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**Poverty and Inequality in Chile: Methodological  
Issues and a Literature Review**

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# Poverty and Inequality in Chile:

## Methodological Issues and a Literature Review

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### *Abstract*

This paper has two main objectives. On the one hand, it is aimed at assessing the reliability of poverty and inequality measures in Chile, and their robustness to methodological changes. In particular, we evaluate the impact on the measurement of poverty and inequality of adjustments for non-response, missing values, under-report, implicit rent from own-housing, and regional prices. The second objective of the paper is to review the poverty and inequality literature in Chile. In particular, we focus on the contributions on the level, trends and characteristics of poverty and inequality, and the development of anti-poverty programs, highlighting the main gaps remaining in the literature.

*Keywords:* poverty, inequality, measurement, Chile

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## 1. Introduction

In a companion paper (CEDLAS, 2004) we present and discuss a wide range of poverty and social development indicators for Chile. In the present paper we complement that report by (i) assessing the robustness of poverty and inequality measures to several methodological decisions, and by (ii) reviewing the poverty and inequality literature.

The measurement of poverty and inequality requires taking a large number of methodological decisions. Some of these decisions are linked to theoretical issues. The measurement of poverty requires choosing a dimension in which to define poverty (income/consumption, basic needs, endowments), selecting a poverty line, and an aggregation method, *i.e.* a poverty index. Similar decisions should be taken in order to measure inequality. The large literature on poverty and inequality indices reflects the complexity of this issue.<sup>1</sup> A second level of methodological decisions refers to practical matters. Even when we agree in the way poverty and inequality should be measured, the empirical implementation is usually not trivial. In Latin America poverty and inequality are measured based on incomes reported in household surveys. Statistics are then subject to potential biases coming from income non-response and misreport. Another problem is generated by the fact that the items included in household income differ across countries, and sometimes even within a country over time. In fact, household surveys in Latin America are constantly evolving, a fact that, although certainly welcome, adds a significant problem of comparability.

While in CEDLAS (2004) we tackle the first methodological issue by assessing the robustness of poverty and inequality measures in Chile to changes in poverty lines, and poverty and inequality indices, section 2 of the present document is aimed at analyzing the second type of methodological issues, *i.e.* those related to the practical implementation of poverty and inequality measures. We first assess the effect on the measurement of distributional indicators of changes in the characteristics of the main household survey in Chile- the CASEN. We then analyze the issues of non-response, misreport, non-monetary incomes, and implicit rent from own-housing. One separate subsection is devoted to the discussion of regional issues. We also investigate the impact of the sample variability problem on the distributional statistics. The main conclusion in section 2 is that while the *level* of poverty and inequality is sensible to some methodological changes, the trends are in general quite robust.

In section 3 we present a survey of the poverty and inequality literature in Chile, and the cross-country international literature that includes Chile. There is not a long tradition in studying distributional issues in Chile. A likely reason is that poverty and inequality measurement and analysis requires microdata from household surveys, which is available since not too long: the CASEN is carried out since the mid 1980s. In

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<sup>1</sup> See Lambert (1993), Deaton (1997) and Cowell (2000).

reviewing the literature, we particularly focus on the contributions on the level, trends and characteristics of poverty and inequality, and the development of anti-poverty programs, highlighting the main gaps remaining in the literature. We do not try to make a comprehensive list of all the contributions, but instead to single out the main strands of the literature.

## **2. Methodological issues**

Poverty and inequality statistics in Chile are computed from microdata of the official household survey, Encuesta de Caracterización Socioeconómica Nacional (CASEN). Besides the usual problems of all household surveys in Latin America (e.g. lack of consumption data), working with the CASEN has several particular limitations. Most of these limitations arise from using the processed databases by CEPAL, instead of the original ones, which are not available to the public. Some variables are dropped, re-codified and aggregated, introducing constraints in the analysis of some issues. For instance, although in some documents the adjustment factors used by CEPAL are reported, the income variables to which the coefficients must be applied are not all available in the official databases, so undoing the adjustments prove to be difficult.

### ***2.1 The survey***

The *Caracterización Socioeconómica Nacional* (CASEN) is the main household survey in Chile. The survey is carried out since 1985 by the Ministry of Planning (MIDEPLAN) through the Department of Economics at the Universidad de Chile, that is responsible for the data collection, digitalization and consistency checking of the database. CEPAL (UN Economic Commission for Latin America and the Caribbean) is responsible of making adjustments for non-response, missing income values, and the under (or over) reporting of different income categories before the databases are officially available for public use.

The survey is multi-topic and provides a wide range of socioeconomic variables. One of the survey objectives is to capture the various income flows received by persons and families, either resulting from their participation in the production process and ownership of assets, or as beneficiaries of monetary transfers. It also collects data on social programs, as well as information on the access to utilities and public services, health conditions, insurance and the use of health services. Education variables such as school attainment, type of schools, and fees are also gathered. The survey has been regularly implemented every two years since 1985 during November and in some cases, up to mid December.

Although the last survey was carried out during 2003, data is not officially available yet. For this report we use data for 1990, 1994, 1996, 1998 and 2000. We will update this report when the data for the CASEN 2003 becomes available to the public.

The CASEN is nationally and regionally representative and covers the whole population including rural areas, totalizing 15 million people. The survey does not cover those areas where access is difficult, which represent only 1.36% of the total population. The sample for the 2000 survey was around 250,000 individuals (65,000 households).

Tables 2.1 and 2.2 show the coverage of the survey. The number of observations has increased from around 100,000 in 1990 to 250,000 in 2000. The share of the observations in urban areas has declined, although the population represented by those observations has become larger.

## ***2.2. Changes in the survey***

From 1987 up to 1994 urban areas were defined as any grouping of dwellings with more than 2000 people, while rural areas were defined as any area with less than 2000 inhabitants. In 1996 the definitions of urban and rural areas were changed in order to match the urban-rural classification used by the National Institute of Statistics (INE) in the 1992 Census. That definition considers as urban area every concentrated area with more than 2000 inhabitants, or between 1001 and 2000 inhabitants when 50% or more of the population is economically active in secondary and/or tertiary activities.

This change in methodology means that some of the results by area from 1987-1994 may not be strictly comparable with those of 1996-2000. The impact on the measurement of inequality and poverty by area cannot be studied with the microdata at hand, although it is probably of a minor significance.

A second change in the CASEN has to do with the survey sampling frame. From 1987 to 1994 the sampling frame used for the design of the survey was based on the listing of housing units of the 1982 Census, updated through air pictures. The type of sampling was of urban and rural stratification and random.

From 1996 to the present, the sampling frame of the CASEN is based on the Population Census of 1992. This frame is complemented with information from the Municipalities of new constructions underwent since 1992, especially in those that experienced a significant growth after de Census. The random sampling method is multi-stage with regional stratification and clustering. The stratification is geographical, as before 1996, but with a substantial larger number of strata in the survey, allowing a bigger dispersion in the sample, and higher accuracy of the results. As with the change in the urban-rural definition, it is impossible to assess the impact on the measurement of inequality and poverty of this methodological change.

### *2.3. Non response and invalid answers*

Not all the individuals selected to respond the household survey answer all the questions. Non-response is more usual for the income questions. The omission or non-response problems may be due to a wide variety of causes, such as plain refusal to inform, ignorance of having received certain incomes or of their amount (e.g. when the informant is not the person who received the income), or even an unsuitable questionnaire design or badly written questions. The existence of missing incomes can bias the poverty and inequality statistics if non-response is correlated with income. Even when that occurs, trends may not be affected if people who do not answer the income questions are consistently the same.

