

Poverty Reduction in Chile: has economic growth been enough?

MAURICIO OLAVARRIA-GAMBI

Mauricio Olavarría-Gambi is Assistant Professor at the Department of Public Policies, Institute of Public Affairs, University of Chile

Abstract This paper analyses the relationship between growth, education, health status, and poverty in Chile. A comparative analysis with four countries is also undertaken. It is argued that long government involvement in social services has been a key factor in enabling many sectors of the population to increase their human capital, making it possible for them to take advantage of the opportunities given by growth to escape poverty.

Key words: Chile, Latin America, Poverty, Social Policy, Economic Growth

Introduction

Chile has often been cited as a successful case of the fight against poverty (see, for instance, CEPAL, 2000; World Bank, 2001). Income poverty fell from 45.1 to 21.7% of the population between 1987 and 1998, and again to 20.6% by 2000 (MIDEPLAN, 1999, 2001). Based on the basic needs approach, a study by Carrasco *et al.* (1997) found that the percentage of people presenting at least one basic need unsatisfied fell from 58.1 in 1982 to 45.2 in 1990 and to 30.2 in 1994. Similarly, the Foster-Greer-Thorbecke family of indices also shows a sharp reduction in poverty (see Contreras and Larrañaga, 1998; Ferreira & Litchfield, 1998; Torche, 1999). Thus, the lessons of Chile's poverty reduction experience could be of relevance to policy-makers.

The usual explanation has been to attribute Chile's success in reducing poverty to economic growth, assigning a marginal role to social policy (see Larrañaga, 1993, 1994; Larrañaga and Sanhueza, 1994; Contreras, 1996, 2000; World Bank, 1997; Contreras and Larrañaga, 1998; Meller, 2000). The National Council to Overcome Poverty¹ (1996) sees social programmes not as the main factor in poverty reduction, but rather as a means of improving the living conditions of individuals, neighbourhoods and communities. The Council believes that the most important factor in lowering poverty has been decreases in unemployment followed by low inflation and increases in salaries. Similarly, Urmeneta (1996) argues that reductions in poverty have been mainly the consequence of economic growth and that social

policy has had a low impact on poverty since it mainly consists of non-cash benefits.

Although there is no question about the important role of economic growth in fighting poverty, there are several indications that other factors might be equally important. Lustig and Deutsch (1998), in an analysis of poverty reduction in Latin America, suggested that economic growth would be “essential but not enough”, especially in a context of high inequality, and that investing in human capital was also essential. De Janvry and Sadoulet (1999), in a study on 12 Latin American countries between 1970 and 1994, found that growth was effective if initial levels of poverty were not too high and if initial levels of secondary school enrolment were sufficiently high; inequality could erase the effect of growth.

Overall, there has been a tendency in the debate on Chile’s poverty reduction process to separate the effects of growth and distribution, and to attribute the increase in people’s income to economic growth, mainly through the intermediary of the labour market. It is usually said that growth impacts on poverty through two main mechanisms: the labour market and greater government capacity for social spending.

Certainly, greater economic activity increases the demand for labour, producing a scarcity of workers, a consequent increase in wages and, ultimately, an improvement in the situation of the poor. However, there are two basic conditions that people must satisfy to get into the job market: they must be educated and healthy. Although these are obvious factors, they have been often neglected in analysis about poverty and growth in Chile. As for government capacity to increase social spending because of higher tax returns, it is not clear that the poor automatically benefit from greater government social expenditure. For instance, between 1990 and 1995 social spending grew 27.5% in real terms in Latin America but little was allocated to sectors or programmes benefiting the poor (Zevallos, 1997, pp. 12-14). If increased spending is to help the poor escape poverty, governments must target the poor.

Separating the effects of growth and social policies discounts the importance of human capital accumulation. In this paper, human capital is used to refer to education, on-the-job and other training, and health (Becker, 1995). Many studies have shown that the higher a person’s human capital, the lower their probability of being poor (Schultz, 1993; Becker, 1983). Growth brings opportunity — but people must be equipped to seize that opportunity. In other words, growth and social policy are complementary.

