productive factors transacted between sectors "i" and "j". Under these conditions, it is evident that the price of what group "i" sells to group "j" has to be equal to the price of what group "j" buys from group "i," or in other terms $X_{ij} = W_{ji}$, just as $x_{ij} = w_{ji}$.

In line with the foregoing, equation (III) would become

(IV) $y_i = \sum_j (a_{ij}\, x_{ij} - b_{ij}\, x_{ij})$

For the purpose of calculating the values of variables "x_{ij}" and "x_{ji}," we can use a modification of Laspeyres' formula, which allows us to obtain a rate of variation of a price index in period "t" with respect to a former period "t-1."

In these terms

$$x_{ij} = \sum_k \left[\frac{X_{k,o}\, V_{k,o}}{\sum_k X_{k,o}\, V_{k,o}} \cdot \left(\frac{X_{k,t}}{X_{k,t-1}} - 1 \right) \right]$$

and likewise

$$x_{ji} = \sum_r \left[\frac{X_{r,o}\, Z_{r,o}}{\sum_r X_{r,o}\, Z_{r,o}} \cdot \left(\frac{X_{r,t}}{X_{r,t-1}} - 1 \right) \right]$$

where k = the quantity of goods and services of productive factors bought by sector "j" and which generate income for sector "i."

r = the quantity of goods and services of productive factors sold by sector "j" and which represent expenditure for sector "i."

O = base period.

t = year for which the index rate of variation is determined.

Hence both x_{ij} and x_{ji} represent the rate of variation, between period "t-1" and period "t," in price indices for goods and services of productive factors, weighted by the proportion of income or expenditure attributable to each of time in a base period "O."

In an inflationary context, the variation expressed by a price index can be broken down into two types of movement:

(a) that part of the variation which is attributable to the increase of all prices simultaneously and in the same proportion and

(b) that part of the variation which is attributable to changes in the relative prices of certain products, which can cause a given partial index to increase more or less than the general level of prices in the economy, depending on whether the prices of the goods and services included in it have increased more or less than the prices of the rest of the goods and services in the economy.

This last type of movement is that which is of interest in this study, and to isolate it we have to deflate each of the price indices used, via an index that represents the rise in the economy's general price level. In other words, changes in relative prices should be expressed with relation to the economy's implicit inflation index corresponding to the weighted average of the price indices of all the goods and services of productive factors transacted in the said economy. Hence,

$$y_i^* = \sum_j (a_{ij} x_{ij}^* - b_{ij} x_{ji}^*)$$

where the symbol"*" indicates that the corresponding variable has been deflated by the economy's inflation rate.

This would be the expression that allows one to determine the total real variation of the "relative income" of group "i," as well as the composition of said variation in accord with the incidence that each of the "j" groups with which it trades has on it.

In the same way, it is possible to obtain a similar equation for each of the economic groups considered in the analysis, and we could represent the "n" groups that make up the economy by using the following system:

$$y_1^* = (a_{11} x_{11}^* - b_{11} x_{11}^*) + (a_{12} x_{12}^* - b_{12} x_{21}^*) + \ldots \ldots + (a_{1n} x_{1n}^* - b_{1n} x_{n1}^*)$$

$$y_2^* = (a_{21} x_{21}^* - b_{21} x_{12}^*) + (a_{22} x_{22}^* - b_{22} x_{22}^*) + \ldots \ldots + (a_{2n} x_{2n}^* - b_{2n} x_{n2}^*)$$

$$y_n^* = (a_{31} x_{31}^* - b_{31} x_{13}^*) + (a_{32} x_{32}^* - b_{32} x_{23}^*) + \ldots \ldots + (a_{3n} x_{3n}^* - b_{3n} x_{n3}^*)$$

$$y_n^* = (a_{n1} x_{n1}^* - b_{n1} x_{1n}^*) + (a_{n2} x_{n2}^* - b_{n2} x_{2n}^*) + \ldots \ldots + (a_{nn} x_{nn}^* - b_{nn} x_{nn}^*)$$

All of those terms in which $i = j$ (a_{ij}, b_{ij}, x_{ij}^*) are irrelevant for the model's results, as they cancel themselves out mutually. For instance, in group "i" if $i = j$, $a_{ii}\, x_{ii}\, (a_{ii} - b_{ii}) = 0$ as $a_{ii} = b_{ii}$ by definition (if income equals expenditure, the proportion of increase coming from sales made within the same group is obviously equal to the proportion of expenditure corresponding to purchases made with the same group).

This system of equations allows us to isolate and quantify the net redistributive effects that are derived from any change that has occurred in the price system, i.e., it would enable us to reach our goal of determining who are benefitted or prejudiced and to what extent (values of y_i^*) when changes in relative prices occur. It also allows us to determine which are the ("j") groups that contribute, and in what proportion, to these implicit income transfers ($a_{ij}\, x_{ij}^* - b_{ij} x_{ji}^*$).

Finally, we can also determine--and quantify--whether the implicit income transfers originated from sales ($a_{ij}\, x_{ij}^*$) or from purchases ($b_{ij}\, x_{ji}$) of goods and services of productive factors made in the "j" groups.

If the "n" economic groups considered cover all of the transactions made in the economy, and due also to the fact that the model only detects redistributive aspects, the sum of the variations in the different groups' relative income, weighted by the importance of each group in the total income generated in the economy, should equal zero.

That is to say, if we call the proportion of total income generated by group "i" "c_i," we shall have $\sum_i c_i\, y_i = 0$, where $\sum_i c_i = 1$, for $i = 1, 2, 3, 4, \ldots \ldots n$.

In other words, having isolated the redistributive effects implies that it is not possible to use relative price policies to improve a given group without this implying the simultaneous worsening of another or other groups.

The weights used in the equation for each group (a_{ij}, b_{ij}), allows us to express the variations of relative income with relation to the total income generated by the same group. If one wishes to relate the different values of y_i^* as well as its components to the total income generated in the economy, in order to make them comparable with each other in absolute terms, it will suffice to weight each weight of income and expenditure in group "i" by its corresponding participation in the total income, complying with $\sum_i c_i = \sum_i \sum_j c_i\, a_{ij} = \sum_i \sum_j c_i\, b_{ij} = 1$, for $i = 1, 2, 3, \ldots n$ and $j = 1, 2, 3, \ldots n$.

The results described above correspond to the descriptive solution, which would enable us to quantify and evaluate "ex post" the effects derived from adopting certain relative price policies.

However, the model can also be used to obtain normative solutions, i.e., if it is deliberately decided to have recourse to the price system to benefit or prejudice given groups to a desired magnitude, one can fix the values of y_i that one wishes to obtain, and then work out the equation system to determine what groups of prices have to be changed, and to what extent, to obtain the desired effect.

As we are dealing with an undetermined equation system (we have more variables than equations), we shall have to assume predetermined values for a certain number of variables, so that the number of unknowns shall equal the number of equations. If we have "n" equations, we shall have a maximum of $(n^2 + n)$ variables. Out of these, "n" variables will correspond to the y_i^* whose values we have fixed beforehand and shall try to attain. In addition, there will be "n" x_{ij}^* variables for $i = j$ which are irrelevant for the result of the model. That is to say, we shall have "n" equations and n(n-1) unknowns, we shall be able to solve the system for the values of the "n" remaining unknowns in such a way that they will reach the goals of y_i^* that we have fixed.

Application of the Model

In this section we analyze the empirical results obtained by applying the proposed model to Chile. From the historical information presented in Chapter 3 we have seen that, especially in recent decades, economic policies have been closely related with presidential periods. Having regard to the availability of the statistical information, the fact that the base for the weights is 1962, as well as the interesting changes that have recently occurred in economic policy, we have decided to choose the nine year period of 1959 to 1967, inclusive, in an attempt at this quantification. For purposes of analysis, this period has been sub-divided into three: the three-year periods of 1959-1961 and 1962-1964, which comprise the first and second halves of Alessandri's administration, respectively, and the three-year period of 1965-1967, which covers the first half of Frei's administration.

We make the main comparisons by using the average figures for each of these three-year periods, thus avoiding circumstantial alterations in the price system caused by elements that are foreign to economic policy (earthquakes, for instance). The sectors used are those presented in Chapter 3.

