Development Policy Review, 2001, 19 (3): 291-302

Economic Growth and Poverty Reduction by Region: Chile 1990-96

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This article examines the evolution of poverty in Chile during 1990-96, a period of rapid economic growth. It shows that Chile has embarked on a significant poverty-reduction trajectory. The robustness of this result is examined by using nonparametric estimates of the income distribution and a stochastic dominance test. Growth is an important factor in explaining the poverty reduction that has occurred. Using the Datt-Ravallion decomposition, it accounts for over 85% of poverty reduction at the national level. However, the pattern varies significantly across regions. Both growth, and its contribution to poverty reduction, vary significantly among regions. This seems to reflect the sectoral composition of growth across regions, with export-oriented activities producing a larger poverty-reduction impact.

This article adopts a multi-pronged approach to the empirical analysis of poverty in Chile. Using data from the period 1990-96, it examines the evolution of poverty with special emphasis on regional analysis. This period is of interest because of the rapid economic growth exhibited by the Chilean economy.

Most Latin American countries grew less than 30% in per capita terms between 1985 and 1998. For example, Argentina experienced a growth of 29%, while Brazil and Mexico grew 18% and 12% respectively. In contrast, per capita income in Chile doubled in these 14 years. The analysis presented here takes on greater relevance when we consider that other countries in the region have begun to implement structural reforms similar to those carried out by Chile 20 years ago. Understanding the Chilean economic transition provides us with a sense of the future evolution of poverty in other countries in the region and the necessary conditions for solving similar problems in other economies.

The evidence suggests that economic growth has contributed significantly to poverty reduction. At the national level, over 85% of the reduction in poverty can be attributed to economic growth. However, the pattern of economic growth and poverty alleviation varies significantly across regions. At regional level, growth varies between 2% and 14% per annum, and the contribution of economic growth to poverty reduction between 50% and 90%.

The regional heterogeneity in poverty alleviation suggests that policy-makers need to revise the design of targeting schemes. In Chile subsidies and public expenditure are

* Department of Economics, Universidad de Chile A preliminary version of this article benefited from the comments of Gonzalo Becerra, Janet Currie, Arnold Harberger, Hajime Hadeishi, Kenneth Sokoloff, Ricardo Paes de Barros, T. Paul Schultz and Felipe Zurita. The author also wishes to thank the participants in the economic workshop at the Universidad de Chile and the LACEA meeting in Buenos Aires, 1999, Duncan Thomas for helpful discussions and support and Maria Isabel Larenas, Rodrigo Montero and Sergio Urzúa for research assistance, as well as FONDECYT which financed the project.

Published by Blackwell Publishers, Oxford OX4 1JF, UK and 350 Main Street, Malden, MA 02148, USA.

allocated on the basis of a means tested scheme. However, the significant variation in poverty evolution across regions would suggest that the next stage in targeting will call for greater geographical targeting.[1]

In order to obtain a clear assessment of the evolution of poverty in Chile, a range of different poverty indicators are examined and special emphasis is placed on tracing poverty changes across regions and over time. The robustness of our conclusions is examined using tests of stochastic dominance, which do not rely on a specific poverty line.

The article proceeds as follows. The next section covers the data and methodology used, followed by a section describing the trends in levels and the composition of poverty. The fourth section then examines the robustness of the conclusions using stochastic dominance tests, and the final section presents the main conclusions.

Data and some methodological considerations

The data employed in this study are taken from the Chilean National Characterization Survey (CASEN), which is a tool designed to describe and analyse the socio-economic situation of Chilean families, including housing, education and labour characteristics. This is a cross-sectional survey, whose periodicity yields a time-based picture of the evolution of individual/household welfare. The survey is available for the years 1987, 1990, 1992, 1994 and 1996.[2] The present article analyses the evolution of welfare using CASEN 1990, which contains information on 105,189 individuals (25,793 households), and 1996 which provides information on 134,262 individuals (45,636 households).

Poverty is measured by the standard indicators in the tradition of Foster, Greer and Thorbecke (1984). Thus, it is measured at the individual level using a fixed poverty line based on per capita income.[3] The measures employed take into account estimates of the distance between per capita incomes and the individual poverty line as well as the proportion of the population falling under the line (the headcount ratio, P_0). Two measures are used to capture the severity of living conditions – the depth of poverty or 'poverty gap' (P_1) and the severity of poverty or 'poverty gap squared' (P_2).