CEPAL (2000) has shown that the number of years of schooling as well as quality and relevance strongly influence a person’s capacity to earn income and the relative position of themselves and their family in the national distribution of income. For instance, in Latin America, most of those who have attained no more than 8 years of schooling only get low productivity jobs, which are associated with low incomes and a high risk of poverty. The situation is different for those with 12 or more years of schooling, who predominantly work as technicians, professionals and managers with much higher incomes (CEPAL, 2000). As noted earlier, De Janvry and Sadoulet (1999, p. 4)

found that “growth is only effective if the initial levels of secondary school are sufficiently high. Thus, in Uruguay . . . the income elasticity of poverty is -2.5 with a secondary school enrollment of 81 percent, falling to -0.6 with the enrollment levels prevailing in Honduras (32 percent)”.

Beyond its economic effects, education enriches people’s lives, allowing them to improve their knowledge about the surrounding natural and social environment and to actively participate in society. Regarding the non-economic effects of education, Sen (1997, p. 1959) argues that “even with the same level of income, a person may benefit from education, in reading, communicating, arguing, in being able to choose in a more informed way, in being taken more seriously by others, and so on”.

Education has also an effect on health. Higher schooling is associated with better habits of health, hygiene and other behaviours impacting on welfare (Larrañaga, 1997). The children of better-educated mothers tend to be healthier (World Bank, 1990), and the fertility rate tends to decrease with education with the consequence that parents can “do more for each child — greater concern about health, schooling, training and values” (Becker, 1995, p. 4).

The effect of health on poverty reduction has not been as well documented as that of education, but its contribution is equally important and involves economic (and non-economic) aspects. Akin *et al.* (1985, p. 109), based on Grossman’s model of demand for health services, argue that “people own a stock of health capital from which they derive utility over a lifetime . . . (or, in other words) . . . the individual enjoys a flow of healthy days which accrue from his stock of good health”. Given that health capital deteriorates with age and sickness, public health services are needed to restore it or at least minimize deterioration over the lifetime. Analysing the determinants of the demand for primary health services, Akin *et al.* (1985, p. 111) confirmed that “healthy days produce larger total pecuniary returns because more days can be devoted to earning income”.

Health also has an effect on economic growth. According to the World Bank, improvements in health contribute to growth in four ways: “by reducing worker’s sicknesses, it reduces production losses; it allows natural resources to be used that, due to sicknesses, were totally or practically inaccessible; it increases school enrollment and improves learning; and it frees resources from combating sicknesses to alternative uses” (Banco Mundial, 1993, p. 18). Health, then, becomes an essential ingredient in the process of overcoming poverty

This paper goes against the view that overemphasizes the role of growth. It argues, rather, that in the case of Chile poverty was reduced because of both fast economic growth and a comparatively high human capital accumulation. Moreover, such human capital accumulation is the result of the long Chilean tradition of policy intervention in social affairs, which may have provided the basis for effective poverty reduction through economic growth. The paper begins by presenting a model to explain the relationship of poverty, growth and investment in human capital, particularly in education and health. It then looks at experience across Latin America

before moving to the specific Chilean context of economic growth and social development.

Poverty, growth and human capital in Chile

This section uses data from Enruesta de Caracterización Socioeconómica Nacional (CASEN) surveys in an effort to explain whether and how variations in the poverty rate are associated with variations of economic growth, schooling, health status and availability of medical treatment. CASEN surveys are conducted by the University of Chile's Economics Department on behalf of the Ministry of Planning and Cooperation. CASEN surveys have been carried out in 1987, 1990 and every 2 years since then. This study draws on the six surveys from 1987 to 1998.

In CASEN surveys, the poor are defined as people whose income falls below the poverty line. Economic growth is usually expressed as Gross Domestic Product (GDP) per capita. Education has been taken as number of completed or approved years of schooling. Health status differentiates whether people have been healthy or sick during the past 3 months. The unit of analysis is the region, and the analysis has built on data from Chile's 13 regions in the six CASEN surveys (Appendices 1 and 2).

The analysis has been based on variants of the same econometric model (see equation later). It takes the number of poor people as a dependent variable. The independent variables are measures of economic growth, level of education and health status. The measures of economic growth used have been GDP, GDP per capita or GDP per capita variation. The education variables include the number of people above or below average years of schooling, and literacy. In addition, a variable simulating a much lower average has been created, assuming an average of between 2.0 and 2.9 years of schooling from 1987 to 1992 and between 3.0 and 3.9 from 1994 to 1998. The health status variables used have been people in good health, sick people, and those who have been sick people and have (or have not) received medical help in the previous 3 months.