Table 1 shows the changes that have occurred in the relative income of the different groups between the three-year periods in 1959-1961 and 1962-1964.[1] Tables 1 and 2 show, for different periods

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[1] The Appendix presents details on calculations of Tables 1 and 2.

Table 1. Total and partial changes in relative income.[a] Period of 1959-61/1962-64.

Group and Total Weight of the Group[b]	Total Variation in Relative Income $\sum_j (a_{ij}x^*_{ij} - b_{ij}x^*_{ji})$[c]	Compo-nent[d]	Partial components attributable to each group $(a_{ij}x_{ij}) - (b_{ij}x_{ji})$						
			Large Producers (Group 1)	Small Producers (Group 2)	Tenant Laborers (Group 3)	Agric. Workers (Group 4)	Non-Agric. Producers (Group 5)	Non-Agric. Workers (Group 6)	Rest of the World (Group 7)
1. Large Producers (4.24%)	+ 4.92	INC		(-0.03)	(-0.06)	(0.01)	(1.52)	(0.22)	(2.13)
		EXP		-(-0.02)	-(1.02)	-(0.31)	-(-3.14)	-(-)	-(0.70)
		NET		-0.01	-1.08	-0.30	+4.66	+0.22	+1.43
2. Small Producers (1.13%)	+ 1.39	INC	(-0.08)			(-0.03)	(0.86)	(-1.09)	
		EXP	-(-0.10)			-(-)	-(-1.63)	-(-)	
		NET	+0.02			-0.03	+2.49	-1.09	
3. Tenant Laborers (2.08%)	+ 2.57	INC	(2.08)			(-0.02)	(-)	(-0.65)	
		EXP	-(-0.13)			-(-)	-(-1.03)	-(-)	
		NET	+2.21			-0.02	+1.03	-0.65	
4. Agricultural Workers (0.11%)	+11.97	INC	(11.90)	(-)	(-)		(-)		
		EXP	-(0.24)	-(-0.32)	-(-0.34)		-(0.35)		
		NET	+11.66	+0.32	+0.34		-0.35		
5. Non-Agricultural Producers (68.58%)	+ 1.28	INC	(-0.20)	(-0.03)	(-0.03)	(0.00)		(-0.83)	(2.69)
		EXP	-(0.10)	-(0.01)	-(-)	-(-)		-(-0.79)	-(1.00)
		NET	-0.30	-0.04	-0.03	+0.00		-0.04	+1.69
6. Non-Agricultural Workers (18.58%)	- 4.60	INC	(-)	(-)	(-)		(-2.90)		(-)
		EXP	-(0.05)	-(-0.07)	-(-0.07)		-(-3.06)		-(4.85)
		NET	-0.05	+0.07	+0.07		+0.16		-4.85
7. Rest of the World (5.16%)	- 6.14	INC	(0.57)				(13.36)	(17.57)	
		EXP	-(1.74)				-(35.90)	-(-)	
		NET	-1.17				-22.54	+17.57	

(footnotes on next page)

Table 1. (footnotes)

[a]The Changes have been expressed as percentages of variation between the limits of the period considered. Total variation corresponds to the algebraic sum of partial variations.

[b]The "Total Weight of the Group" represent each economic group's importance in the Total Income (or Expenditures) of the economy. (Table IO)

[c]The sum of the variations of Relative Income in all groups, weighted by the importance of each group in the total income generated in the economy is equal to zero. (Table IO)

[d]INC=Income Component; EXP-Expenditure Component; NET=difference between INC and EXP.

of time, the total and partial changes in the relative income of each of the groups studied, expressed as percentages of change in the total income received by the group in the base period, between the time limits of the period considered.

Each figure reflects the redistributive income effects only, originated among the different groups due to changes in the price system. In each table, therefore, the sum of all of the groups' relative income, weighted by each group's importance in the total income generated in the economy, equals zero.

It will be recalled that the most important events in that period were the monetary devaluation that took place in 1962 and the increase in the rate of inflation in the second three-year period. Moreover, an occurrence that was not very important in itself, but which served as the basis for measures that were taken later, was the passing of an Agrarian Reform Law (Law 15,020, of November 27, 1962). In accord with this law, a decree (Decree with Force of Law N° 21) was dictated in 1963, establishing a raise of 50 percent in agricultural wages and ruling that at least 30 percent of them had to be paid in cash in 1963, which percentage was to increase to 50 percent in 1964. The decrease in inflation during 1960 and 1961 was attained partly through the exchange policy (over-valuation of the escudo) and partly by granting smaller wage adjustments than the cost of living increase in the preceding period. When devaluation occurred in 1962 and prices started to rise again, union pressures commenced to increase, tending toward obtaining larger wage adjustments than the rise in prices, as a defense against expected faster inflation.

These facts are clearly reflected in Table 1, where, too, their importance for the different groups is quantified. So the Large Producers (Group 1) saw their situation improve between the two periods, mainly due to their inputs costing less. This is attributable to bonuses granted toward the price of certain inputs, as well as to inflation which substantially reduced the cost of credits, which represented an important part of the said group's expenditure. There was also a rise in the price of certain agricultural products used as inputs in non-agricultural activities (beetroot and wool especially), which strengthened the last mentioned effect. In this way, the non-agricultural producers' (among whom the credit institutions figure) contribution to the increase of the relative income of Group 1 amounted to 4.7 percent. On another hand, devaluation made returns on agricultural exports substantially larger, offsetting the higher cost of input imports and giving a credit balance of 1.4 percent. These gains were partly offset by an increase in the cost of farm labor, the greatest impact coming from the tenant laborers (they were supplying most of the labor needed by the large producers) with -1.1 percent, reinforced by -0.3 percent corresponding to agricultural workers. The positive effects of devaluation and inflation were greater than those of the higher cost of labor, so that the large producers' economic welfare improved by 4.9 percent between the two periods.

The Small Producers (Group 2) improved their relative income by about 1.4 percent, mainly through income transfers coming from Group 5 and for similar reasons to those mentioned with regard to the large producers (reduction of the relative prices of the inputs and non-agricultural consumer goods used by the small producers, and high relative prices of the inputs sold by them to other activities). However, the price of consumer goods they sell declined, causing a reduction of the corresponding income components, the strongest of which is that coming from the non-agricultural workers (-1.1%). Although they derived no benefits from devaluation (it is assumed that they exported nothing), neither were they negatively affected by the increase in the cost of labor (it is assumed that they used family labor or exchanged it within the same group).

The Tenant Laborers (Group 3) experienced an increase of 2.6 percent in their economic welfare, between the two periods considered. This is higher than that of the small producers, since they simultaneously enjoyed the favorable effect of the increase in the cost of labor (2.1%) and of the reduction in the relative price of inputs and non-agricultural consumer goods (1.0%).

The Agricultural Workers (Group 4) were those who benefited most from price policies, obtaining a 12 percent increase in their relative income, attributable almost entirely to the effect of the real rise in the level of farm wages between the two periods.

The Non-Agricultural Producers (Group 5) show a somewhat modest increase in their economic welfare (their relative income increased by 1.3%.. The negative effects originated by the drop in the relative price of inputs sold to agriculture (credit, fertilizers and bonused transportation, etc.), which effects are reflected in the negative sign of the partial components attributable in Groups 1, 2 and 3, were more than offset by the increase in income derived from better prices in escudos for exports (2.7%), attributable to devaluation and possibly to better international copper prices. It is most interesting to note that the non-agricultural producers' net result with respect to the non-agricultural workers is very close to zero. Breaking this figure down, we find that the income component's influence ($a_{56}\ x_{56}^{*}$) equals -0.83 percent which is almost exactly offset by expenditure's influence ($b_{56}\ x_{56}^{*}$), which amounts to +0.79 percent. This seems to indicate that urban union pressures were not strong enough to hold back the negative effect of accelerated inflation on non-agricultural salaries and wages, so that a real reduction of 0.79 percent took place in non-agricultural producers' expenditure due to this concept. However, the decrease of 0.83 percent in their incomes because of the drop in the relative price of consumer goods sold to Group 6 compensates exactly for the above effect.