Among its more important characteristics, P_2 satisfies the following conditions. First, a reduction in the income of a poor individual increases the poverty measure, everything else being held constant. Second, the measure captures the importance of the relative distance from the poverty line by assigning a different weight as a function of

1. For a fuller discussion of this topic see *World Bank Economic Review*, 14 (2000).
2. CASEN 1987 is not strictly comparable with the other surveys.
3. The standard procedure to account for poverty by using a fixed poverty line ignores the importance of regional heterogeneity in prices and economies and equivalence scales at the family level. The effects of these elements on poverty and inequality in Chile are discussed by Contreras (1996a), Contreras and Larrañaga (1997 and 1999), and Contreras and Ruiz-Tagle (1997). Traditionally, nominal incomes have only been deflated by a common national consumer price index, taking no account of regional variations in price levels, which can in some cases be considerable. This is reinforced by Chile's geography, with the extreme southern and northern regions having substantially higher average prices than those closer to Santiago. However, previous research has shown that though taking into account regional price heterogeneity changes the absolute level of poverty, especially for the extreme regions, the changes in poverty over time do not depend on such adjustments.

the proportional distance from the threshold.[4]

It is useful to consider different poverty measures because a society might experience a reduction in the number of people in poverty while simultaneously experiencing an increase in the income gap of those who remain in poverty.[5] This would be reflected in a decline in the headcount ratio while both the depth and severity measures increase.

The poverty line is based on the cost of a nutritionally adequate diet measured in a minimum bundle. The Economic Commission for Latin America and the Caribbean provides the composition of the bundle. The bundle satisfies the requirements in terms of calories and proteins compiled by the WHO and the FAO.

Poverty in Chile, 1990-96[6]

Chile is divided administratively into twelve regions plus the Metropolitan Region, which includes the capital city. Table 1 presents the main socio-economic characteristics by region in 1990 and 1996 respectively. The main economic activities in the north of the country are commerce and mining. These regions report household income, and schooling of household head, higher than the national average. Regions IV, VI and VII exhibit heads of household with relatively low educational levels and economic activities, mostly concentrated in agriculture. Similarly, agriculture is the most important economic activity in the south of the country. Finally, the Metropolitan Region shows one of the highest household income levels and education of the head of the household. In addition, compared with the rest of the country service activities are relatively more important.

The poverty indicators are presented in the bottom rows of the two parts of the table. As previously mentioned, poverty is measured by the P_0, P_1 and P_2 indices. These poverty measures are estimated using per capita income, where all figures are expressed in Chilean pesos of November 1996. The official Consumer Price Index was used for price adjustments.

The headcount index (P_0) indicates that the proportion of people living in poverty has decreased significantly. Between 1990 and 1996, all measures of poverty show remarkable improvement. At the national level, nearly 42% of the population was living in poverty in 1990, while six years later the percentage of people classified as poor had shrunk to 27%. This extraordinary reduction involved a decline not only in the number of poor people but also in the 'magnitude' of poverty. The poverty gap (P_1) was reduced

4. Sen (1976), Foster, Greer and Thorbecke (1984) and others show that P_2 with a fixed poverty line satisfies three axioms: Monotonicity, Transfer and Sensitivity. Monotonicity implies that a reduction in income of a poor household must increase the poverty measure. A pure Transfer of income from a poor household to any other richer household must increase the poverty measure. Sensitivity implies that if a transfer $t>0$ of income takes place from a poor household with income y_i to a poor household with income y_i+d ($d>0$), then the poverty measure must be smaller for larger y_i. Contreras (1996b) presents a discussion in a variable poverty line context.
5. Deaton (1997) provides a good example that helps illustrate the importance of considering different measures. There are policies that reduce the number of people in poverty but decrease social welfare, such as taxes on very poor people that are used to lift the marginally poor out of poverty.
6. For a complete description of the Chilean poverty profile see Contreras and Larrañaga (1997, 1999).