Model equation

$$\text{Pov}_{Rt} = \beta_1 + \beta_2 \text{GDP}_{Rt} + \beta_3 \text{Ed}_{Rt} + \beta_4 \text{HSt}_{Rt} + \beta_5 \text{BG}_{Rt} + \beta_6 \text{RD}_{Rt} + \beta_7 \text{CY}_{Rt} \\ + \beta_8 \text{PrP}_{Rt} + e_{Rt}$$

where Pov represents poverty, GDP stand for Growth Domestic Product, Ed represents variables for education levels, HSt indicates variables on health status, RD controls for regional differences, CY for CASEN's years, PrP for presidential periods, e for the error term, and R and t stand for region and year of CASEN, respectively.

Regression analysis consistently shows that, at the regional level, economic growth, higher than average schooling, and health are negatively

correlated to poverty, and that lower than the average schooling, minimal literacy and illness are positively correlated to poverty.

As expected, higher than average schooling as well as economic growth are positively associated with poverty reduction, but lower schooling is not (Appendix 1). It should be noted that average schooling in Chile includes some secondary school during the whole period under analysis.² In addition, secondary enrolment varied from 81.5 to 86.9% of the targeted population from 1987 to 1998 (MIDEPLAN, 1999, p. 40).

The analysis on the simulated lower schooling average would suggest that having higher than average schooling, when that average is low, is not enough to reduce poverty (Appendix 1). The variable representing this simulation appears positive but insignificant in its relationship to poverty. When controlling for low average schooling, combined with being sick but unable to receive medical help, both variables appear positive and significantly correlated to poverty. In other words, in a context of low human capital accumulation, the effect of having above average education vanishes. These results would re-affirm the De Janvry and Sadoulet finding that “growth is only effective if the initial levels of secondary schools are sufficiently high”. However, research in countries with much lower schooling should be undertaken to see whether similar results are obtained and whether average years of schooling can be taken as a proxy for accumulated human capital in education in this type of analysis.

Ill-health is associated with poverty (Appendices 1 and 2). When including a variable about the status of ill-health or about the ability to access medical help, higher than average schooling presents a negative relation to poverty. However, when controlling for sick people not being able to access medical help, the relationship of higher than average schooling to poverty becomes positive. These results affirm the hypothesis of Akin *et al.* that health status has an effect on income — and consequently on poverty. They also suggest that lack of medical help when sick would increase the rate of deterioration of health capital and negate the effect of higher than average schooling on poverty. As there is no proxy for accumulated health capital in order to establish the effect of longstanding policies of investment in health on poverty reduction, the analysis has used the impact of whether or not medical help is available when needed, since this is evidence of the functioning or otherwise of the public health system. However, it is unfortunately not possible to draw conclusions on which of these two would have the dominant impact in Chile’s case.

Nevertheless, enjoying good health strengthens the association of higher than average schooling and poverty reduction (Appendix 2). Despite the fact that coefficient of the variable representing healthy status is positive, the coefficient of the one for high-level schooling remains negative and its value increases. Similarly, lower than average schooling and sickness weaken the association of economic growth and poverty reduction (Appendix 1). When controlling for low-level schooling and sickness, the coefficient of the variable for growth remains negative, but with a lower absolute value.

Lower than average schooling or minimum literacy is not associated

with poverty reduction, whatever the health status (Appendix 1). This confirms the general sense that those with little schooling would only be able to get low-level jobs and wages, facing a high probability of being poor. For these people, the only asset to escape poverty would be good health (Appendix 1, column 7). Controlling for marital status, age, regional differences, presidential period and year of CASEN survey confirm the afore-stated relationships between education, health status, and poverty (Appendix 2). While higher than average schooling and good health is negatively related to poverty, being bare literacy and ill-health sick is positively related to poverty.

In summary, the analysis shows that greater numbers of people attaining higher than average schooling and in good health is associated with lower incidence of poverty. Ill-health and inability to access treatment erase the effect of relatively higher than average schooling. The analysis has also shown that, when the accumulated human capital is low, the effect of having above average schooling vanishes. These findings show that accumulation of human capital in education and health, together with the availability of public health services, are essential to fight poverty.