In like manner, upon analyzing the results for Non-Agricultural Workers (Group 6), the opposite effect can be appreciated. The income component attributable to Group 5 ($a_{65}\ x_{65}^*$) amounts to -2.9 percent, and is neutralized by the expenditure component with respect to Group 5 ($b_{65}\ x_{56}^*$) which is + 3.06 percent. This means that, despite stronger union pressure and higher wage adjustments, a real decrease took place in non-agricultural workers' incomes between the two three-year periods, but without consequences for them as that decrease was offset by a lower cost of non-agricultural consumer products. Despite the foregoing, the total change in non-agricultural workers' relative income was negative and sizeable (-4.6 %). This loss of economic welfare is attributable in an important part to the increase in the prices of imported consumer articles between the two periods, caused by the devaluation.

Finally, the Rest of the World (Group 7) clearly shows the effects of the devaluation of the escudo, having experienced decreases in its relative income due to a higher price for exports in escudos, and at the same time increases because the devaluation made the prices of imported goods rise within the country, thus partly neutralizing the above effect. The rise in the price of exports seems to have been considerably larger than that in the price of imports, as, for instance, the deterioration in the rest of the world's relative income attributable to non-agricultural producers (22.5%) breaks down into 13.4 percent corresponding to higher income from the sale of imports ($a_{75}\ x_{75}^*$), and -35.9 percent attributable to larger expenditure on the purchase of exports ($b_{75}\ x_{57}$). This is probably where an upward tendency in copper prices in the international markets began to have influence, reinforcing the internal effect of the devaluation. If the deterioration of the rest of the world's relative income was no greater, it was fundamentally due to the important income transfer from the non-agricultural workers, caused by a higher cost of imported consumer goods.

It is of interest to stress the fact that all of the figures are proportionate to the magnitude of the income generated in each group. Thus, although we can see that the large producers, small producers and tenant laborers have experienced large increases in their economic welfare due to deterioration in the relative prices of some inputs (credits, transportation, fertilizers, etc.) and consumer goods coming from non-agricultural activities, as well as to increase in the relative price of certain inputs destined to non-agricultural activities (sugar beets, wool), this had an almost negligible impact on the non-agricultural producers' relative income, as the gross income generated by them was more than eight times that of the three agricultural producer groups.

When the change of government occurred in late 1964, several important modifications took place in economic policy. Among the most relevant ones for the objectives of this study, we might mention: the intention of improving the real prices of agricultural and cattle

farming products; the will to favor the real increase in farm wages (stimulating peasant unionization and putting farm laborers on a level with urban ones in terms of minimum wage and family allowance) and the upkeep of non-agricultural workers' purchasing power (through wage adjustments equivalent to 100 percent of the increase in living costs); promotion of a redistribution of income toward the neediest groups (through both price systems and direct transfers); and the encouragement of exports by means of a more realistic exchange rate which (complemented by returns of taxes and other export facilities), upon periodical adjustment, was intended to maintain the real internal value of exports.

Table 2 gives the empirical results obtained from a comparison of the last three-year period of Alessandri's government with the first three-year period of Frei's government.

It would appear that, out of the policies mentioned above, that which was best carried out was that of raising workmen's wages in general, and especially those of agricultural workers. Thus we can appreciate that the Large Producers saw their relative income decrease by 4.1 percent due to the higher cost of tenant laborers' labor, and by 1.1 percent through the higher cost of agricultural workers. This was only partly offset by a positive transfer of 0.8 percent coming from the non-agricultural producers, but this cannot be attributed to better relative farm prices (as had been anticipated when the policy was formulated) but rather to a real deterioration in the prices of inputs and consumer goods of industrial origin ($b_{15}\, x^{*}_{51} = +1.0$). That is to say, industrial prices increased less than agricultural ones, these last remaining practically unchanged. In part, this was established in the policy formulated by the government, as the intention was (and it was apparently attained) to decrease substantially the real prices of agricultural inputs, mainly through a reduction of the marketing margins. The transfers mentioned, which seem to have been the most important implicit income transfers, caused a total reduction of 4.0 percent in the large producers' relative income. However, there is a figure which, although it has no influence on relative income, it is of interest to analyze in more detail. The net relative income component attributable to the rest of the world is practically nil, which would indicate that no net transfers have occurred. But upon analyzing income and expenditure corresponding to this component separately, it is seen that farm exports caused a reduction in the relative income of Group 1 of approximately 1.4 percent, which was compensated by an increase of relative income, attributable to imports, also of about 1.4 percent. This seems to indicate a decrease in the relative price of exports and a reduction in the cost of imports. Although part of this last feature could be attributed to lower marketing costs for machinery and other imported inputs, the double effect on exports and imports is more symptomatic of an over-valuation of the escudo. And as the escudo has permanently lost value (during Frei's first three years) with approximate relation to the consumer

Table 2. Total and partial changes in relative income.[a] Period 1962-64/1965-67.

Group and Total Weight of the Group[b]	Total Variation in Relative Income $\Sigma_i(a_{1i}x^*_i - b_{1i}x^*_{i1})$[c]	Compo-nent	Partial components attributable to each group $(a_{1i}x^*_i)-(b_{1i}x^*_{i1})$						
			Large Producers (Group 1)	Small Producers (Group 2)	Tenant Laborers (Group 3)	Agric. Workers (Group 4)	Non-Agric. Producers (Group 5)	Non-Agric. Workers (Group 6)	Rest of the World (Group 7)
1. Large Producers (4.24%)	- 4.02	INC		(0.23)	(0.38)	(-0.01)	(-0.23)	(-0.26)	(-1.37)
		EXP		-(-0.04)	-(4.12)	-(1.11)	-(-1.01)	-(-)	-(-1.42)
		NET		+0.27	-3.74	-1.12	+0.78	-0.26	+0.05
2. Small Producers (1.13%)	- 0.96	INC	(-0.14)			(-0.05)	(-0.89)	(-1.88)	
		EXP	-(0.87)			-(-)	-(-2.87)	-(-)	
		NET	-1.01			-0.05	+1.98	-1.88	
3. Tenant Laborers (2.08%)	+10.02	INC	(8.43)			(-0.03)	(-)	(-1.12)	
		EXP	-(0.79)			-(-)	-(-3.53)	-(-)	
		NET	+7.64			-0.03	+3.53	-1.12	
4. Agricultural Workers (0.11%)	+49.01	INC	(42.70)	(-)	(-)		(-)		
		EXP	-(-0.28)	-(-0.55)	-(-0.59)		-(-4.89)		
		NET	+42.98	+0.55	+0.59		4.89		
5. Non-Agricultural Producers (68.58%)	- 6.93	INC	(-0.06)	(-0.04)	(-0.11)	(-0.01)		(-2.02)	(-0.05)
		EXP	-(-0.01)	-(-0.01)	-(-)	-(-)		-(6.01)	-(-1.35)
		NET	-0.05	-0.03	-0.11	-0.01		-8.03	+1.30
6. Non-Agricultural Workers (18.68%)	+33.04	INC	(-)	(-)	(-)		(22.00)		(-)
		EXP	-(-0.06)	-(-0.11)	-(-0.13)		-(-7.42)		-(-3.32)
		NET	+0.06	+0.11	+0.13		+29.42		+3.32
7. Rest of the World (5.16%)	-29.55	INC	(-1.17)				(-18.14)	(-12.03)	
		EXP	-(-1.12)				-(- 0.67)	-(-)	
		NET	-0.05				-17.47	-12.03	

(footnotes on next page)

Table 2. (footnotes)

[a]The changes have been expressed as percentages of variation between the limits of the period considered. Total variation corresponds to the algebraic sum of partial variations.

[b]The "Total Weight of the Group" represent each economic group's importance in the Total Income (or Expenditures) of the economy. (Table 10)

[c]The sum of the variations of Relative Income in all groups, weighted by the importance of each group in the total income generated in the economy is equal to zero. (Table 10)

[d]INC=Income Component; EXP=Expenditure Component; NET=difference between INC and EXP.

price index, this would lead us to think that the said index greatly underestimates not only the economy's real price level when it is used as an indicator of inflation (it does not include many important prices, that of labor among them), but would also be underestimating the consumer price level (farm exports are mainly consumer goods).