Table 1: Descriptive statistics for Chilean Regions, 1990-6

	Region	Region I	Region II	Region III	Region IV	Region V	Region VI
	Name of region	Tarapacá	Antofagasta	Atacama	Coquimbo	Valparaiso	O'Higgins
	Geographical location	North	North	North	North	Centre	Centre
1990	***Descriptive Statistic***						
	Principal Econ Activities	Commerce	Mining	Mining	Mining	Industry	Mining
	% Urban	93.76	97.87	90.45	67.72	87.59	59.76
	Monthly earnings	64,861	67,508	58,689	40,946	45,252	43,915
	Schooling of HH	10.57	10.53	9.64	8.78	9.61	8.32
	Employer=1	0.05	0.02	0.03	0.02	0.02	0.01
	Economic Activities						
	Agriculture	0.12	0.05	0.15	0.28	0.16	0.37
	Mining	0.03	0.16	0.21	0.10	0.02	0.05
	Construction	0.06	0.10	0.07	0.07	0.08	0.05
	Commerce	0.24	0.17	0.08	0.17	0.18	0.14
	Financial Services	0.08	0.08	0.06	0.03	0.05	0.04
	Personal Services	0.11	0.10	0.09	0.10	0.13	0.08
	Community Services	0.12	0.12	0.10	0.09	0.13	0.08
	Transport and Commun.	0.10	0.10	0.08	0.08	0.11	0.06
	Poverty Measures						
	Headcount	0.29	0.34	0.35	0.52	0.45	0.47
	Poverty Gap	0.10	0.12	0.13	0.22	0.18	0.20
	Severity P_2	0.05	0.07	0.06	0.12	0.10	0.12
1996	***Descriptive Statistic***						
	Principal Econ Activities	Commerce	Mining	Mining	Agriculture	Industry	Agriculture
	% Urban	94.88	98.25	92.11	71.45	90.13	65.52
	Monthly earnings	150,242	178,082	151,752	101,722	123,007	99,708
	Schooling of HH	11.00	11.13	10.58	9.45	10.72	9.01
	Employer=1	0.04	0.03	0.04	0.03	0.04	0.03
	Economic Activities						
	Agriculture	0.08	0.02	0.17	0.25	0.14	0.33
	Mining	0.04	0.20	0.20	0.08	0.02	0.04
	Construction	0.08	0.10	0.08	0.11	0.11	0.07
	Commerce	0.24	0.17	0.15	0.17	0.18	0.16
	Financial Services	0.04	0.06	0.05	0.03	0.05	0.03
	Personal services	0.28	0.23	0.23	0.22	0.28	0.18
	Community services	ne	ne	ne	ne	ne	ne
	Transport and Commun.	0.13	0.11	0.07	0.07	0.10	0.08
	Poverty Measures						
	Headcount	0.23	0.18	0.29	0.38	0.26	0.36
	Poverty Gap	0.08	0.06	0.10	0.14	0.09	0.12
	Severity P_2	0.04	0.03	0.05	0.07	0.04	0.06