CEPAL is in charged of assessing and correcting the measurement biases arising from non-response and invalid answers in the CASEN. Three problems of non response can be identified, quantified and corrected by CEPAL: (i) people who declare themselves as employed in a category other than unpaid family worker, but who do not report income from their main occupation; (ii) people who declare themselves to be retired or living from pensions, but do not report the value of those pensions; and (iii) households living in owner-occupied housing, but not reporting an imputed rental value. CEPAL estimates incomes in these cases, but unfortunately does not identify them in the microdata. For this reason it is impossible to undone the estimations and study the distributional impact of the adjustments. Instead, in the rest of this section we present statistics on the non-response adjustments reported by CEPAL.

Table 2.3 shows the share of observations with non-response from 1990 to 1998. That share had increased over 1980s, fell to 3% in the early 1990s, and then stabilized around 6%. The table also provides information of non-response by type of income. According to these figures, the incidence of non-response is quite high in some cases, and variable over time. Wage-earners have lower rates of non-response than the self-employed. The income non-response rate of domestic servants is smaller than for other groups, although it has been increasing. Notice the high non-response rates among recipients of social security transfers.

The typical way to alleviate the problem of non-response or non valid incomes is by imputing income. There are several methodological alternatives for making such imputations, depending on the type of income involved. The most common are imputing earnings to non-respondents by applying the coefficients of a Mincer equation (imputation by regression), imputing the mean value of each income type, imputation by principal components, or by the Hot Deck technique.

For the case of the employed who do not report earnings from their main occupation, CEPAL uses the mean imputation technique, i.e. imputing to each employed person the value of the mean income reported by people of similar characteristics. In most cases

groups are defined in terms of the combination of six variables: (i) occupational category (except for unpaid family workers); (ii) family relationship (head; non-head); (iii) gender; (iv) educational level; (v) type of economic activity (primary; secondary and tertiary) and (vi) region. For retired people without reported income from retirement the procedure is the same, but the groups are formed by combining only three variables: (i) family relationship; (ii) gender, and (iii) educational level.

The results of the income imputations done by CEPAL due to income non-response are presented in Table 2.4. The table reports the share of people in each category not declaring income, along with the mean income change following the imputation, and the change in the Gini coefficient. Some interesting facts can be inferred from the table. As indicated above, the proportion of observations involved in the imputations varies across income types, and has increased over time. The imputations do not imply significant changes in the mean income for each category (wage earners, self-employed and retired). Similarly, the (equalizing) changes in the Gini coefficient resulting from the adjustments for non-response seem negligible. Inequality within each income category is almost exactly the same with or without adjustments for non-response.

The percentage of households without incomes both before and after the imputation due to non-response is shown in Table 2.5. Notice that corrected cases do not cover 100% of non-response, because it is not always possible to find people who have reported their incomes and have the same characteristics as the person being analyzed. In some cases when this happens, CEPAL reduces the number of attributes considered.<sup>2</sup> The table shows that while in 1996 0.48% of households did not report income, after the imputations that number decreased to 0.23%.

#### ***2.4. Implicit rent from own-housing***

Families living in their own dwellings implicitly receive a flow of income equivalent to the market value of the service that the use of this property represents for them. This remuneration should be computed as part of household income, even though it is never recorded in a formal market and it is not usually registered as income in household surveys. Two alternatives can be implemented to estimate the implicit rent from own-housing at a micro level: self-report and hedonic regressions.

The CASEN follows the first alternative, including questions on estimated rents for owners. Then, it is possible to know how much a family living in their own dwelling would pay in terms of an “implicit rent”, and the reported value is considered as part of the household income. When owners do not report an implicit rental value, the CEPAL adjusts incomes for non-response. The “Hot Deck” imputation technique is applied in these cases. After ordering the data set geographically, households are selected

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<sup>2</sup> In general, this means working with very few variables to obtain a significant increase in the number of “matched” records, with the corresponding loss of precision in the value to be imputed.

according to the housing tenancy situation, type of housing, and other relevant variables. When households report a positive value for imputed rent despite of not being owners of their dwelling, the value reported is subtracted and not computed as part of household income. This adjustment is proportionally larger than the previous one. Table 2.6 presents information on non-response by type of housing tenancy. Non-response has been relatively low.

Table 2.7 is aimed at investigating the impact on the measurement of poverty and inequality of including estimates of the implicit rent for owners. For each year the table shows several poverty and inequality measures computed over two alternative income distributions: including and ignoring the imputed rent from own housing estimated by CEPAL. As expected, poverty is higher when ignoring the implicit rent. The differences are not large, especially in the last surveys.

For comparison with other countries in the region, in a companion paper (CEDLAS, 2004) we subtract the imputed rent from household income in Chile. The resulting headcount ratio computed with the USD2 a day poverty line for 2000 is 9.3%. Adding the CEPAL estimates of the implicit rent for owners would imply a fall in the headcount ratio to 7.9%.

The official poverty estimates include the imputed rent in the definition of household income. The official moderate poverty headcount ratio for 2000 is 20.6: it would be around 1 point higher if the estimates of the imputed rent were not included as part of household income, as it is done, for instance, in the neighbor Argentina.

In general inequality falls when including the estimates of imputed rents (see last panel in Table 2.7). This fact arises even when the proportion of poor people who own the dwelling is lower than the corresponding share for the rich. However, notice that this difference is not large. In 2000, for instance, the share was 61% in the poorest quintile, and 65% in the richest quintile. On the other hand, the relevance of the imputed rent in total household income is much greater in the low-income strata. In 2000 this share is 39% in quintile 1, and falls to 15%, 12%, 9% and 6% for the rest of the quintiles.

As with the levels, the assessment of the distributional changes is robust to the methodological decision on imputed rent: poverty substantially fell and inequality slightly increased in Chile over the 1990s, regardless of whether estimates of the imputed rent from own housing are included or not in the definition of household income.

## ***2.5. Misreporting***

The second type of adjustment made in the CASEN survey seeks to correct for under (or over) reporting of different income categories, a common problem with household

income surveys, as people do not necessarily tell the true when answering. In particular, there is evidence that individuals under-report income. Under-reporting can be the consequence of the deliberate decision of the respondent to misreport, or to the absence of questions to capture some income sources, or to the difficulties in recalling or estimating income from certain sources (earnings from informal activities, in-kind payments, home production, capital income).

A common strategy to alleviate this problem is applying some grossing-up procedure. Income from a given source in the household survey is adjusted to match the corresponding value in the National Accounts. This alternative is used by CEPAL to correct for misreporting in the CASEN. The adjustment is based on aggregate income flows from the Household Incomes and Expenditures Account of the National Accounts System (SCN) of the Central Bank of Chile.

A careful process is undertaken to convert the information in the original Central Bank accounts to the income concepts surveyed in the CASEN. Once that conversion is completed, total values by specific income categories are compared to the ones in the CASEN (using the appropriate expansion weights). The proportional differences for each income category between the two sources are imputed uniformly to each income recipient in the CASEN, with two exceptions: (i) the adjustments in capital incomes are applied only to the top quintile (of households), proportionately to the primary incomes of all recipients in the quintile, and (ii) incomes from transfers and gifts are not adjusted.