The Small Producers, who were not affected by the increase in the cost of labor, show a deterioration in their relative income of about 1 percent, attributable fundamentally to lower prices of the consumer goods that they sell (all of their income components are negative). This implicit transfer of income was especially important with respect to non-agricultural workers (-1.9%), who are the main buyers of agricultural consumer goods. However, the negative effect just mentioned was partly offset by lower prices of physical inputs and consumer goods purchased from non-agricultural activities (2.9%).

The Tenant Laborers improved their economic welfare substantially (by 10.0%), as they derived benefit from both the rise of farm wages (an increase of 8.4 percent in relative income is attributable to this factor) and the lower relative price of inputs and non-agricultural consumer goods (3.5 percent attributable to these factors). The decrease in the real price of agricultural products sold by the tenant laborers (although it was smaller than that suffered by the real price of non-agricultural products) is seen to have been reflected in a reduction of 1.1 percent of their relative income, derived from sales of agricultural consumer goods to non-agricultural workers.

The Agricultural Workers, as wage earners pure and simple, had a spectacular increase of economic welfare. Between the two periods their relative income increased 49 percent, 43 percent of which is attributable to better wages and the rest to a reduction of the real price of agricultural products (0.55% and 0.59%), and, to a greater extent, to a decrease in the real price of non-agricultural consumer goods (4.9%).

The Non-Agricultural Producers saw their relative income diminish substantially (-6.9%), due especially to a higher cost of labor, which, added to a decrease in the real price of the products that they sold in the internal market, gave a loss of over 8 percent. This loss was partly compensated by an increase of 1.3 percent in their relative income due to favorable prices in their trade with the rest of the world. This, which could be explained perfectly by the extraordinary prices of copper, is not as clear as it looks. The income component ($a_{57}\ x_{57}$) is practically nil (-0.05%), while the expenditure component ($b_{57}\ x_{75}$) amounted to +1.35 percent. The only plausible explanation for this phenomenon would be in the over-valuation of the escudo, which would have caused an instantaneous reduction of the higher copper prices (in dollars) when they were converted into escudos at the official exchange rate, so that their favorable effect was neutralized. On the

other hand, the expenditure component (purchase of imported goods and inputs) would have caused an increase of the relative income, as the cost of imported products would have decreased upon overvaluation of the escudo.

An analysis of the figures corresponding to Non-Agricultural Workers confirms the foregoing hypothesis, as this group, which purchases only consumer goods from abroad, saw its relative income increase by 3.3 percent due to the reduction in the price of imports. In addition to this income, the non-agricultural workers enjoyed a considerable increase in their relative income, mainly at the expense of non-agricultural producers (29.4%). The increase was due mainly to better real wages (22.0%), reinforced by a reduction in the price of non-agricultural consumer goods (7.4%). Besides the above, they also received less important transfers from the agricultural producer groups, owing to a decrease in the real prices of agricultural consumer products.

Group 7, which reflects the situation of trade relations with the rest of the world, clearly shows the unfavorable impact of the overvaluation of the escudo, and, what is even more important, of the high prices that copper reached in the second period. Altogether, their relative income was reduced by 29.6 percent. The overvaluation of the escudo results in similar decreases of both the internal price of exports and imports, which can be seen clearly in the foreign trade components corresponding to large producers. In the same context, the higher price of copper would cause an increase of the international price of Chilean exports (expenditure of the rest of the world). However, in the results of Table 9 for that expenditure component ($b_{75}\ x_{57}$) we can appreciate that the effect of the overvaluation (lower internal price of exports) and the effect of higher prices of copper almost cancel each other out, leaving a net income in the prices of Chilean non-agricultural exports of 0.67 percent.

From the analysis contained in Table 2, we can summarize some aspects related with the goals fixed by the government. In the first place, there has been a strong income redistribution toward the worker groups (both agricultural and urban) due to higher wage rates. With regard to the prices of agricultural products, although the government's wish had been to improve substantially their real price level, it can be stated that their real level could only barely be maintained, small decreases being noted in all of the selling groups. Notwithstanding, the objective of improving them with relation to industrial products was fully attained, as these last deteriorated considerably more. Now, as we are aware of the rigidities existing in the marketing margins of most consumer products in Chile, it seems extremely doubtful that the producers could have faced the large increases in the cost of labor without passing a large part of them on to the product's final price. If so, this would mean that the

consumer price index would not only not give an adequate estimate of the economy's real price level (as it only includes consumer goods), but would also be substantially underestimating the price level for consumer articles. This would also enable us to explain the possible overvaluation of the escudo, for if the consumer price index were to underestimate the rise of the price level very much, adjustments in the price of the dollar would not be enough to maintain parity, thus tending toward a growing overvaluation of the escudo.

Chapter 6

General Conclusions

The main purpose of this study has been to draw attention to an area of research, that of income transfers among different groups or sectors, which up to now has been relatively neglected in development literature. We have tried to state the problems involved, and propose a method of analysis that will make it possible to improve economic decision making and policy formulation. Therefore, the main over-all findings are of a methodological nature.

If the proposed approach is to be used efficiently for the formulation of price policies, it would be desirable to break down the economic groups considered still further, including explicitly and separately: the government; the middlemen in marketing; a sub-sivision of small producers, making a separate group of those who display a better business orientation (truck-gardners in the provinces of Santiago and Aconcagua, small fruit-growers, agrarian reform settlers, etc.); probably a separation of the large producers who devote themselves fundamentally to cattle farming, in order to detect the impact of policies to encourage cattle raising; etc., etc., i.e., all of the necessary sub-dividions to have the greatest possible homogeneity within each group of people and the greatest heterogeneity among different groups, with respect to the part of the price system that they face.

Among some of the most important over-all conclusions, we highlight the following:

(1) Different economic groups within one and the same activity are affected in a substantially different way when changes in the price system occur, for which reason aggregated results for the entire activity as a whole may lead to mistaken interpretations of a given price policy's implications. This can be clearly seen when comparing the total variations in the relative income of the different agricultural groups in Tables 1 and 2. Depending on the importance that each group has in the total gross income generated in the sector, a favorable or unfavorable result will be obtained for the activity as a whole. This result will cover the internal transfers between the groups that make up the activity. This may be fundamentally important in the evaluation of policies.

(2) It can be clearly appreciated, more so in countries like Chile where agricultural activity as a whole has relatively little importance, that it is fundamentally essential when making the analysis of income transfers to maintain the adequate proportion between the magnitude of the transfer and the total gross income generated by each economic group,

in order to keep a proper perspective. Thus, for instance, it can be seen from the different tables calculated that those income transfers from non-agricultural producers that made it possible to improve the agricultural groups' situation substantially had a negligible effect on the non-agricultural producers' relative income. Inversely, if an attempt were made, in a country such as Chile, to utilize agricultural activity as a source of capital for non-agricultural development, the magnitude of the income transfers that would have to be extracted from agricultural activity to have any impact on the non-agricultural activities' capital formation rate would be so great that it would seriously affect productive capacity and incentives in the agricultural activity.

(3) In analyzing the income transfers caused by changes in the price system, it is fundamental to consider all of the economy's prices, especially the price of labor, which is the most important of all. It can be clearly seen from the results of the model that the producer groups' economic welfare is greatly diminished when increases in the wage rate occur, which, as in the case of the large producers, neutralizes any attempt to improve their real income through better prices for their products. In the same way, in considering solely prices of goods in elaborating an economy's inflation indices, without including therein prices like those of capital, land and labor (thought could even be given to some form of including the tax rate as the price of services rendered by the government), strong biases are being created in the estimates of the inflation rate (downward when wages are omitted and upward when the interest rate is omitted). These omissions create serious problems for evaluating the impact that changes in the price system have on income distribution in the economy.