Source: Mideplan 'Panorama económico y social', Las regiones de Chile 1990-1999

Region VII	**Region VIII**	**Region IX**	**Region X**	**Region XI**	**Region XII**	**Metrop. Reg.**	**Total**
Del Maule Centre	Bío- Bío Centre	Araucanía South	Los Lagos South	Aisén South	Magallanes South	Centre	
Agriculture	Industry	Agriculture	Agriculture	Agriculture	Mining	Commerce	
54.70	74.86	55.43	57.92	65.94	92.00	96.08	81.5
39,735	42,617	37,421	42,193	56,954	55,826	58,105	50,011
8.11	8.99	8.83	8.37	8.58	9.56	10.36	9.59
0.03	0.02	0.03	0.03	0.02	0.02	0.03	0.02
0.43	0.23	0.36	0.38	0.25	0.16	0.05	0.17
0.00	0.04	0.00	0.00	0.01	0.04	0.00	0.02
0.04	0.07	0.08	0.06	0.09	0.10	0.08	0.08
0.13	0.17	0.12	0.13	0.16	0.20	0.18	0.17
0.04	0.05	0.04	0.04	0.05	0.08	0.09	0.07
0.08	0.12	0.12	0.10	0.11	0.13	0.13	0.12
0.12	0.11	0.13	0.11	0.12	0.12	0.14	0.12
0.05	0.07	0.06	0.06	0.07	0.09	0.07	0.08
0.52	0.52	0.53	0.48	0.35	0.31	0.33	0.42
0.22	0.22	0.24	0.19	0.13	0.12	0.12	0.17
0.12	0.12	0.14	0.10	0.06	0.06	0.06	0.09
Agriculture	Industry	Agriculture	Fishing/ Agriculture	Fishing/ Agriculture	Industry	Commerce	
60.10	77.86	59.71	61.50	74.80	93.40	96.48	83.9
87,553	105,873	89,322	98,716	114,691	137,310	162,755	130,614
8.63	9.94	8.96	8.93	8.75	9.71	11.15	10.35
0.02	0.03	0.04	0.04	0.03	0.05	0.04	0.04
0.38	0.21	0.32	0.30	0.30	0.13	0.04	0.15
0.01	0.01	0.00	0.00	0.00	0.03	0.00	0.02
0.09	0.10	0.09	0.08	0.13	0.12	0.09	0.09
0.15	0.17	0.15	0.15	0.14	0.19	0.20	0.18
0.03	0.04	0.03	0.03	0.02	0.04	0.10	0.07
0.18	0.24	0.25	0.24	0.27	0.32	0.28	0.26
ne	ne	ne	ne	ne	ne	0.08	ne
0.05	0.07	0.06	0.07	0.08	0.05	0.08	0.08
0.42	0.39	0.45	0.42	0.26	0.15	0.16	0.27
0.16	0.15	0.19	0.15	0.08	0.05	0.05	0.10
0.09	0.08	0.10	0.08	0.04	0.02	0.02	0.05

significantly in the period, changing from 0.17 in 1990 to 0.10 in 1996. In addition, the severity of poverty experienced a reduction of four points.

A similar trend is observed at the regional level. Among the poorest regions in 1990, Region VIII exhibited a reduction in the poverty headcount from 52% in 1990 to 39% in 1996. Among the richest, we observe Regions II and XII (north and south respectively) and the Metropolitan Region with poverty rates lower than 20% in 1996. Poverty reduction over the period is not related to the initial poverty level. Regions I and X, a rich and a poor region respectively in 1990, show a similar poverty reduction of about 6 points.

In summary, the evolution of poverty in Chile during the period may be characterised as a general reduction in the number of individuals classified as poor, with poor people moving quickly towards the poverty line and also becoming closer to this threshold. The different measures demonstrate that Chile has embarked on a significant poverty-reduction trajectory.

How robust are these conclusions?

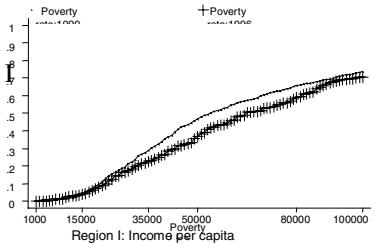
The robustness of the parametric conclusions on poverty described in the previous section was tested using stochastic dominance tests. In the estimation of poverty, the definition of the poverty line is ultimately arbitrary. Therefore those who are sceptical about the conclusion that poverty has been alleviated may argue that the choice of a different standard could lead to a reversal of this conclusion, especially in cases where the differences are not substantial. It is possible to expect that, given the density of the distribution of income, alternative poverty lines could give us different results and/or rankings of poverty. Stochastic dominance can be used to support our conclusions.

Following Deaton (1997) and Lipton and Ravallion (1995), to obtain robust measures of poverty we evaluated the poverty measurement over a wide range of poverty lines [z,z^*] and then examined whether the poverty alleviation was robust over this broad range. In particular, we used the poverty incidence in period *t* and evaluated this measure over the range [z, z^*] to generate the cumulative distribution by evaluating the poverty incidence at every poverty line z.[7] If the distribution in period *t* lies above that in period *t+1*, then the second curve (*t+1*) exhibits first-order stochastic dominance over the first curve. Stochastic dominance has been a theoretical movement away from cardinal poverty, and towards an emphasis on consistency and robustness in poverty evaluation. If first-order stochastic dominance is demonstrated, then second and third orders are guaranteed.[8] We estimated the robustness of the poverty profile (Table 1) with the first-order statistical dominance test.