The underlying assumption justifying this procedure is that misreporting differs fundamentally across income categories, rather than income levels. In fact, the imputation would be strictly correct only if the income-elasticity of misreporting within each income category was unitary. The only exception to this assumption, as mentioned above, is in the treatment of capital incomes, which are imputed proportionately, but exclusively within the richest 20% of households. In the case of incomes from subsidies and transfers, due to the difficulty in finding a conceptually similar item in the national accounts, no adjustment is made.

Table 2.8 shows the average income per person according to National Accounts and the CASEN for every income category. The resulting adjustment factors are shown in the last column. Notice that the coefficients are not constant over time, and considerably vary among different types of income. The adjustment factors applied to wages and salaries are smaller than the ones applied to other income categories (with the exception of imputed rent). While the adjustment coefficient was 1.2 in 1990, it fell to 1 in 1996.

On the other hand, according to the table, the income of self-employed workers seems to be highly under-estimated by the survey. In 1996 the CASEN captured about 49% of the earnings of self-employed persons reported by the National Accounts. The

adjustments for under-reporting in social security benefits has decreased over time, from 1.5% in 1990 to 1.4% in 1996. In the whole period the CASEN captured, on average, 72% of the social security benefits reported by National Accounts. As in other countries, property income (interest, dividends, rents) is the income source for which misreport is more usual. The adjustment factor is around 2.7. Imputed rent for own-housing is a special case, since there seems to be overestimation in the survey. The adjustment factors are lower than 1 and decreasing over time.

Unfortunately, the adjustment factors are only available from 1990 to 1996. Since we do not have information for other years, we apply the coefficients of 1996 to the CASEN dataset of 2000. For a given income source this procedure implies constant under-reporting since 1996.

It is relevant to study the impact of the adjustments made by CEPAL for misreport on poverty and inequality measures. Undoing the adjustment is particularly important since in most of the Latin American countries incomes are not adjusted for misreport, and then poverty and inequality statistics are not strictly comparable with those of Chile. As commented above, a perfect undoing of the adjustments is not possible since we do not have access to the original dataset, and in the processed dataset some of the income sources are presented only in aggregate items. Despite these problems we could compute reasonable estimates of the income distribution undoing the adjustments. Table 2.9 shows some poverty and inequality measures over the income distribution, alternatively including and excluding the adjustments for misreport.

As expected, ignoring the adjustment implies an increase in poverty. For instance, the headcount ratio for the USD 2 a day poverty line would be 11.9, instead of 9.3 as usually recorded (see CEDLAS, 2004). Although certainly significant, the change just slightly modifies our view of poverty in Chile compared to other countries in the region. For the latest available survey the headcount ratio (USD 2) is 22.6 in Argentina (2003), 37.2 in Paraguay (2002), and 5.7 in Uruguay (2003). In none of these countries incomes are modified to match National Accounts. The change in the headcount ratio in Chile from 9.3 to 11.9 when undoing the adjustments does not change the position of Chile in the poverty ranking of the Southern Cone countries.

The conclusion of the substantial fall in poverty over the 1990s in Chile is also robust to the adjustment for misreport. In fact, the fall in poverty is even larger when computed over the distribution of unadjusted income. For instance, while official moderate poverty fell 17.6 points between 1990 and 2000, the fall is 20.5 if the misreport problem is ignored.

As expected, inequality is higher when including the adjustments, since the income sources with the largest adjustment factors (property incomes) are those more concentrated in the upper income percentiles. The change in the Gini coefficient

resulting from undoing the adjustment is large. For instance, the Gini computed over the distribution of household per capita income falls from 0.572 to 0.551. The size of this change can be better understood with the help of Figure 2.1, which shows the Gini coefficient over the distribution of household per capita income in all the countries in Latin America. When considering the adjustment for misreport, Chile ranks as the fifth most unequal country in the region. Instead, when ignoring the matching with National Accounts, as in the other LAC countries, Chile falls to the tenth place. In particular, the table shows that recorded inequality in Chile would be significantly lower than in Honduras, Paraguay and Ecuador. Certainly, the assessment of Chile as a high-inequality country does not change, but the relative magnitude of this phenomenon seems smaller after properly comparing the statistics with other Latin American countries.

The result of the small increase in inequality in Chile over the 1990s is robust to the misreport adjustment. In fact, the increase seems smaller when computed over the unadjusted distribution.

## ***2.6. Non-monetary income***

Some workers receive food stamps, goods and vouchers as in-kind payments. The share of non-monetary payments is very low and has been falling over the decade. This section explores the impact of non-monetary income on the measurement of poverty and inequality between 1990 and 1994, when in-kind payments were more important than today.

Table 2.10 reports the proportion of workers (panel A) and individuals (panel B) that receive non-monetary income. In 1990 11% of workers receive some non-monetary income. That proportion decreased to 5% in 1994. The fraction of entrepreneurs and self-employed workers who take goods from their activity as a way of payment is higher than the proportion of wage earners that get some in-kind earning. Of course, vouchers are concentrated in the salaried workers. The second panel indicates that while in 1990 5% of the population received some kind of non-monetary income, that share fell to 2% in 1994. This change is mostly due to reduction in the in-kind payments to workers.

In some countries, for instance Argentina, non-monetary income is not recorded in the survey. It is interesting to assess poverty and inequality in Chile when ignoring this type of income. Table 2.11 shows that, as expected, the exclusion of non-monetary payments increases poverty measures. However, the changes are small. Moreover, the main conclusions on poverty trends remain invariant. For instance, moderate official poverty increased 10.7 points when including non-monetary income, and 10.9 when excluding this concept. The same conclusion applies to inequality. The Gini coefficients in Table

2.11 are slightly affected by the adjustment. The inequality change between 1990 and 1994 is similar with or without non-monetary income.

## **2.7. Regional issues**

In a companion paper (CEDLAS, 2004) we deflate all household incomes by a regional price index, with Santiago as the base location. The regional price adjustment is based on the *Anuario de Precios* of the National Statistical Institute (INE), which surveys prices in 16 Chilean cities.<sup>3</sup> Following Litchfield (1997), and due to changes in relative price levels from year to year, an average of the index from 1985 to 1994 is used.

Table 2.12 shows poverty and inequality measures with and without deflating by regional prices. Both poverty and inequality measures are smaller if we ignore that prices in Chile differ by region. However, the changes are small. For instance, the poverty incidence using the USD2 a day poverty line falls from 9.3 to 8.7 when ignoring the regional dispersion of prices. The Gini coefficient is almost the same with or without the adjustment.

## **2.8. Sample variability**

Measures of the different dimensions of a distribution are subject to sample variability problems, since they come from surveys, not census data. We tackle this issue by computing standard errors and confidence intervals for some poverty and inequality indicators. Standard errors are estimated by bootstrapping techniques, which provide interval estimations and dispersion measures for the distributional indicators in a simple and efficient way.<sup>4</sup> For a given indicator we compute its bootstrapped standard error, the coefficient of variation, and the corresponding confidence interval for a 95% of significance.

Tables 2.13 to 2.16 show the analysis for the headcount ratio using alternative poverty lines. Given the large changes in poverty and the relatively large sample of the CASEN, most recorded changes in poverty are statistically significant. For instance, the interval for 1990 does not overlap with that for 2000 for any of the poverty lines. The assessment of poverty trends is quite robust to the potential problem of sample variability.