(4) The different groups in each activity, as well as the type of price policies and their orientation, depend fundamentally on each country's historical and political reality, so that it is inadequate to recommend or transfer price policy schemes from one country to another without making the necessary adjustments and modifications to interlock with and within that reality. It can be appreciated from Chapters 3 and 4 that existing political, social and economic conditions in Chile make up a structure of relative prices and economic groups which differs distinctly from that existing in other Latin American countries. In the same way, in the Chilean context decisions can be made which, although just as desirable, might not be feasible in other countries, and vice versa. In this sense, relative price policies have been frequently used as a substitute for taxation in underdeveloped countries, where the tax systems are characterized by their inflexibility and inefficiency. Although in economic terms this may be a very poor way of extracting income from some groups to benefit others, in many instances it is the only alternative that is politically feasible. However, and as the empirical results of this study have shown, the implications of a change in relative prices are multiple and very difficult to isolate. Frequently price policy measures have results completely different, or even opposite, to the results desired.

(5) Before concluding we would like to stress some considerations that, although not directly derived from the empirical findings, are extremely relevant because of their implications for the Chilean development process.

In this study we have so far discussed and analyzed the role of the price system as a mechanism for redistributing income among different economic groups. We have elaborated a model that enables us to isolate solely this redistributive effect, and have made empirical estimates for the Chilean economy. The Chilean case is a particularly interesting workshop for this kind of analysis, since the strong inflation continuously generates shifts in the price system. Additionally, in an attempt to halt inflation and to keep the cost of living down, successive governments have been forced by urban consumers (the majority of the voters) to impose a rigid control over the prices of the most important consumer goods, creating further alterations in the price system. The political awakening and organization of large sectors of the population (especially agricultural workers) has originated strong income redistribution pressures, especially through higher wages. Depending on their political and economic power, each group of people tries to obtain privileges, or to create automatic economic mechanisms, to protect themselves against inflation. The different degrees of success of the various groups generate shifts in the price system. All these variations in the relative prices originate, as was clearly demonstrated in the numerical findings of this study, important implicit transfers of income among the different groups.

However, in any monetary economy, be it socialist or capitalist, the price system also has simultaneously the function of being a guide for the efficient allocation of the economy's resources. In other words, since the productive resources are controlled by the different socio-economic groups, the price system will determine to some extent what proportion of the income generated in the economy will correspond to each economic group (distribution implications). At the same time the price system will guide the producer groups so that they will use more of those products or factors whose price is relatively lower, and less of those whose price is relatively higher (efficiency implications). These two functions of the price system, which to a large extent are conflicting among themselves, are crucial for the formulation of a strategy of economic development. On the one hand, social equity demands a distribution of income and wealth that will not result in too large disparities in the level of living of different groups of people, and the price system is one of the several mechanisms (taxes, subsidies, etc.) that can be used to achieve this objective. On the other hand, economic and productive efficiency would require that higher prices would be set for scarce resources and lower for those that are abundant.

In Chile this can be clearly appreciated in the agricultural activity with regard to the price of labor, which is the most important

price in the economy. A wage fixed in terms of efficiency in the use of available resources should be quite low (equal to the marginal productivity of labor), as labor is relatively plentiful (one-third of the active population is used to produce one-eighth of the national product). However, due to the extreme concentration of land and capital in Chilean agriculture (which has made an agrarian reform absolutely necessary), this fact would imply that a very small part of total agricultural income is going to the workers, while the greater part corresponds to rents, interests and profits, all concentrated in the hands of the people who own most of the land and the capital. However, if wages are raised substantially in order to redistribute income more fairly, the people who are responsible for combining the productive factors will tend to use less labor and substitute it with capital. This higher wage, which could be perfectly desirable in terms of social justice, is to a large extent undesirable in terms of economic efficiency. What this situation could lead to is, for instance, that instead of producing vegetables and fruit, the tendency would be to produce cereals and other easily mechanizable crops which would yield a very inferior agricultural product to that which could be obtained by using the factors efficiently.

It can be argued that, as has happened in the Chilean case, labor unemployment can be avoided by passing an immovability law. Although this law may have some effect during a very brief period, the adjustment will soon tend to materialize through at least two mechanisms: On the one hand, and assuming that no labor is dismissed, to generate unemployment the producers would only have to abstain from hiring the people who enter the labor force from year to year. This could be supplemented by using capital intensive technologies, which would make it possible to do without a great deal of seasonal labor. This means that although no workmen are dismissed no new employment opportunities will be generated and agricultural labor will have to migrate to the cities, where the same phenomenon is occurring on a smaller scale. The net result is that, although a high real wage is maintained for those who are still employed, the workers' share in the national income diminishes because of increased unemployment. On the other hand, when this imbalance in the cost of factors occurs, and if adjustment through unemployment is not allowed, there will tend to be an increase in the monetary selling price of goods, offsetting the rise in the monetary wage rate, thus reducing the real wage rate enough to maintain full employment, and at the same time again reducing the workers' share in the national income.

These aspects of efficiency and redistribution which we have described very superficially for labor's case, are also valid for the relative prices of the different goods and services generated in the economy. In view of these complexities, it seems to us that in Chile the use of the price system as a tool for income distribution is not recommendable. A small product in the economy, inefficiency in resource use, unemployment and inflation appear to us to be too high a cost for the attainment of social justice through this mechanism.

It would be much more sensible (although far more difficult) to reach the income distribution goals by making the ownership of the factors more homogeneous, i.e., by reducing the concentration of land and capital in few hands, so that profits, rents and interests would be distributed among the workers to a greater extent. This process, which is a part of what is intended as an achievement through Chilean agrarian reform, is a very slow one, and at best would only benefit a small part of the workers. Another mechanism, just as difficult to attain, would be to extract through taxation that part of profits, rents and interests considered socially excessive, and to redistribute it more homogeneously to the community, through mechanisms that would be independent of the price of the factors, such as family allowances, educational infrastructure, health and welfare insurance, transportation, recreation, etc.

We have mentioned that these alternative mechanisms (redistribution of property and/or redistribution of income) are quite difficult to use, as they are bound to destroy privileges and over-ride vested interests. Agrarian and tax reforms usually meet with solid opposition precisely on the part of those who hold economic power and, directly or indirectly, political power. Moreover, during the implementation process as well as in its subsequent application, there is the danger that inefficiencies will be generated, that incentives will be affected and that uncertainties will be bred. Given the relative mobility of the capital factor and entrepreneurial capacity between different countries, the outcome could be a flight of capital and entrepreneurs to other nations that may offer better advantages. Unfortunately, there is no easy solution for this problem in a society in which relative individual liberty is preserved.

Despite the difficulties presented by these reforms, we believe that, if it is desired to improve the distribution of income and opportunity in a society, it is essential to tackle those difficulties instead of yielding to the temptation of falling back on the price system to generate the transfers in question. Although it seems easier to achieve, redistribution produced by changes in the price system is usually short-lived and generates pressures that take away what has been gained, while at the same time the economy's productive capacity is used inefficiently. It would therefore appear more fitting to reserve for the price system the function of serving as a guide to what is plentiful and what is scarce, so that the people who have to make economic decisions from day to day may do so efficiently in accord with the economy's resource endowment, and the greatest possible product may be achieved with consequent welfare for the community.

Appendix

Several price indices representing the most important sets of products exchanged between the economic groups have been determined (9). The summary of these price indices is presented in Table 3, which shows the values of each index for the different years included between 1959 and 1967, as well as averages for some selected periods, all expressed with relation to 1959 = 100.

In the matrix represented in Table 4, we show the different variables of model (X_{ij}); the horizontal lines correspond to the sets of goods and services that constitute the income of the groups that sell, and the columns to the sets of goods and services that constitute the expenditure of the groups that buy. In both cases the variable is shown in brackets, followed by the internal weights (which allow aggregation of partial indices among themselves), and by the symbol that represents the pertinent price index, as shown in Table 3.

From the information contained in Tables 1 and 2 we have calculated the value corresponding to each of the model's variables for certain selected years within the period of 1959 - 1967. These values are shown in Table 5, and correspond to the average nominal magnitudes of the model's variables in the years or groups of years indicated in the Table's heading.

Variations in the price system should be computed with relation to an inflation index covering all of the economy's prices, adequately weighted according to their importance. (9, p. 137).