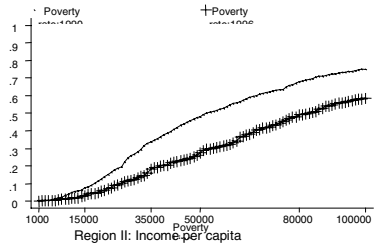
Figures 1a and 1b present the first-order stochastic dominance test, and corroborate the previous conclusions on poverty. For a broad range of poverty lines and with no assumptions about the threshold, the conclusion remains: poverty decreased between 1990 and 1996. The cumulative distribution curves validate the conclusion that poverty has decreased without any methodological assumptions. The only cases where this

7. The range in which the poverty line z fluctuated was (0,CH$100,000). In November 1996, the monthly average poverty line per person was estimated to be 35.000.
8. Second and third order stochastic dominances are estimated following a similar strategy. For second order the poverty gap is used, while for third order P_2 is used.

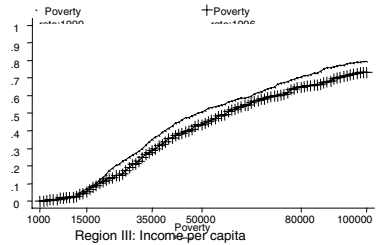
Figure 1a: First-order stochastic dominance



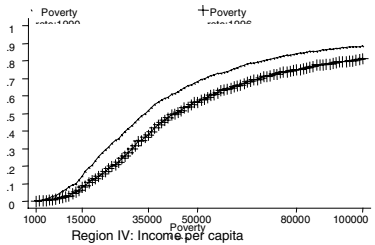
Region I: Income per capita



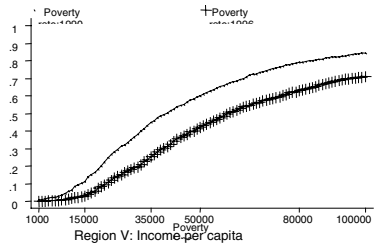
Region II: Income per capita



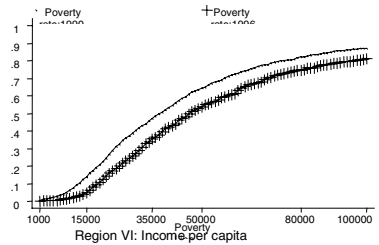
Region III: Income per capita



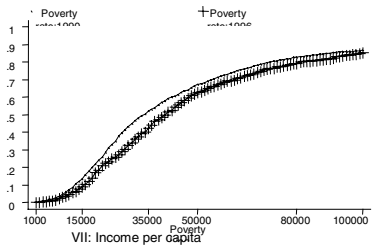
Region IV: Income per capita



Region V: Income per capita

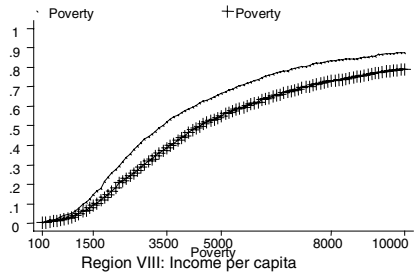


Region VI: Income per capita

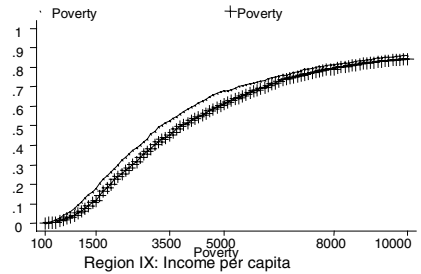


VII: Income per capita

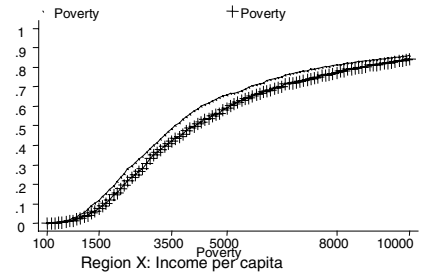
Figure 1b: First-order stochastic dominance