The changes in the measures of inequality are also robust to the sample variability problem (see Tables 2.17 to 2.19). However, since changes have been small, some of them are not statistically significant. The increase in the Gini coefficient in 1 point

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<sup>3</sup> No systematic data were found of prices in rural areas in Chile.

<sup>4</sup> The implementation of the bootstrap method follows Sosa Escudero and Gasparini (2000). For more theoretical references on the subject see Biewen (2002), Davidson and Duclos (2000) and Mills and Zandvakili (1997).

between 1990 and 2000 seems sufficiently large to be generated by two samples taken from the same invariant distribution. The confidence intervals overlap only in the extremes.

### **3. Poverty and inequality review**

The study of poverty and other distributional issues in Latin America was stimulated by CEPAL in the 1970s. However, in many countries, like in Chile, there were few contributions until the early 1980s, probably as the result of the scarcity of microdata. Since the 1980s a significant number of papers have analyzed topics related to poverty and income distribution. Although different social sciences have made some relevant contributions, in what follows we survey essentially the *economic* literature on poverty and inequality.

Chile did not have a system of household surveys until 1985, when the CASEN was implemented. The survey was especially aimed at characterizing and analyzing the socioeconomic situation of Chilean households, and to contribute to the design of social policies. The CASEN has the dual objective of generating a reliable portrait of socioeconomic conditions in the country, and of monitoring the incidence and effectiveness of the government's social programs and expenditures. Since its creation, the CASEN is widely regarded as the best available source of information on households, and it is broadly used in the literature on poverty and income distribution.

Statistics for the previous decades are based on other surveys, such as the Survey of Employment and Unemployment, carried out on a regular basis since 1986 by the National Institute of Statistics. Other sources of information are the Employment Survey of the University of Chile implemented since 1958, and the Household Expenditure Surveys. However, these surveys have some important limitations: both surveys only covered the Metropolitan Region of Santiago, and in the case of the expenditure survey, the last one was carried out in 1988. Nevertheless, many studies use these surveys. Among them, Larragaña (1999) studies the income distribution and its determinants in the Chilean economy during the period 1958-2001 using the employment survey of University of Chile and the CASEN, while Contreras (1996) uses the expenditure survey and the CASEN.

#### **3.1. Inequality**

Although no single household survey of national coverage gathered information on incomes with a regular periodicity before 1985, general consensus exists on the significant increase in income inequality in Chile during the decades of 1960, 1970 and 1980. Based on the long time-series of the Universidad de Chile Household Survey data for the Metropolitan area of Santiago, Riveros (1983) reports an increasing trend in the Gini coefficient from 1958 to 1982. This result was confirmed by Robbins (1994), and

by Montenegro (1996) for wage incomes, although these authors find that the trend changed in 1990. Using national data for 1971, 1980 and 1989, Londoño and Szekely (1997) confirm these findings. The authors report that the Gini coefficient of total household income rose in those years from 0.47 to 0.53 and 0.59. They too found a reversal beginning in 1990, with the Gini falling to 0.57 in 1994.

More recently, De Gregorio and Cowan (1996) emphasize that the significant inequality in the distribution of income in Chile has been relatively stable over time. They find that while the Gini coefficient was 0.448 in 1990 and 1992, it increased to 0.459 in 1994 and decreased to 0.435 in 2000. The authors remark that the changes in the distribution of monetary incomes are closely related to changes in labor market and the economic activity and cannot be treated as a structural phenomenon. Bravo and Marinovic (1997), using the Employment Survey of the University of Chile also find a significant increase in income inequality. They observed a significant increase in wage inequality within wage earners between 1974 and 1987 in Greater Santiago, followed by a decrease in the 1990s. The same authors analyze wage inequality, disaggregating the available information according to gender, education and labor experience. By applying the methodology used by Katz and Murphy (1992), they also identify supply and demand factors behind the inequality in the wage distribution.

According to Contreras (1996) significant changes are observed in the income distribution at the regional level. Using the CASEN for the years 1987, 1990 and 1992 and the Household Expenditure Survey for 1988, he concludes that significant changes have occurred in the distribution of regional income in the period 1987- 1992, which are mainly explained by changes in the returns to education.

More recently, Contreras and Ruiz-Tagle (1997) reveal significant disparities in the behavior of income distribution at the regional level between 1990 and 1994. Using the CASEN Survey they construct different income concepts and estimate various inequality measures for the different regions in Chile. Although they find important differences in the magnitude of inequality indices across regions, all regions show the same increasing trend in inequality. The authors attribute this heterogeneity to the varying evolution of job-market demand for skilled and unskilled labor force in different geographical areas. In order to understand the changes in income distribution they observed the employment and migration rates between regions, the fiscal and wage changes among them, and economic disparities. They also discuss and include in their estimations some methodological aspects to be considered in the measurement of inequality, such as using equivalized incomes that take into account differences in food needs across sex and age groups (adjustments for adult equivalent scales) and the existence of household economies of scale that could be produced within the families.

Ferreira and Litchfield (1997) present evidence on inequality in Chile between 1987 and 1994. According to these authors after rising in the 1960s, falling in the early 1970s,

and rising again from the mid-seventies to the mid-eighties, Chilean inequality seems to have stabilized since around 1987. After the 'stormy' period of economic and political reforms of the 1970s and 1980s, no statistically significant Lorenz dominance results could be detected since 1987. Scalar measures of inequality confirm this picture of stability, but suggest a slight change in the shape of the density function, with some compression at the bottom being 'compensated for' by a stretching at the top. As inequality remained broadly stable, sustained economic growth led to substantial poverty reduction, according to a range of measures, and with respect to three different poverty lines. When examining the factors underlying these trends they suggests that an equilibrium was reached between rising demand and supply of skills workers, where the former was associated with technological progress, and the latter with expansions in education. The returns to years of schooling explain most of the variations in income distribution inequality.

Both results were also studied by Chumacero and Paredes (2002) and Contreras (2000). Chumacero and Paredes (2002) present a characterization of the income distribution in Chile in order to understand the coexistence of a successful economic performance and the persistently high inequality in income distribution. They also assess the impact of different social policies dealing with poverty. They focus their analysis in the year 1996, which is considered as representative of the period where Chile experienced its longest and largest boom. They provide a systematic empirical characterization of income distribution in Chile by using flexible forms. They find that mixtures of distributions performed better than simple parametric alternatives, feature that is consistent with the literature on labor markets that suggest that segmentation and exclusion may be behind the determinants of income in Chile. They performed two exercises associated with policies that affect the quality of education and the number of years of schooling. They found that policies that reduce heterogeneity, like improving the quality of education, are more valued and effective in reducing poverty than increasing its quantity. However, such a policy does not imply a reduction in inequality and, on the contrary, may increase it. Moreover, they conclude that policies traditionally followed in Chile to deal with poverty, like increasing mandatory schooling, may have an extremely low effect on reducing income inequality.

On the other hand, Contreras (2000) studies the impact of changes in the returns to education on inequality by using data of Greater Santiago from the Employment Survey of the Universidad de Chile for the period 1958-1996. The main conclusion is that education is the most important factor in explaining wage inequality and its changes over time. He finds that changes in education account for at least 38% of the changes in the distribution of income. Returns to education is the most important factor within this percentage, explaining almost 80% of the power of education in accounting for inequality.