Deflating the variables' nominal values by the implicit inflation index corresponding to each period, we obtain the real values of the model's variables, which appear in Table 6. These real magnitudes are equivalent to expressing the variables' values, in the different periods selected, as a percentage of the inflation index corresponding to that period.

In Table 7 we have computed real (deflated) growth rates (x_{ij}) out of some of the periods selected previously. These growth rates have been expressed as a percentage of net increase (or decrease) between the two periods considered in each case.

The total weights of the income variables (a_{ij}), which allow us to give the different variables' real growth rates an importance that is proportionate to the percentage of income generated in each group by the sale of the goods and services that constitute the variable, appear in Table 8. In like manner, the total weights of the expenditure variables (b_{ij}), which allows us to give the different variables'

real growth rates an importance that is proportionate to the expenditure incurred by each group, are set forth in Table 9. In both tables, in order to facilitate identification, the corresponding variable is shown in brackets alongside of each weight.

With the foregoing data (x_{ij}^*, a_{ij} and b_{ij}) we can calculate the magnitude and composition of the changes in the relative income of the seven economic groups (as presented in main text tables 1 and 2), as per the expression

$$y_i^* = \sum_j (a_{ij} x_{ij}^* - b_{ij} x_{ji}^*)$$

where $i = 1, 2, 3, 4, 5, 6, 7.$

$j = 1, 2, 3, 4, 5, 6, 7.$

Table 3. Summary of price indexes.[a]

Price Index for:	1959	1960	1961	Average 1959-1961	1962	1963	1964	Average 1962-1964
(I_1) Direct Consumption Agricultural Products (General Index)	100.0	121.9	127.8	116.6	147.8	199.4	310.4	219.1
(I_2) Direct Consumption Agricultural Products (Index for Small Producers and Tenant Laborers)	100.0	128.3	133.0	120.4	142.7	207.4	307.3	219.1
(I_3) Agricultural Inputs destined to Agricultural Activity	100.0	124.3	142.9	122.4	146.7	208.9	304.3	220.0
(I_4) Agricultural Inputs destined to Non-Agricultural Activities	100.0	106.0	104.8	103.6	132.0	212.6	319.3	221.3
(I_5) Exports of Agricultural Origin	100.0	101.4	99.4	100.3	178.4	298.1	331.2	269.?
(I_6) Agricultural Labor (Tenant Laborers and Agricultural Workers)	100.0	111.3	153.0	121.4	179.1	238.1	344.9	254.0
(I_7) Non-Agricultural Consumer Goods and Services purchased by High Income Urban Consumers	100.0	112.0	118.8	110.3	134.4	188.0	270.7	197.7
(I_8) Non-Agricultural Consumer Goods and Services purchased by Low Income Urban Consumers	100.0	107.8	112.0	106.6	123.5	184.7	265.7	191.3
(I_9) Non-Agricultural Consumer Goods and Services purchased by Low Income Rural Consumers	100.0	104.6	106.0	103.5	113.3	191.4	281.2	195.3
(I_{10}) Non-Agricultural Inputs destined to Agricultural Activity	100.0	106.9	112.6	106.5	124.5	173.3	245.5	181.1
(I_{11}) Non-Agricultural Capital Goods destined to the Agricultural Activity	100.0	114.0	120.3	111.4	141.2	200.3	275.3	205.6
(I_{12}) Non-Agricultural Activities' Exports	100.0	103.0	96.4	99.8	164.3	282.5	321.7	256.2

(continued)

Table 3. (continued)

Price Index for:	1959	1960	1961	Average 1959-1961	1962	1963	1964	Average 1962-1964
(I_{13}) Non-Agricultural Workers' Salaries and Wages	100.0	115.1	132.5	115.9	150.9	205.7	274.3	210.3
(I_{14}) Consumer Goods, purchased from the Rest of the World	100.0	92.7	98.3	97.0	175.1	306.0	332.6	271.2
(I_{15}) Imported Inputs, destined to the Agricultural Activity	100.0	96.0	97.7	97.9	99.3	169.8	247.6	172.2
(I_{16}) Imported Inputs, destined to Non-Agricultural Activities	100.0	95.6	82.0	92.5	127.4	230.1	224.4	194.0
(I_{17}) Imported Capital Goods destined to the Agricultural Activity	100.0	103.5	108.5	104.0	111.5	195.8	279.4	195.6
(I_{18}) Imported Capital Goods, destined to Non-Agricultural Activities	100.0	102.3	108.9	103.7	160.0	289.1	373.0	274.0

(continued)

Table 3. (continued)

Price Index for:	1965	1966	1967	Average 1955-1967
(I_1) Direct Consumption Agricultural Products (General Index)	406.4	517.0	616.4	513.3
(I_2) Direct Consumption Agricultural Products (Index for Small Producers and Tenant Laborers)	346.7	537.6	595.?	493.?
(I_3) Agricultural Inputs destined to Agricultural Activity	426.1	586.3	797.2	503.2
(I_4) Agricultural Inputs destined to Non-Agricultural Activities	429.5	516.7	596.5	514.?
(I_5) Exports of Agricultural Origin	335.4	465.7	570.3	457.1
(I_6) Agricultural Labor (Tenant Laborers and Agricultural Workers)	566.0	855.7	1,140.0	353.9
(I_7) Non-Agricultural Consumer Goods and Services purchased by High Income Urban Consumers	351.6	447.6	561.4	453.5
(I_8) Non-Agricultural Consumer Goods and Services purchased by Low Income Urban Consumers	330.?	400.1	490.8	407.0
(I_9) Non-Agricultural Consumer Goods and Services purchased by Low Income Rural Consumers	337.5	387.4	461.5	395.5
(I_{10}) Non-Agricultural Inputs destined to Agricultural Activity	335.6	431.2	510.2	425.7
(I_{11}) Non-Agricultural Capital Goods destined to the Agricultural Activity	368.7	465.1	587.8	473.9
(I_{12}) Non-Agricultural Activities' Exports	411.9	622.7	762.7	599.1

(continued)

Table 3. (continued)

Price Index for:	1965	1966	1967	Average 1965-1967
(I_{13}) Non-Agricultural Workers' Salaries and Wages	422.4	574.5	817.2	604.7
(I_{14}) Consumer Goods, purchased from the Rest of the World	408.8	386.3	473.1	422.7
(I_{15}) Imported Inputs, destined to the Agricultural Activity	320.3	337.3	386.3	348.6
(I_{16}) Imported Inputs, destined to Non-Agricultural Activities	263.4	292.9	358.7	305.0
(I_{17}) Imported Capital Goods destined to the Agricultural Activity	392.8	418.7	511.8	441.1
(I_{18}) Imported Capital Goods, destined to Non-Agricultural Activities	360.3	464.6	569.0	464.6

[a]Source: "The Effect of Agricultural Price Policies on Intersectoral Income Transfers," by Roberto P. Echeverria, unpublished Ph.D. Thesis, Cornell University, June 1969.

Table 4. Composition and internal weights of the model's variables.[a]

Groups that Sell \ Groups that Buy	Large Producers (Group 1)	Small Producers (Group 2)	Tenant Laborers (Group 3)	Agricultural Workers (Group 4)
Large Producers (Group 1)	(X_{11}) 48.2 I_3 19.7 I_1 32.1[b]	(X_{12}) 19.1 I_3 80.9 I_1	(X_{13}) 28.6 I_3 71.4 I_1	(X_{14}) 100.0 I_1
Small Producers (Group 2)	(X_{21}) 100.0 I_2	(X_{22}) 61.9 I_3 29.1 I_2 9.0[b]	(X_{23})	(X_{24}) 100.0 I_2
Tenant Laborers (Group 3)	(X_{31}) 63.7 I_6 36.3 I_2	(X_{32})	(X_{33}) 12.2 I_3 77.4 I_2 10.4[b]	(X_{34}) 100.0 I_2
Agricultural Workers (Group 4)	(X_{41}) 100.0 I_6	(X_{42})	(X_{43})	(X_{44})
Non-Agricultural Producers (Group 5)	(X_{51}) 37.8 I_{10} 40.6 I_7 21.6 I_{11}	(X_{52}) 50.0 I_{10} 50.0 I_9	(X_{53}) 36.4 I_{10} 63.6 I_9	(X_{54}) 100.0 I_9
Non-Agricultural Workers (Group 6)	(X_{61})	(X_{62})	(X_{63})	(X_{64})
Rest of the World (Group 7)	(X_{71}) 46.3 I_{15} 22.0 I_{14} 31.7 I_{17}	(X_{72})	(X_{73})	(X_{74})