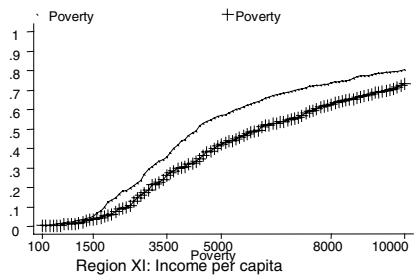
Region VIII: Income per capita



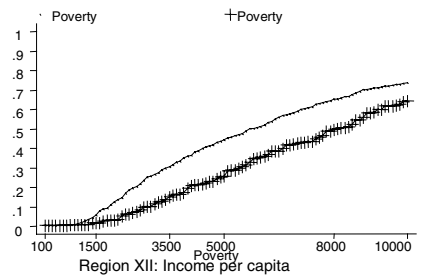
Region IX: Income per capita



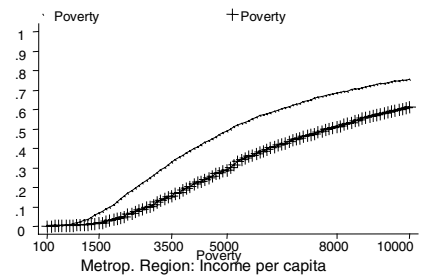
Region X: Income per capita



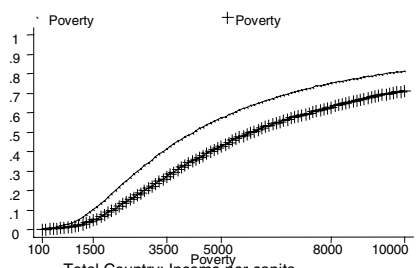
Region XI: Income per capita



Region XII: Income per capita



Metrop. Region: Income per capita



Total Country: Income per capita

conclusion does not obtain are Regions I and III, where the changes in poverty do vary depending on the poverty line chosen.

Finally, Regions VII and X show an improvement in poverty, but the reduction is lower than in the other regions analysed. In general, the first-order stochastic dominance test not only confirms that the selection of a poverty line does not influence the substantial reduction in poverty, but also supports the previous parametric outcomes. These figures therefore provide strong evidence of a generalised reduction in poverty. With respect to the other regions, the most unusual result is exhibited by Region I, where the evidence suggests an unclear result on poverty.

First-order stochastic dominance not only establishes that poverty comparisons are robust across poverty lines, but also indicates that they are robust across a very wide range of poverty measures (see Atkinson, 1987: 759-60). It also implies dominance for the headcount index and the depth and severity of poverty.

How much of the poverty reduction can be explained by economic growth?

The link between growth and absolute poverty can be addressed using the poverty measures P_0 and P_1. Following Datt and Ravallion (1992), we decompose the effects of economic growth and distribution on the poverty indicator. Thus, the poverty indicator is considered as a function of the poverty line, mean income and the Lorenz curve, representing income distribution. The Lorenz curve is estimated by using a parametric functional form.[9] The growth component of the change in the poverty measure is defined as the change in poverty due to a change in the mean, while holding the Lorenz curve (the estimated parameters) constant at the initial level. In a similar way, the distribution effect corresponds to the change in poverty due to a change in the Lorenz curve while keeping the mean income constant at its initial level. This decomposition was made separately for each region for the headcount index and the poverty gap.

Table 2 presents the effect of economic growth on poverty alleviation in each region as well as at the national level. At national level, between 1990 and 1996, the simulated[10] poverty rate changed from 40.2% to 27.8%. The reduction in poverty is presented in the third column, and is equivalent to a reduction of 12.4 points in the headcount. Economic growth accounts for 87% of the poverty reduction during the period. The changes in income distribution contribute a further decrease in poverty of about 17%. The residual effect accounts for a decrease in poverty of about 4.5%.

At the regional level, however, we observe different patterns in the contribution of economic growth to poverty reduction. In Regions II-VI, VIII, XI and Metropolitan, the contribution of economic growth to poverty reduction is over 70%, significantly more than the distribution effect. Among the most interesting cases, Regions III and XI show a growth contribution of over 90% to the reduction in both the headcount ratio and poverty gap. On the other hand, in Regions VII, IX and X the contribution of economic

9. Datt and Ravallion (1992) have proposed two functions to estimate the Lorenz curve: the Beta and the GQ Lorenz curve. This article uses the former. See also Lipton and Ravallion (1995) and Ravallion and Bidani (1993).
10. These poverty indicators are slightly different from those presented in Table 1. Here the poverty figures are constructed from the Lorenz curve estimation.