A comparative perspective

The aforementioned analysis shows that economic growth and accumulated human capital in education and health are associated with poverty reduction in Chile. Conversely, low accumulation of human capital and inability to receive medical treatment when necessary are associated with increase in poverty. A key issue is whether there is an association between poverty reduction and fast growth in the context of low accumulation of human capital and low social development. This section addresses the issue by comparing conditions in different countries (see Olavarria-Gambi, 2001a).

Given the difficulties of analysing the effect of both social policy and growth on the same country across time, the analysis is based on a comparison of countries having different combinations of achievement in social affairs and growth. Four countries were selected because of their incidence of poverty and social development. Two are cases most similar to Chile (Uruguay and Costa Rica) and two are most different (Bolivia and Paraguay).

Costa Rica, Chile and Uruguay are consistently ranked among the Latin American countries exhibiting the highest social development statistics (see Table 1) and low incidence of poverty. CEPAL (1999) classifies these three countries among those with low urban poverty and both the United Nations Development Programme (UNDP) Human Development Index (HDI) and the Human Poverty Index (HPI) ranks them in the top positions in Latin America (UNDP, 1998). By contrast, CEPAL includes Bolivia and Paraguay among the countries having high urban poverty, and the UNDP HDI and HPI rank them far from the top positions (UNDP, 1998).

Chile had fast growth of 7% on average from 1984 to 1998 (MIDEPLAN, 1996, 2000) and modest long-term growth of 3.3% during the twentieth century (Thorp, 1998). Costa Rica had average growth of 5.1% from 1920 to 1996 (Thorp, 1998), fast growth of 8.9% from 1950 to 1954 and 6.9% from

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TABLE 1. Selected indices of well-being in selected American and Caribbean countries

Country	Life expectancy 1998	Adult literacy rate 1995	Infant mortality rate 1990-1995	Mortality rate children age 1-4 years 1990-1994	Population with access to drinking water 1995	Population with access to sewerage, 1995
Argentina	73.3	96.2	24	1.4	65	75
Bolivia	61.7	83.1	75	6.6	71	62
Brazil	67.2	83.3	47	1.9	69	67
Chile	75.4	95.2	14	0.7	91	81
Colombia	71.0	91.3	28	2.2	75	59
Costa Rica	76.9	94.8	14	0.6	100	97
Dominican Republic	71.0	82.1	42	3.8	73	77
Ecuador	69.9	90.1	44	4.1	55	53
El Salvador	69.6	71.5	44	8.4	53	77
Guatemala	67.4	65.0	48	8.9	67	67
Honduras	69.9	72.7	43	4.5	77	82
Mexico	72.6	89.6	34	2.6	83	76
Nicaragua	68.4	65.7	52	7.3	62	59
Panama	74.0	90.8	25	2.0	84	91
Paraguay	69.8	92.1	43	3.9	39	32
Peru	68.5	88.7	55	4.3	66	61
Uruguay	72.9	97.3	20	0.9	89	51
Venezuela	72.9	91.1	23	1.2	79	72
Canada	79.0	99.0	7	0.3	99	95
United States	76.8	99.0	8	0.5	100	

Source: Pan American Health Organization (1998), UNDP (1998).

1961 to 1974 (Gonzalez-Vega and Cespedes, 1993), and slow growth during the 1980s and 1990s (World Bank, 1999). Uruguay had a poor long-term growth record of 1.9% from 1920 to 1996 (Thorp, 1998), while Bolivia had average growth of 2.9% during the second half of the twentieth century (Thorp, 1998) and high growth of around 6% from 1963 to 1977 (Morales and Pacheco, 1999). Paraguay had a long-term growth record of 4.7% from 1945 to 1996 and an average growth of 9.3% from 1972 to 1981 (Thorp, 1998), the highest growth achieved in a decade by a Latin American country in the twentieth century.

There is an association between the countries' social policy traditions and their social development record and incidence of poverty. Countries such as Chile, Uruguay and Costa Rica experienced an early beginning of government involvement in the formulation and implementation of social policy. This began with education policy, in the first half of the nineteenth century in the case of Chile, in the 1870s in Uruguay and in the 1880s in Costa Rica. That tradition was reinforced by later government involvement in health service delivery and in the establishment of social security systems in Uruguay and Chile by the early twentieth century, and in Costa Rica by the 1940s. This was not the case in either Bolivia or Paraguay.