Larrañaga (2001) follows an approach in the same line of Juhn, Murphy and Pierce (1993). This study decomposes the changes in the distribution of income into three components: endowments or observable variables, prices or returns, and non-observable components. Then through simulations he identifies and measures the effect of changes in each of those components over the overall wage distribution, using data from the CASEN. The author concludes that the main factors behind the changes in the wage distribution are the structure of education, experience, and gender (all considered endowments), with changes in prices and non-observables being less important. He finds that changes in endowments have had an equalizing effect, while prices and non-observables have implied unequalizing changes in the distribution of income.

Bravo, Contreras and Urzúa (2002) study the microeconomic determinants of household income dynamics in poverty and inequality in Chile during the 1990s. By using a microsimulation model the paper contributes to the literature with a detailed analysis on the factors that play a role in the determination of income distribution and their changes over time. They estimate a participation model and an earnings equation and examine how income distribution and poverty would change as a result of a different set of microsimulations. They find that while poverty responds strongly to the simulation exercises, the distribution of income appears less sensitive, and is therefore more stable. In particular, they conclude that a reduction in poverty would have been observed in 1990 if some characteristics of 1998 had been present, while inequality indicators would have remained at the same level (See Table 3.1)

### **3.2. Poverty**

MIDEPLAN has considerably contributed to the poverty literature and cannot be ignored in a literature review. In fact, the main source for poverty statistics in Chile, the CASEN Survey, is carried out by MIDEPLAN. This government department also publishes some descriptive studies with the results of the surveys and the update of official poverty measures. Each paper analyzes the evolution of poverty headcount ratio and the incidence of poverty at national level, by region and for urban and rural areas. The analysis of poverty is shown in terms of households and individuals. Between 1990 and 2000, moderate poverty decreased from 38.6 to 20.6 while extreme poverty fell from 12.9 to 5.7. Also in rural areas, poverty measures substantially decreased. Since 1996, a characterization of poor and indigent people is included. The poverty profile analyzes the occupational condition, demographic and educational characteristics and health conditions of the poor. From these characterizations, policy recommendations are usually stated to be considered by government authorities.

Many researchers from CEPAL and MIDEPLAN study methodological issues. Among them, Feres (1997) analyzes the impact of non-response in income variables on household surveys in Latin America, and Teitelboim (1997) analyzes how to measure

social programs in household surveys. Other studies, like those done by CEPAL, document and describe the adjustments done to income variables in the CASEN.

The World Bank report “Chile’s high growth economy: poverty and income distribution, 1987-1998” has greatly contributed to the characterization of inequality and poverty in Chile. The report provides a comprehensive picture of the levels and trends in income inequality and poverty in Chile in the period 1987-1998, which are analyzed at a national and regional level. The report concludes that from 1987 to 1998 Chile has made impressive progress reducing the incidence, severity and depth of poverty and improving overall social conditions. The economic and social policies followed by the government during the last decades have brought sustained growth and the expansion of social services. The report emphasizes that Chile has almost eliminated extreme poverty and improved the access to social services.

The World Bank report also presents analytical considerations regarding the inclusion of social services in the measurement of poverty and an evaluation of the standard of living of the Chilean population when considering the access to education, health care and housing. It also includes an analysis of the distributional impact of social expenditures in Chile and a quantitative and qualitative assessment of the targeting of government programs. There is also a chapter on social exclusion, poverty and indigenous population, which remains among the poorest and most vulnerable groups of the country.

Valdes (1999) presents a quantitative analysis of poverty between 1987 and 1995 using the CASEN Survey. The author concludes that the principal factor behind the changes in poverty is the integration of the poor into the labor market, as a consequence of the economic growth. When examining the factors underlying the downward trend in poverty the author suggests that the increase in labor incomes, instead of non-labor incomes had a significant role in poverty reduction. The author also observed that when the economic growth experiences a slowdown, it is more difficult to reduce poverty. Valdés also includes some policy recommendations and strategies for poverty reduction.

The downward trend in poverty is also reported by Larrañaga (1994) and Contreras (1996). According to these authors, economic growth has a central role in reducing poverty, although some disparities are observed at the regional level.

Litchfield (1997) applies a range of statistical techniques to estimate the level and changes in poverty measures between 1987 and 1994 using the CASEN. She introduces some adjustments to the dataset: household incomes are deflated by a regional price index and adjusted by an adult equivalence scale. Although the resulting poverty rates are higher, the trend is unchanged. The recorded poverty reduction in Chile is quite robust to the specific measure used. This conclusion confirms the widely held view that Chile has made substantial progress in the fight against poverty during the last decade.

Bravo, Contreras and Urzúa (2002) study the channels through which economic growth produces a reduction in poverty. They explore whether the reduction in poverty was the result of a change in the structure of labor participation or a change in prices, for example the returns to education, and how important were changes in the demographic structure of Chile for the reduction of poverty. They find that the change in the returns to education had great importance in the reduction of poverty. A brief description of the mentioned studies is included in Table 3.1.

### ***3.3. Distributional incidence and program evaluation***

There is a reasonably large literature on the distributional impact of fiscal policies in Chile. Although there were some studies by CEPAL, benefit-incidence analysis of social expenditures in Chile became a common practice in late 1990s, in particular, since the implementation of the CASEN and the publications of MIDEPLAN.

MIDEPLAN (1999) analyzes the monetary subsidies distribution among households and its impact on total household income. The poverty-alleviation programs evaluated are Pensions Subsidies (PASIS), Unique Family Subsidy (SUF), Water Subsidy (SAP), Family Benefits and Unemployment Subsidy. The paper concludes that during the 1990s the targeting on the poor substantially increased. While in 1990 the bottom decile received 19.4% of social expenditures, in 1998 this share changed to 28.4%.

Contreras, Larragaña, Litchfield and Valdés (2001) develop and apply a methodology for the estimation of the imputed income transfers for government subsidies in health, education and housing, for the years 1990, 1994, 1996 and 1998. The analysis confirms that adjustment for in-kind transfers substantially reduce the Gini coefficient and has significant impact in poverty reduction. For 1998, the Gini coefficient decreased from 0.56 (unadjusted) to 0.50 (adjusted) and the ratio of the highest (richest) to the lower (poorest) quintile falls from 20 to 11. The results suggest that social policies in Chile has also a significant role in reducing income inequality, in spite of the fact that such policies are oriented towards poverty reduction rather than reduction in inequality per se.

In a similar study, Larragaña (1994) analyzes the distribution of expenditures for various social programs in the period 1990-1993. The author not only considers the social programs reported in the CASEN, but also others of smaller relative importance. Valdés (1994) studies the distributive effects of social expenditure and examines its targeting on the poor. Through simulations, the author evaluates the distributive impact of a change in social expenditure assignments and changes in the tax policy.

Shorrocks (1997) in the context of a World Bank study, estimates the impact of taxes and social expenditures on income distribution. This study discusses the degree of targeting and incidence of the tax structure and social expenditures in Chile. The study

confirms the progressivity of the income tax and the regressivity of the value added tax. The aggregate impact of the tax structure on the distribution of income is null. Additionally, it is shown that social expenditure, especially on education, has a significant impact on inequality. Engel, Galetovic and Raddatz (1999) quantify the direct impact of taxes on income distribution at the household level in Chile and estimate the distributional effect of several changes in the tax structure. They find that income distribution before and after taxes are very similar (Gini coefficients of 0.488 and 0.496, respectively). Moreover, radical modifications of the tax structure, such as raising the value added tax from 18 to 25% or substituting a 20% flat tax for the present progressive income tax affect the after-tax distribution only slightly. Table 3.1 presents a brief description of the studies mentioned above.