Table 2: Datt-Ravallion poverty decomposition

	1990 %	1996 %	Change 1990-96	Growth effect %	Distribution effect %	Residual %
Region I						
Headcount Index	30.3	31.5	1.1	-89.2	173.8	15.4
Poverty Gap	11.6	13.8	2.2	-24.5	123.6	0.9
Region II						
Headcount Index	33.4	20.5	-12.9	70.6	23.8	5.6
Poverty Gap	14.8	7.2	-7.6	69.1	34.8	-3.9
Region III						
Headcount Index	36.9	27.6	-9.3	96.3	17.5	-13.8
Poverty Gap	15.3	10.5	-4.8	105.5	0.5	-6.0
Region IV						
Headcount Index	50.3	36.8	-13.5	79.8	17.1	3.2
Poverty Gap	23.4	14.4	-9.0	72.2	27.8	-0.1
Region V						
Headcount Index	44.3	28.4	-15.9	82.0	15.0	3.1
Poverty Gap	19.9	10.2	-9.7	74.7	25.8	-0.5
Region VI						
Headcount Index	47.4	33.8	-13.6	80.8	10.6	8.6
Poverty Gap	21.6	12.1	-9.5	65.5	31.3	3.2
Region VII						
Headcount Index	49.9	38.4	-11.5	4.8	95.3	-0.1
Poverty Gap	22.7	15.5	-7.2	4.9	95.8	-0.7
Region VIII						
Headcount Index	49.4	33.7	-15.7	79.7	34.0	-13.7
Poverty Gap	22.2	14.3	-7.8	92.1	19.9	-12.1
Region IX						
Headcount Index	50.3	41.6	-8.7	23.9	71.9	4.2
Poverty Gap	25.0	17.0	-7.9	17.3	82.6	0.1
Region X						
Headcount Index	47.0	37.5	-9.4	8.5	91.5	0.0
Poverty Gap	20.9	14.9	-6.0	8.5	92.5	-1.0
Region XI						
Headcount Index	37.0	27.5	-9.5	98.3	6.6	-4.9
Poverty Gap	14.8	10.2	-4.6	105.5	-2.4	-3.1
Region XII						
Headcount Index	32.0	16.0	-16.1	55.2	41.6	3.2
Poverty Gap	13.5	4.4	-9.2	53.0	54.4	-7.4
Metrop. Region						
Headcount Index	34.5	20.4	-14.1	85.0	17.2	-2.2
Poverty Gap	14.4	6.5	-7.8	89.3	16.8	-6.1
Total Country						
Headcount Index	40.2	27.8	-12.4	87.1	17.4	-4.5
Poverty Gap	17.7	10.6	-7.1	87.0	16.7	-3.6

growth is lower than that of distribution. In Region XII the distribution and growth effects are nearly equal.

Finally, the simulated poverty indicators in Region I (Tarapacá) suggest an increase in poverty between 1990 and 1996. The headcount ratio calculated on this basis increased from 30.3 to 31.5 during the period. Similarly, the poverty gap changed from 11.6 to 13.8. The evidence indicates that the economic growth effect tends to reduce poverty, but the distribution effect tended to increase it, with the second effect dominating the first.

The evidence presented shows that there are significant differences in the way economic growth has impacted on poverty reduction across the regions. A more precise analysis of the characteristics of each region suggests that neither education levels, nor urban/rural characteristics, nor initial poverty levels, help to account for these differences. Most of the regions exhibit a similar level of education for the head of household. Regions such as IX and VIII show similar poverty levels in 1990 – a headcount of about 52%. While poverty was reduced by 13 percentage points in Region VIII, it decreased only 8 points in Region IX (Table 1). However, economic growth accounted for 24% of the poverty reduction in Region IX, while it was 80% in Region VIII. Finally, the regions where economic growth has played a relatively moderate role in reducing poverty do not show lower growth rates compared with other regions where the impact was higher.[11]

The only plausible explanation for such differences that I can conjecture is that the sectoral composition of growth is crucial in the link between growth and poverty reduction. In regions where growth was driven by export activities, the correlation between this growth and poverty reduction is higher. This is the case in Regions II-VI, VIII, XI and Metropolitan, where export activities are concentrated, including copper mining in the north, agroindustry in Region VIII and services and commerce in Metropolitan. On the other hand, those regions with the lowest impact of growth on poverty – VII, IX and X – are characterised by traditional agricultural production oriented towards domestic markets. This hypothesis is strengthened by the case of Region XII, which during the period in question exhibited a marked shift from oil production (domestic orientation) to fisheries (export orientation). In that region the contribution of growth to poverty reduction was around 50%, an intermediate impact compared with more specialised regions. The finding of an export bias in the impact of growth on poverty is intriguing and deserves further research.