A positive relation between growth and poverty reduction appears in the context of comparatively high achievement in social affairs. Chile exhibited

relatively high indicators on social development before the fast growth era (see CEPAL, 1986). Costa Rica exhibits relatively high achievements in social affairs, two periods of fast growth, longer periods of slow growth, and comparatively low poverty even in periods of slow growth. Bolivia and Paraguay do not show faster social improvement and poverty reduction either during or after their respective fast growth eras. In Bolivia, 70% of the households were deemed poor by the early 1990s (Pan-American Health Organization, 1998), and 67% of the population was in the same condition in Paraguay by early 1980 (Galeano and Barrios, 1999), when its fast growth era ended. In the case of Uruguay, a comparatively high level of social development and low poverty was achieved in the context of a long-term slow growth.

Relatively high achievement in social development as well as comparatively low poverty are observed in those countries with a long-established tradition of investment in social development, namely Chile and Costa Rica. Conversely, those countries that did not experience faster social development or poverty reduction in a context of fast growth are the ones in which such social policy tradition is absent, namely Bolivia and Paraguay. Furthermore, the remaining case, that of Uruguay, illustrates a situation of relatively high social development and low poverty in a context of both an active social policy tradition and slow growth. These findings would suggest that the effect of social policy on poverty reduction is greater than that usually attributed to it.

Chile's social policy tradition

In spite of its modest long-term economic performance, Chile recorded relatively high indicators in social development even before the fast growth era. By 1980, Chile already had one of the best indices in Latin America in, for instance, life expectancy, infant and child mortality, overall mortality, literacy rate, primary and secondary education coverage, and proportion of the economically active population that had completed secondary education (see CEPAL, 1986). By the 1990s, Chile remained highly ranked on Latin American social indices (see Table 1). Indeed, between 1950 and 1998 Chile jumped from the eighth to the second highest life expectancy among the Latin American countries included in Table 2 (see Organización Panamericana de la Salud, 1994; Pan-American Health Organization, 1998). Similarly, in 1998 the UNDP HDI and HPI show Chile ranking second and 31st, respectively, the highest position for a Latin American country (UNDP, 1998).³

Chile's educational indices are also high in the context of Latin America. While the average for years of schooling was 9.7 years in Chile, the Latin American average was 5.2 years (Klikberg, 1998). In fact, the average for years of schooling of Chile's poorest 20% aged 15 years and older was 6.5 years in 1987 and 7.4 years in 1998 (MIDEPLAN, 1999). Furthermore, Chile's indicators on educational achievement show greater dynamism compared with the rest of the region, while Chile's secondary system shows one of

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TABLE 2. Proportion of the population in each birth cohort completing secondary education (3 year moving average)

Country	Year of birth					Change 1930-1950	Change 1950-1970	Change 1930-1970
	1930	1940	1950	1960	1970			
Honduras	2.1	7.5	14	17.4	22.4	11.9	8.4	20.3
Nicaragua	2.7	8.1	13.2	21.6	18.1	10.5	4.9	15.4
Mexico	3.2	7.7	18.7	25.7	33.6	15.5	14.9	30.4
El Salvador	5.5	10.1	13.1	21.2	28.0	7.6	14.9	22.5
Dominican Republic	6.4	8.1	21.7	33.7	32.7	15.3	11.0	26.3
Colombia	7.9	13.9	22.4	34.5	42.2	14.5	19.8	34.3
Ecuador	8.4	7.3	17.4	32.4	38.4	9.0	21.0	30.0
Brazil	8.5	12	20.6	25.8	25.4	12.1	4.8	16.9
Costa Rica	9.1	17	23.2	36.5	31.6	14.1	8.4	22.5
Venezuela	9.3	13.2	19.9	27.0	30.2	10.6	10.3	20.9
Paraguay	9.9	9.2	17.1	21.6	22.2	7.2	5.1	12.3
Bolivia	10.4	13.8	20.0	25.5	36.4	9.6	16.4	26.0
Uruguay	12.6	19.5	29.4	36.8	43.6	16.8	14.2	31.0
Chile	16.3	23.7	34.9	44.1	59.7	18.6	24.8	43.4
Panama	16.4	25.6	31.8	43.9	48.2	15.4	16.4	31.8
Peru	19.5	25.8	36.0	51.4	58.5	16.5	22.5	39.0
Argentina	21.0	32.5	37.7	44.3	53.6	16.7	15.9	32.6
Average LAC	9.8	14.7	23.1	32.6	38.2	13.3	15.1	28.4

Source: Berhman *et al.* (1999, p. 60).

the best results in Latin America, as measured by the proportion of people completing secondary education in each birth cohort (see Table 2).