### ***3.4. Chile in the world***

CEDLAS (2004 b) provides poverty and inequality statistics for 21 LAC countries, including Chile. The evidence confirms that poverty is low and income inequality in Chile is relatively high compared to LAC standards (see Figure 2.1), although part of this assessment is due to the adjustments for misreport performed in the CASEN. In the poverty ranking Chile stands in second place, after Uruguay, as the countries with the lowest poverty rates in Latin America.

According to Chumacero and Paredes (2002) income distribution in Chile is more unequal than in otherwise comparable countries, showing largest Gini indexes than East Asia, the Middle East and North Africa (0.38), and even the South Saharan Africa (0.47).

ECLAC (2002) reports poverty indicators for Chile and shows that the percentage of households below the poverty line is almost half of the average of 18 Latin American countries. ECLAC (2003) shows Chile as one of the five countries with the lowest poverty rates in the region. Chile is the country that most reduced poverty in the 1990s. Székely (2001) also places Chile as a low-poverty country compared to the rest of LAC. Using data for 1998 the author ranks Chile in the second place after Uruguay and before Argentina, Venezuela and Mexico.

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Table 2.1  
Observations

	1990	1994	1996	1998	2000
<b>Individuals</b>					
Sample	105,189	178,057	134,262	188,360	252,748
Population	12,934,650	13,809,195	14,232,244	14,623,269	15,003,753
<b>Households</b>					
Sample	25,793	45,381	33,636	48,107	65,036
Population	3,172,550	3,536,973	3,587,641	3,742,683	3,871,853

Source: Own calculations based on the CASEN.

Table 2.2  
Urban and rural population

	1990	1994	1996	1998	2000
<b>Urban population</b>					
Sample	75,932	111,643	98,292	131,888	148,565
Population	10,535,862	11,524,923	11,937,950	12,492,250	12,881,497
<b>Rural population</b>					
Sample	29,257	66,414	35,970	56,472	104,183
Population	2,398,788	2,284,272	2,294,294	2,131,019	2,122,256
<b>Sample Share</b>					
Urban	72.2	62.7	73.2	70.0	58.8
Rural	27.8	37.3	26.8	30.0	41.2
<b>Population Share</b>					
Urban	81.5	83.5	83.9	85.4	85.9
Rural	18.5	16.5	16.1	14.6	14.1

Source: Own calculations based on the CASEN.

Table 2.3  
Rate of income non-response

	1990	1992	1994	1996	1998
Total	3.4	3.1	5.4	6.5	6.4
Employees	3.1	2.8	5.1	7.1	7.1
Entrepreneurs	8.4	8.2	11.6	13.9	13.2
Self-employed	4.1	3.7	6.4	13.3	12.9
Army	3.7	7.3	9.5	-	-
Domestic Service	1.4	1.5	4.1	-	-
Domestic Service outside house	1.2	1.0	3.3	-	-
Domestic Service inside house	1.7	2.4	5.8	-	-
Retired or Pensioned	11.0	-	10.8	19.3	-
No data/ Unknown	33.2	28.9	-	-	-

Source: CEPAL, based on the CASEN.

*Table 2.4*  
*Adjustment for non-response in income*  
*By income category*

	Not declaring income (%)	Mean income changes compared to		Gini coefficient changes compare to	
		All employed	Declare income	All employed	Declare income
<i>Wage earners</i>					
1990	3.0	3.0	0.0	-0.016	-0.002
1994	4.9	5.1	1.1	-0.027	-0.001
1996	7.1	7.7	0.3	-0.038	-0.002
<i>Self-employed</i>					
1990	4.6	4.8	1.0	-0.017	-0.002
1994	7.0	7.5	2.6	-0.025	-0.003
1996	13.4	15.4	0.8	-0.050	-0.003
<i>Retired</i>					
1990	11.0	12.4	-1.2	-0.062	-0.011
1994	10.8	12.1	-1.4	-0.058	-0.011
1996	19.3	23.9	-2.5	-0.107	-0.018

Source: CEPAL, based on the CASEN.

*Table 2.5*  
*Percentage of households without incomes,*  
*before and after the imputation due to non-response*

	Before imputation	After imputation
1990	0.46	0.42
1992	0.49	0.44
1994	0.92	0.57
1996	0.48	0.23

Source: CEPAL, based on the CASEN.

*Table 2.6*  
*Non-response in incomes from imputed rent from own housing*  
*By type of housing tenancy*

	1990	1992	1994	1996
<i>Total</i>	4.59	3.54	6.0	2.0
Own House	4.58	3.41	6.1	1.9
Already Paid	4.83	3.03	8.8	-
Servicing debt	4.52	3.47	5.6	-
Rented	-	6.50	9.5	-
Lent	6.71	7.54	9.1	5.0

Source: CEPAL, based on the CASEN.

Table 2.7

*Poverty and inequality measures*

*Including and excluding implicit rent from own-housing*

	Years Imputations	1990		1994		1996		1998		2000		Changes 1990-2000	
		No	Yes	No	Yes								
<i>Poverty</i>													
USD1		5.1	3.8	3.6	2.6	2.5	2.6	2.7	2.6	2.8	2.7	-2.3	-1.2
USD2		20.0	16.5	13.6	10.9	10.5	9.3	9.7	8.4	9.3	7.9	-10.7	-8.6
Moderate official		43.3	38.2	31.0	27.5	25.6	23.2	22.0	21.7	21.5	20.6	-21.8	-17.6
Extreme official		16.0	12.9	7.8	7.6	6.7	5.8	6.8	5.6	7.0	5.7	-9.0	-7.2
<i>Inequality (Gini coefficient)</i>													
Per capita income		0.560	0.552	0.556	0.557	0.560	0.552	0.567	0.567	0.571	0.568	0.012	0.016
Equivalentized income		0.548	0.540	0.555	0.554	0.550	0.541	0.557	0.557	0.563	0.563	0.015	0.023

Source: Own calculations based on the CASEN.

Table 2.8

*Adjustment for misreport – National Accounts*

*Mean incomes and adjustment factors applied to income variables in the CASEN*

	Average		Adjustment factor
	National Accour	CASEN	
<i>Wages and salaries</i>			
1990	186,885	154,730	1.208
1992	303,181	283,183	1.071
1994	447,256	417,610	1.071
1996	560,328	565,730	0.990
<i>Self-employed income</i>			
1990	138,648	70,027	1.980
1992	251,995	126,484	1.992
1994	316,044	208,848	1.513
1996	426,637	208,786	2.043
<i>Social security benefits</i>			
1990	38,473	26,110	1.473
1992	63,052	38,612	1.633
1994	84,093	58,616	1.435
1996	108,106	77,331	1.398
<i>Property incomes</i>			
1990	34,660	30,699	1.129
1992	38,142	13,264	2.876
1994	49,271	18,391	2.679
1996	69,691	25,743	2.707
<i>Imputed rent</i>			
1990	31,931	48,110	0.664
1992	46,320	84,576	0.548
1994	59,639	125,618	0.475
1996	72,825	160,519	0.454

Source: CEPAL, based on information of the Central Bank of Chile and the CASEN.