Conclusions

During 1990-96 the Chilean economy not only experienced rapid economic growth, but also a substantial reduction in poverty. The evidence indicates reduced poverty levels and a movement by the poor towards the poverty line over this period. Stochastic dominance has been used to test these results and obtain a reliable poverty profile, which is robust over a broad range of poverty lines and measures.

Decomposing poverty reduction into an economic-growth effect and an income-distribution effect reveals a strong effect of growth on poverty reduction, accounting for over 85% of poverty reduction at the national level. However, there are wide regional

11. For a discussion on regional growth patterns, see Diaz (2001).

differences in the impact of growth on poverty which do not seem to be related to educational levels or initial poverty levels across regions. Rather, there is evidence that the export orientation of the main economic activities of a region may be a factor behind these differences.

These findings confirm that high economic growth rates are an effective tool for reducing poverty. Although this is an expected result, the magnitude of the contribution of economic growth to poverty alleviation is striking. In addition, policy-makers should take into account that high growth rates are not necessarily enough to reduce poverty in countries where significant differences across regions are observed.

It follows that the design of the poverty safety net must take such regional differences into consideration in the distribution of subsidies and the allocation of public goods. In Chile, subsidies and social expenditures are allocated using a means-tested subsidy scheme, which is defined at national level. However, the evidence presented in this article suggests that different regions will need different economic policies. Some regions will require additional effort to reduce poverty. Future strategies to fight poverty in Chile will require a geographical element in their targeting scheme.

References

Atkinson, A.B. (1987) 'On the Measurement of Poverty', *Econometrica* 55: 749-64.

Contreras, D. (1996a) 'Household and Individual Welfare. Evidence from Less Developed Economies'. Ph.D. Dissertation, University of California, Los Angeles.

Contreras, D. (1996b) *Pobreza y Desigualdad en Chile: 1987-1992. Discurso, Metodología y Evidencia Empírica*. Santiago: Centro de Estudios Públicos No. 64, Spring.

Contreras, D. and Ruiz Tagle, A. (1997) *Cómo Medir la Distribución de Ingresos en Chile*. Santiago: Centro de Estudios Públicos No. 65. Summer.

Contreras, D. and Larrañaga, O. (1997) *Chile, Poverty and Income Distribution in a High-Growth Economy: 1987-1995*. Washington, DC: World Bank.

Contreras, D. and Larrañaga, O. (1999) 'Activos y Recursos de la Población Pobre en Chile', *El Trimestre Económico*, México, LXVI (263) July-September.

Datt, G. and Ravallion, M. (1992) 'Growth and Redistribution Components of Changes in Poverty Measures: A Decomposition with application to Brazil and India in the 1980s', *Journal of Development Economics* 38: 275-95.

Deaton, A., (1997) *The Analysis of Household Survey: Microeconometric Approach to Development Policy*. Baltimore, MD: Johns Hopkins University Press.

Diaz, L. (2001) 'Pobreza, Desigualdad y Convergencia Regional: Un Análisis para el Período 1990-1998'. Unidad de Estudios Prospectivos, MIDEPLAN, January.

Foster, James, Greer, J. and Thorbecke, E. (1984) 'A Class of Decomposable Poverty Measures' *Econometrica* 52: 761-5.

Lipton, M. and Ravallion, M. (1995) 'Poverty and Policy', in Jere Behrman and T.N. Srinivasan, eds., *Handbook of Development Economics*. Amsterdam: North-Holland.

Ravallion, M. and Bidani, B. (1993) 'How Robust is a Poverty Profile?' *World Bank Economic Review* 8: 75-102.

Sen, A. (1976) 'Poverty: An Ordinal Approach to Measurement'. *Econometrica* 46: 437-46.