(continued)

Table 4. (continued)

Groups that Sell \ Groups that Buy	Non-Agricultural Producers (Group 5)	Non-Agricultural Workers (Group 6)	Rest of the world (Group 7)
Large Producers (Group 1)	(X_{15}) 43.1 I_4 56.9 I_1	(X_{16}) 100.0 I_1	(X_{17}) 100.0 I_5
Small Producers (Group 2)	(X_{25}) 38.2 I_4 61.8 I_2	(X_{26}) 100.0 I_2	(X_{27})
Tenant Laborers (Group 3)	(X_{35})	(X_{36}) 100.0 I_2	(X_{37})
Agricultural Workers (Group 4)	(X_{45})	(X_{46})	(X_{47})
Non-Agricultural Producers (Group 5)	(X_{55}) 43.3[b] 47.7 I_7 9.0[b]	(X_{56}) 100.0 I_8	(X_{57}) 100.0 I_{12}
Non-Agricultural Workers (Group 6)	(X_{65}) 100.0 I_{13}	(X_{66})	(X_{67})
Rest of the World (Group 7)	(X_{75}) 66.1 I_{16} 6.4 I_{14} 27.5 I_{18}	(X_{76}) 100.0 I_{14}	(X_{77})

Source: 2, p. 206.

[a] In each case the variable appears in brackets, followed by the internal weights and the symbol representing the corresponding Price Index, according to Table 3. For the definition of the variables, see the text.

[b] See the text for an explanation of these variables.

Table 5. Nominal values of the model's variables, for some selected periods between 1959 and 1967.[a]

Global Weights[b]	Variables[c]	Periods[d] 1959-1961	1962-1964	1965-1967	1964	1965	1966	1967
0.58	X_{11}	120.7	219.7	577.1	306.1	420.4	566.2	744.8
0.38	X_{12}	117.7	219.3	530.5	309.2	410.2	530.2	650.9
0.39	X_{13}	118.3	219.4	539.0	308.7	412.0	536.8	668.1
0.04	X_{14}	116.6	219.1	513.3	310.4	406.4	517.0	616.4
1.07	X_{15}	111.0	220.0	513.7	314.2	416.4	516.9	607.8
1.58	X_{16}	116.6	219.1	513.3	310.4	406.4	517.0	616.4
0.21	X_{17}	100.3	269.2	457.1	331.2	335.4	465.7	570.3
0.03	X_{21}	120.4	219.1	493.2	307.3	346.7	537.6	595.2
0.31	X_{22}	121.8	219.7	568.0	305.3	400.7	570.7	732.6
0.01	X_{24}	120.4	219.1	493.2	307.3	346.7	537.6	595.2
0.30	X_{25}	114.0	219.9	501.2	311.9	378.3	529.6	595.7
0.47	X_{26}	120.4	219.1	493.2	307.3	346.7	537.6	595.2
0.65	X_{31}	121.0	241.3	723.0	331.3	486.4	740.2	942.2
0.90	X_{33}	120.7	219.2	508.2	306.9	357.5	544.2	622.7
0.01	X_{34}	120.4	219.1	493.2	307.3	346.7	537.6	595.2
0.52	X_{36}	120.4	219.1	493.2	307.3	346.7	537.6	595.2
0.11	X_{41}	121.4	254.0	853.9	344.9	566.0	855.7	1,140.0
2.52	X_{51}	109.1	193.1	447.4	262.2	349.2	445.2	547.7
0.44	X_{52}	105.0	188.2	410.6	263.4	336.6	409.3	485.9

(continued)

Table 5. (continued)

Global Weights[b]	Variables[c]	Periods[d] 1959-1961	1962-1964	1965-1967	1964	1965	1966	1967
0.79	X_{53}	104.6	190.1	406.5	268.2	336.8	403.3	479.2
0.04	X_{54}	103.5	195.3	395.5	281.2	337.5	387.4	461.5
45.56	X_{55}	110.3	197.7	453.5	270.7	351.6	447.6	561.4
14.28	X_{56}	106.6	191.3	407.0	265.7	330.2	400.1	490.8
4.96	X_{64}	99.8	256.2	599.1	321.7	411.9	622.7	762.7
18.68	X_{65}	115.9	210.3	604.7	274.3	422.4	574.5	817.2
0.36	X_{71}	99.6	201.4	394.2	276.4	362.8	373.9	446.1
2.97	X_{75}	95.9	220.9	356.4	272.2	299.4	346.1	423.9
1.84	X_{76}	97.0	271.2	422.7	330.6	408.8	386.3	473.1
Implicit Index of Inflation[e]		110.0	205.6	484.5	277.3	367.8	476.2	609.5

[a] We have excluded those variables having a total weight equal to zero, since they are irrelevant for the results of the model.

[b] Source: Table 10.

[c] For the definition of the variables, see the text.

[d] The indexes corresponding to each period have been elaborated from the data in Tables 3 and 4.

[e] The Index of Inflation implicit in the model corresponds to the weighted average (weighted by the Global Weights) of the indexes of the different variables in each period.

Table 5. Real values of the model's variables, for some selected periods between 1959 and 1967.[a]

Variables	Periods						
	1959-1961	1962-1964	1965-1967	1964	1965	1966	1967
X_{12}	107.0	106.7	109.5	111.5	111.5	111.3	106.8
X_{13}	107.5	106.7	111.2	111.3	112.0	112.7	109.6
X_{14}	106.0	106.6	105.9	111.9	110.5	108.6	101.1
X_{15}	100.9	107.0	106.0	113.3	113.2	108.5	99.7
X_{16}	106.0	106.6	105.9	111.9	110.5	108.6	101.1
X_{17}	91.2	130.9	94.3	119.4	91.2	97.8	93.6
X_{21}	109.5	106.6	101.8	110.8	94.3	112.9	97.7
X_{24}	109.5	106.6	101.8	110.8	94.3	112.9	97.7
X_{25}	103.6	107.0	103.4	112.5	102.9	111.2	97.7
X_{26}	109.5	106.6	101.8	110.8	94.3	112.9	97.7
X_{31}	110.0	117.4	149.2	119.5	132.2	155.4	154.6
X_{34}	109.5	106.6	101.8	110.8	94.3	112.9	97.7
X_{36}	109.5	106.6	101.8	110.8	94.3	112.9	97.7
X_{41}	110.4	123.5	176.2	124.4	153.9	179.7	187.0
X_{51}	99.2	93.9	92.3	94.6	94.9	93.5	89.9
X_{52}	95.5	91.5	84.7	95.0	91.5	86.0	79.7
X_{53}	95.1	92.5	83.9	96.7	91.6	84.7	78.6
X_{54}	94.1	95.0	81.6	101.4	91.8	81.4	75.7
X_{56}	96.9	93.0	84.0	95.8	89.8	84.0	80.5
X_{57}	90.7	124.6	123.7	116.0	112.0	130.8	125.1

(continued)

Table 6. (continued)

Variables	Periods						
	1959-1961	1962-1964	1965-1967	1964	1965	1966	1967
X_{65}	105.4	102.3	124.8	98.9	114.8	120.6	134.1
X_{71}	90.5	98.0	81.4	99.7	98.6	73.5	73.2
X_{75}	87.2	107.4	73.6	98.2	81.4	72.7	69.5
X_{76}	88.2	131.9	87.2	119.9	111.1	81.1	77.6

[a]Source: Table 5. The nominal values of the variables have been deflated by the Index of Inflation implicit in the model.

Table 7. Real rates of growth[a] of the model's variables (x_{ij}^{*}), between some selected periods.