Table 2.9

Poverty and inequality measures

With and without adjustment for misreport – National Accounts

Adjustment for misreport ?	Years		2000		Changes 1990-2000	
	1990	1994	No	Yes	No	Yes
<i>Poverty</i>						
USD1	8.2	5.1	3.6	2.8	-4.6	-2.3
USD2	28.1	20.0	11.9	9.3	-16.2	-10.7
Moderate official	44.5	38.2	24.0	20.6	-20.5	-17.6
Extreme official	16.4	12.9	7.1	5.7	-9.3	-7.2
<i>Inequality (Gini coefficient)</i>						
Per capita income	0.545	0.562	0.551	0.572	0.006	0.010
Equivalent income	0.530	0.549	0.539	0.562	0.009	0.013
Labor household income	0.520	0.540	0.547	0.571	0.028	0.031

Source: Own calculations based on the CASEN.

Table 2.10

Non-monetary income

	Non-monetary income		Non-monetary labor income				Non-monetary non-labor income	
	1990	1994	Goods		Vouchers		1990	1994
			1990	1994	1990	1994		
A. Workers	0.11	0.05	0.04	0.03	0.04	0.02	0.04	0.03
<i>Labor status</i>								
Entrepreneurs	0.20	0.08	0.13	0.08	0.01	0.00	0.07	0.08
Wage earners	0.09	0.04	0.02	0.01	0.05	0.03	0.03	0.01
Self-employed	0.17	0.08	0.09	0.07	0.01	0.01	0.09	0.07
Without income	0.03	0.04	0.02	0.03	0.01	0.01	0.00	0.03
<i>Formality status</i>								
Formal	0.06	0.03	0.02	0.01	0.02	0.02	0.02	0.01
Informal	0.19	0.09	0.07	0.05	0.06	0.04	0.07	0.05
B. All population	0.05	0.02	0.01	0.01	0.01	0.01	0.02	0.01
<i>Age groups</i>								
[0,14]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
[15,24]	0.02	0.01	0.01	0.00	0.01	0.01	0.00	0.00
[25,40]	0.06	0.03	0.02	0.01	0.02	0.02	0.03	0.01
[41,64]	0.09	0.03	0.03	0.02	0.02	0.01	0.05	0.02
[65+]	0.09	0.02	0.01	0.01	0.00	0.00	0.08	0.01
<i>Quintiles equivalent income</i>								
Quintile 1	0.04	0.01	0.01	0.01	0.01	0.00	0.03	0.01
Quintile 2	0.04	0.02	0.01	0.01	0.01	0.01	0.03	0.01
Quintile 3	0.04	0.02	0.01	0.01	0.01	0.01	0.03	0.01
Quintile 4	0.05	0.02	0.02	0.01	0.01	0.01	0.02	0.01
Quintile 5	0.04	0.02	0.02	0.01	0.01	0.00	0.02	0.01

Source: Own calculations based on the CASEN

*Table 2.11*  
*Poverty and inequality changes*  
*Including and excluding non- monetary income*

	Years		1990		1994		Changes 1990-1994	
	Include non-monetary income?		No	Yes	No	Yes	No	Yes
<i>Poverty</i>								
USD1			6.1	5.1	4.1	3.6	-2.0	-1.5
USD2			22.2	20.0	14.6	13.6	-7.7	-6.4
Moderate official			39.9	38.2	29.0	27.5	-10.9	-10.7
Extreme official			14.4	12.9	8.1	7.6	-6.4	-5.3
<i>Inequality (Gini coefficient)</i>								
Per capita income			0.569	0.562	0.573	0.569	0.003	0.007
Equivalentized income			0.557	0.549	0.560	0.556	0.003	0.007

Source: Own calculations based on the CASEN

*Table 2.12*  
*Poverty and inequality measures*  
*With and without adjustment for regional prices*

	Years		1990		2000		Changes 1990-2000	
	Without		With	Without	With	Without	With	
<i>Poverty</i>								
USD1			4.8	5.1	2.7	2.8	-2.2	-2.3
USD2			18.8	20.0	8.7	9.3	-10.1	-10.7
Moderate official			38.2	40.6	20.6	21.4	-17.6	-19.2
Extreme official			12.9	14.2	5.7	5.5	-7.2	-8.7
<i>Inequality (Gini coefficient)</i>								
Per capita income			0.562	0.567	0.572	0.571	0.033	0.008
Equivalentized income			0.539	0.549	0.560	0.562	0.023	0.013
Labor household income			0.537	0.540	0.569	0.571	0.569	0.031

Source: Own calculations based on the CASEN.

*Table 2.13*  
*Headcount ratio - USD 1 a day poverty line*  
*Value, standard error, coefficient of variation and 95% confidence interval*

	Value	Std. Err	Coef. Var.	95% interval	
				Lower	Upper
	(i)	(ii)	(iii)	(iv)	(v)
1990	5.1	0.07	1.4	5.0	5.3
1994	3.6	0.06	1.6	3.4	3.7
1996	2.5	0.06	2.4	2.4	2.6
1998	2.7	0.05	1.9	2.5	2.9
2000	2.8	0.04	1.6	2.7	2.9

Source: Own calculations based on the CASEN.

Note: Estimation by bootstrap with 100 replications.

Table 2.14

Headcount ratio - USD 2 a day poverty line

Value, standard error, coefficient of variation and 95% confidence interval

	Value (i)	Std. Err (ii)	Coef. Var. (iii)	95% interval	
				Lower (iv)	Upper (v)
1990	20.0	0.17	0.8	19.7	20.4
1994	13.6	0.10	0.7	13.4	13.7
1996	10.5	0.10	0.9	10.3	10.7
1998	9.7	0.09	1.0	9.5	9.9
2000	9.3	0.09	1.0	9.2	9.5

Source: Own calculations based on the CASEN.

Note: Estimation by bootstrap with 100 replications.

Table 2.15

Headcount ratio – Official moderate poverty line

Value, standard error, coefficient of variation and 95% confidence interval

	Value (i)	Std. Err (ii)	Coef. Var. (iii)	95% interval	
				Lower (iv)	Upper (v)
1990	38.6	0.168	0.4	38.4	39.3
1994	27.5	0.152	0.6	27.2	27.8
1996	23.2	0.132	0.6	21.8	23.4
1998	21.7	0.154	0.7	21.7	22.3
2000	20.6	0.135	0.7	20.5	21.2

Source: Own calculations based on the CASEN.

Note: Estimation by bootstrap with 100 replications.

Table 2.16

Headcount ratio – Official extreme poverty line

Value, standard error, coefficient of variation and 95% confidence interval

	Value (i)	Std. Err (ii)	Coef. Var. (iii)	95% interval	
				Lower (iv)	Upper (v)
1990	12.9	0.127	1.0	12.1	13.1
1994	7.6	0.092	1.2	7.5	8.0
1996	5.8	0.083	1.4	5.5	5.9
1998	5.6	0.083	1.5	5.5	6.0
2000	5.7	0.087	1.5	5.6	6.9

Source: Own calculations based on the CASEN.

Note: Estimation by bootstrap with 100 replications.