The question is, therefore: How has Chile been able to achieve such social standards despite its long history of modest economic performance? It is argued that the longstanding tradition of investment in education and health has enabled Chile to accumulate a high stock of human capital compared with the rest of Latin America.

Expansion of the education system

The countries with the highest stock of human capital in educational terms are also those with a long tradition of policy intervention in this sector. Latin American countries ranking at the top of the educational indices alongside Chile are Argentina, Costa Rica and Uruguay, all of which have consistently invested in education reform and enhancement. The key steps to found the education system were taken in the 1860s in Argentina under Sarmiento's leadership, in the 1870s in Uruguay by Jose Pedro Varela, and in the 1880s in Costa Rica by Mauro Fernandez.

In Chile, there was a continuous process of consolidation and expansion rather than a specific date, and, although private efforts have been important, the education system's development has been largely due to state efforts. There are four distinct periods. The first period dates from the early days of the Republic to the 1920s, during which time the system was established and consolidated. A proviso, known as the 'Teach State', was included in the

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TABLE 3. Primary student population in the twentieth century

Year	Population	Number of students
1854	1 439 120	27 449
1860	—	43 368
1865	1 819 223	51 294
1875	2 075 971	89 305
1885	2 527 320	97 136
1895	2 712 145	139 991
1901	3 050 973	154 670

Source: Villalobos (1992).

Constitution of 1833 declaring that education was mainly a responsibility of the State and that the government should provide free education for children and youths, establish curricula, and approve schoolbooks (Villalobos, 1992). A Law on Primary Education was passed in 1860. By 1861, 911 schools were operating in the country — 648 of them owned by the government or municipalities — with a total enrolment of over 43 000 students, 18 public Lyceum with an enrolment of 2500 students, and 63 private Lyceum with an attendance of 3800 students (Gazmuri, 1992). By 1891, there were 1253 schools with an enrolment of 114 656 students (Villalobos, 1992).

During the nitrate boom⁴ the government tax revenue was around 30% of total sales and the government allocated an important proportion to education (Meller, 1996). As a result, between 1854 and 1901 school enrolment increased almost six-fold while the population doubled (see Table 3). Between 1900 and 1910 total enrolment almost doubled (see Table 4), and literacy rates rose from 17% in 1865 to 50.3% in 1920 (Villalobos *et al.*, 1974). In that same year, Congress passed the Law on mandatory primary education, making attendance obligatory from first to fourth grades.

The second period extended from the 1920s to the 1960s. The school system was reformed in 1927; primary education was extended to 6 years and secondary education was geared either to university studies or the labour market (Aylwin *et al.*, 1990). ‘School Help Community Commissions’ (Juntas Comunales de Auxilio Escolar) were created in 1928 to promote schooling and to organize feeding programmes in public schools throughout the country so that poor children could gain access to education.

By the late 1930s, education had become a political issue. In 1938, Pedro Aguirre-Cerda won the presidential election claiming that “to govern

TABLE 4. Student enrolment in public educational institutions between 1900 and 1910

Year	Primary education	Secondary and special education	Higher education	Total
1900	157 330	12 624	1 228	171 182
1905	159 379	21 497	1 549	182 425
1910	258 875	30 731	1 824	291 430

Source: Aylwin *et al.* (1990).

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TABLE 5. Percentage of literate population, 1907-1992

Year	Total	Men	Women	Range of ages considered
1907	40.0	42.0	37.9	7 and older
1920	50.3	57.2	49.5	7 and older
1930	56.1	57.4	54.9	8 and older
1940	58.3	59.3	57.3	7 and older
1952	74.8	75.7	74.0	7 and older
1960	82.4	83.2	81.7	7 and older
1970	89.8	90.5	89.2	10 and older
1982	91.7	91.9	91.5	10 and older
1992	94.6	94.8	94.4	10 and older

Source: Instituto Nacional de Estadísticas 1999.