Variables[b]	Real Rate of Growth in each Period (x_{ij}^{*})					
	1959-61/ 1962-64	1962-64/ 1965-67	1964/1965	1965/1966	1966/1967	1964/1967
X_{12}	- 0.3	2.6	0.0	- 0.2	- 4.0	- 4.2
X_{13}	- 0.7	4.2	0.6	0.6	- 2.8	- 1.5
X_{14}	0.6	- 0.7	- 1.3	- 1.7	- 6.9	- 9.7
X_{15}	6.0	- 0.9	- 0.1	- 4.2	- 8.1	- 8.1
X_{16}	0.6	- 0.7	- 1.3	- 1.3	- 6.9	- 9.7
X_{17}	43.5	-28.0	-23.6	7.2	- 4.3	-21.6
X_{21}	- 2.6	- 4.5	-14.9	19.7	-13.5	-11.8
X_{24}	- 2.6	- 4.5	-14.9	19.7	-13.5	-11.8
X_{25}	3.3	- 3.4	- 8.5	8.1	-12.1	-13.2
X_{26}	- 2.6	- 4.5	-14.9	19.7	-13.5	-11.8
X_{31}	6.7	27.1	10.6	17.5	- 0.5	29.4
X_{34}	- 2.6	- 4.5	-14.9	19.7	-13.5	-11.8
X_{36}	- 2.6	- 4.5	-14.9	19.7	-13.5	-11.8
X_{41}	11.9	42.7	23.7	16.8	4.1	50.3
X_{51}	- 5.3	- 1.7	0.3	- 1.5	- 3.9	- 5.0
X_{52}	- 4.2	- 7.4	- 3.7	- 6.0	- 7.3	-15.1
X_{53}	- 2.7	- 9.3	- 5.3	- 7.5	- 7.2	-13.7

(continued)

Table 7. (continued)

Variables[b]	Real Rate of Growth in each Period (x_{ij}^*)					
	1959-61/ 1962-64	1962-64/ 1965-67	1964/1965	1965/1966	1966/1967	1964/1967
X_{54}	1.0	-14.1	- 9.5	-11.3	- 7.0	-25.3
X_{56}	- 4.0	- 9.7	- 6.3	- 6.5	- 4.2	-16.0
X_{57}	37.4	- 0.7	- 3.4	16.8	- 4.4	7.8
X_{65}	- 2.9	22.0	16.1	5.1	11.2	35.6
X_{71}	8.3	-16.9	- 1.1	-20.4	- 6.8	-26.6
X_{75}	23.2	-31.5	-17.1	-10.7	- 4.4	-29.2
X_{76}	49.5	-33.9	- 7.3	-27.0	- 4.3	-35.3

[a]Source: Table 6. The real rates of growth have been expressed as the net percentage of variation between period "t-1" and period "t".

[b]We have excluded those variables X_{ij} when i=j, alongside those having a total weight of zero, for being irrelevant for the results of the model.

Table 8. Total weights (a_{ij}) of income variables.[a]

	Total Income (in $)	Percentage of income coming from each group (a_{ij})						
		Large Producers (Group 1)	Small Producers (Group 2)	Tenant Laborers (Group 3)	Agricultural Workers (Group 4)	Non-Agric. Producers (Group 5)	Non-Agric. Workers (Group 6)	Rest of the World (Group 7)
Large Producers (Group 1)	100.0	13.7 (X_{11})	8.9 (X_{12})	9.1 (X_{13})	1.0 (X_{14})	25.3 (X_{15})	37.1 (X_{16})	4.9 (X_{17})
Small Producers (Group 2)	100.0	3.0 (X_{21})	27.8 (X_{22})	0.0 (X_{23})	1.2 (X_{24})	26.2 (X_{25})	41.8 (X_{26})	0.0 (X_{27})
Tenant Laborers (Group 3)	100.0	31.1 (X_{31})	0.0 (X_{32})	43.3 (X_{33})	0.7 (X_{34})	0.0 (X_{35})	24.9 (X_{36})	0.0 (X_{37})
Agricultural Workers (Group 4)	100.0	100.0 (X_{41})	0.0 (X_{42})	0.0 (X_{43})	0.0 (X_{44})	0.0 (X_{45})	0.0 (X_{46})	0.0 (X_{47})
Non-Agricultural Producers(Group 5)	100.0	3.7 (X_{51})	0.6 (X_{52})	1.2 (X_{53})	0.1 (X_{54})	66.4 (X_{55})	20.8 (X_{56})	7.2 (X_{57})
Non-Agricultural Workers(Group 6)	100.0	0.0(X_{61})	0.0 (X_{62})	0.0 (X_{63})	0.0 (X_{64})	100.0 (X_{65})	0.0 (X_{66})	0.0 (X_{67})
Rest of the World (Group 7)	100.0	6.9 (X_{71})	0.0 (X_{72})	0.0 (X_{73})	0.0 (X_{74})	57.6 (X_{75})	35.5 (X_{76})	0.0 (X_{77})

Source: 9, Pp. 204-291.

[a]In each case the corresponding variable appears in brackets on the right side of the weights.

Table 9. Total weights (b_{ij}) of expenditure variables.[a]

	Total Expenditure (in %)	Percentage of expenditure destined to each group (b_{ij})						
		Large Producers (Group 1)	Small Producers (Group 2)	Tenant Laborers (Group 3)	Agricultural Workers (Group 4)	Non-Agric. Producers (Group 5)	Non-Agric. Workers (Group 6)	Rest of the World (Group 7)
Large Producers (Group 1)	100.0	13.7 (X_{11})	0.8 (X_{21})	1.2 (X_{31})	2.6 (X_{41})	59.3 (X_{51})	0.0 (X_{61})	8.4 (X_{71})
Small Producers (Group 2)	100.0	33.4 (X_{12})	27.8 (X_{22})	0.0 (X_{32})	0.0 (X_{42})	38.8 (X_{52})	0.0 (X_{62})	0.0 (X_{72})
Tenant Laborers (Group 3)	100.0	18.7 (X_{13})	0.0 (X_{23})	43.3 (X_{33})	0.0 (X_{43})	38.0 (X_{53})	0.0 (X_{63})	0.0 (X_{73})
Agricultural Workers (Group 4)	100.0	39.9 (X_{14})	12.2 (X_{24})	13.2 (X_{34})	0.0 (X_{44})	34.7 (X_{54})	0.0 (X_{64})	0.0 (X_{74})
Non-Agricultural Producers (Group 5)	100.0	1.6 (X_{15})	0.4 (X_{25})	0.0 (X_{35})	0.0 (X_{45})	66.4 (X_{55})	27.3 (X_{65})	4.3 (X_{75})
Non-Agricultural Workers (Group 6)	100.0	8.4 (X_{16})	2.5 (X_{26})	2.8 (X_{36})	0.0 (X_{46})	76.5 (X_{56})	0.0 (X_{66})	9.8 (X_{76})
Rest of the World (Group 7)	100.0	4.0 (X_{17})	0.0 (X_{27})	0.0 (X_{37})	0.0 (X_{47})	96.0 (X_{57})	0.0 (X_{67})	0.0 (X_{77})

Source: 9, Pp. 284-291.

[a]In each case the corresponding variable appears in brackets on the right side of the weights.

Table 10. Global Weights of the Model's Variables

	Large Producers (Group 1)	Small Producers (Group 2)	Tenant Laborers (Group 3)	Agricultural Workers (Group 4)	Non-Agricultural Producers (Group 5)	Non-Agricultural Workers (Group 6)	Rest of the World (Group 7)	TOTAL
Large Producers (Group 1)	0.581	0.376	0.388	0.043	1.072	1.575	0.208	4.243
Small Producers (Group 2)	0.034	0.313		0.013	0.295	0.470		1.125
Tenant Laborers (Group 3)	0.647		0.901	0.014		0.517		2.079
Agricultural Workers (Group 4)	0.110							0.110
Non-Agricultural Producers (Group 5)	2.518	0.436	0.791	0.038	45.558	14.281	4.957	68.579
Non-Agricultural Workers (Group 6)					18.682			18.682
Rest of the World (Group 7)	0.355				2.973	1.836		5.164
TOTAL	4.245	1.125	2.080	0.108	68.580	18.679	5.165	100.00

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