Table 2.17

*Gini coefficient – Distribution of per capita income*

*Value, standard error, coefficient of variation and 95% confidence interval*

	Value (i)	Std. Err (ii)	Coef. Var. (iii)	95% interval	
				Lower (iv)	Upper (v)
1990	0.562	0.003	0.5	0.557	0.567
1994	0.569	0.005	0.9	0.559	0.579
1996	0.564	0.004	0.6	0.557	0.573
1998	0.570	0.002	0.4	0.564	0.575
2000	0.572	0.004	0.7	0.563	0.579

Source: Own calculations based on the CASEN.

Note: Estimation by bootstrap with 100 replications.

Table 2.18

*Gini coefficient – Distribution of equivalized household income*

*Value, standard error, coefficient of variation and 95% confidence interval*

	Value (i)	Std. Err (ii)	Coef. Var. (iii)	95% interval	
				Lower (iv)	Upper (v)
1990	0.549	0.003	0.5	0.544	0.554
1994	0.556	0.005	0.9	0.547	0.569
1996	0.552	0.004	0.6	0.546	0.560
1998	0.557	0.002	0.4	0.553	0.561
2000	0.561	0.004	0.7	0.552	0.569

Source: Own calculations based on the CASEN.

Note: Estimation by bootstrap with 100 replications.

Table 2.19

*Gini coefficient – Distribution of equivalized household labor income*

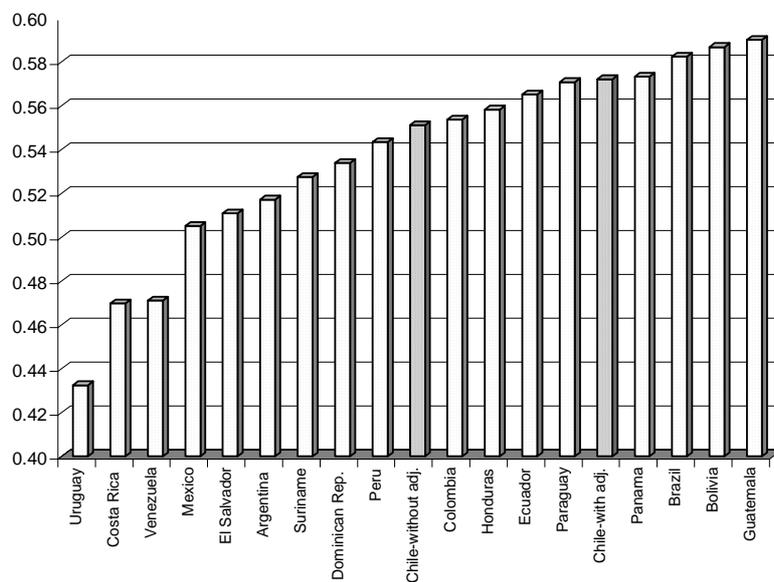
*Value, standard error, coefficient of variation and 95% confidence interval*

	Value (i)	Std. Err (ii)	Coef. Var. (iii)	95% interval	
				Lower (iv)	Upper (v)
1990	0.540	0.003	0.6	0.533	0.546
1994	0.564	0.006	1.0	0.554	0.574
1996	0.555	0.004	0.7	0.548	0.567
1998	0.558	0.003	0.5	0.552	0.565
2000	0.571	0.005	1.0	0.557	0.579

Source: Own calculations based on the CASEN.

Note: Estimation by bootstrap with 100 replications.

*Figure 2.1*  
*Gini coefficients*  
*Distribution of household per capita income*



Source: own calculations based on microdata from household surveys.

*Table 3.1*  
*Inequality and Poverty studies for Chile*

Author/s	Survey	Coverage	Period	Income Concept	Inequality/Poverty	Author's Conclusions
<b>Inequality</b>						
Bravo and Marinovic (1997)	Employment Survey (Univ. of Chile)	Santiago	1974-1987	Wages	Increased	Wage inequality increased between 1974 and 1987 in Santiago and decrease in the 1990s.
Bravo, Contreras and Urzúa (2002)	Casen	National	1990s	Household Income	Stable	Poverty responds strongly to the simulation exercises but the distribution of income appears less sensitive, and is therefore more stable.
Contreras (1996)	Employment Survey (Univ. of Chile) Casen	By region	1987-1990-1992	Household Income	Increased	Significant increased in income distribution among regions between 1987-1992
Contreras (1997)	Employment Survey (Univ. of Chile)	Santiago	1958-1996	Wages	Increased	Education is one of the most important factor in explaining wage inequality in Chile and its changes over time.
Contreras, Larrañaga, Litchfield, Valdés	Casen		1987-1998	Household Income	Stable	Income inequality remains relative stable and high by international standars
Chumacero and Paredes (2002)	Casen	National	1996	Household Income	Stable	Chile has one of the most unequal income distributions in the world. Despite a relatively rapid reduction of poverty, Gini coefficients and other measures of income inequality have remained persistently high over the years.
De Gregorio and Cowan (1996)	Casen	National	1990-2000	Household Income	Stable	Between 1992 and 1994, the Gini coefficient increased. Chile inequality is high comparing to other countries. Progresses in reducing income inequality are slow.
Engel, Galetovic and Raddatz (1998)	Casen Family Budget Survey	National	1996-1997	Household Income and Expenditure		Income distribution before and after taxes are very similar (Gini coefficients of 0.488 and 0.496, respectively)
Ferreira and Litchfield (1997)	Casen	National	987- 1990- 1992-1999	Household Income	Stable	The whole distribution moved to the right reducing poverty and maintaining inequality relatively stable over time.
Laragaña (1999)	Employment Survey (Univ. of Chile) Casen	National Santiago		Household Income	Stable	Income inequality is a pervasive fact in Chile. Lowest point in the 43 year period was a Gini coefficient of 0.41 in 1958. Changes in income inequality are related to fluctuations in the unemployment rate, relative wages and female labor participation.
Lodoño and Szekely (1997)	Casen	National	1971-1980-1989	Household Income	Increased	Gini coefficient increased from 0.47 in 1971 to 0.59 in 1990
Ruiz-Tagle (1999)	Employment Survey (Univ. of Chile) Casen	National	1957-1998	Household Income Per Capita Income	Stable	Since the 1980s per capita income was double and poverty was reduce but although the important economic growth, income distribution remains stable.
Ferreira and Litchfield (1997)	Casen	National	1987-1990-1992-1994	Household Income	Stable	The whole distribution moved to the right reducing poverty and maintaining inequality relatively stable over time.
<b>Poverty</b>						
Bravo, Contreras and Urzúa (2002)	Casen	National	1990s		Decreased	Study the channels through which economic growth produces a reduction in poverty. Changes in the returns to education had great importance in the reduction of poverty
Contreras, Larrañaga, Litchfield, Valdés	Casen	National By region	1987-1998		Decreased	Significant reduction in poverty during the 90s
Litchfield (1997)	Casen	National	1987-1994		Decreased	Poverty rates decreased but the trend is unchanged. The recorded poverty reduction in Chile is quite robust, confirming the substantial progress in the fight against poverty.
MIDEPLAN	Casen	By region	1990-2003		Decreased	Between 1990 and 2000, moderate poverty decreased from 38.6 to 20.6 while extreme poverty falls from 12.9 to 5.7. Poverty also decreased in rural areas.
Valdes (1999)	Casen	National	1987-1995		Decreased	Behind the changes in poverty is the integration of the poor into the labor market, as a consequence of the economic growth.
World Bank (1997)	Casen	By region	1987-1998		Decreased	From 1987 to 1998 Chile made impressive progress reducing the incidence, severity and depth of poverty and improving overall social conditions

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