TABLE 6. School enrolment, 1911-1982

Year	Thousands of students			Total enrolment as a % of total population (4)	Public enrolment/private enrolment (5)
	Primary (6 years) (1)	Secondary (6 years) (2)	University (3)		
1911	327.7	43.6	2.9	11.1	4.0
1915	362.1	46.7	4.3	11.6	4.6
1921	478.4	61.3	5.4	14.2	5.4
1925	500.0	63.5	6.2	14.0	5.0
1930	530.3	68.8	4.9	13.8	4.8
1936	568.7	72.9	6.4	13.6	3.8
1940	649.5	87.4	6.4	14.7	4.1
1945	682.1	122.0	7.1	14.6	3.6
1950	797.6	148.9	11.0	15.7	2.7
1955	976.0	201.6	17.0	17.7	2.1
1960	1162.6	233.2	26.0	18.7	2.1
1965	1528.8	321.8	39.3	22.2	2.4
1970	1756.5	596.2	77.0	25.9	3.3
1975	1899.5	848.4	147.0	28.4	4.2
1980	1754.1	969.7	119.0	25.6	3.6
1982	1676.0	982.3	119.5	24.2	3.0

Source: Arellano (1985).

means to teach". His education policy, called 'The New School', linked education with the industrialization policy and development. This approach was continued by subsequent administrations, and several initiatives to train workers, increase literacy rates and create schools in rural areas were implemented in the 1930s, 1940s and 1950s (see Tables 5 and 6).

The third period, beginning in the mid-1960s, saw a drive comprehensive coverage. By the early 1960s the average for years of schooling was 4.2 years nationwide and 2.4 years in rural areas (see Table 6). The main problem was school dropouts occurring mostly in primary education. The 1965

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TABLE 7. Average years of schooling, 1987-1998
(population age 15 years and older)

Year	General average
Circa 1958	3.3 (1)
1962-1964	4.2 (2)
1970	4.3
1980	7.6
1987	8.3
1990	8.9
1992	9.0
1994	9.1
1996	9.5
1998	9.7

Source: Ahumada (1958), Aylwin *et al.* (1990), Libertad y Desarrollo (2000), MIDEPLAN (1999).

Note: Ahumada (1) and Aylwin *et al.* (2) report these numbers; however, they do not specify population age considered.

educational reform extended primary education to 8 years, and the country saw an expanded enrolment rate of 6% so that around 95% of the prospective student population was covered by 1970. Enrolment in secondary education increased at a rate of 20% per year between 1964 and 1967 (Aylwin *et al.*, 1990). Primary enrolment increased to 98.3% in 1998, and secondary enrolment expanded from 49.73%, in 1970, to 86.9% of the potential students in 1998 (MINEDUC, 2000; MIDEPLAN, 1999). Enrolment continued to expand during the 1970s, 1980s and 1990s.

Table 6 presents the educational expansion during most of the twentieth century. While in 1911 11.1% of the population attended either elementary or secondary school or university, by 1982 enrolment had risen to 24.2% of the population. Although private initiatives made an important contribution, the expansion of education was mainly due to increased public enrolment.

A fourth period can be said to have begun in the late 1990s, with a drive to seek quality education for all. This issue began to be debated in the late 1880s, and the government sponsored educational reform in 1996 to improve quality. The debate was stimulated both by the lower results that public schools achieved in standard testing on quality of education and some international comparisons. For instance, despite the fact that Chilean fourth graders have ranked highly among Latin Americans, their performance is modest when compared with students from developed countries or South East Asian nations (see Larrañaga, 1997, pp. 342-344). The current focus on quality does not detract from the country's achievements over the decades, evident in relatively high indicators on enrolment, completion, and the schooling level of the population, all of which have contributed to high human capital accumulation.

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TABLE 8. Hospitals, immunizations, hospital beds and physicians; 1900-1997

Year	Hospitals	Immunizations	Hospital beds	Number of physicians
1900	83	182 440	13 143	—
1910	97	312 465	—	—
1920	—	—	—	—
1930	145	493 849	15 697	963
1940	198	633 574	22 284	1 428
1950	224	—	27 832	2 205
1960	242	3 725 570	28 119	3 724
1970	—	3 888 396	35 932	4 462
1980	219	4 000 351	37 967	11 671
1990	—	4 614 449	32 931	14 334
1997	226	4 558 395	—	17 467

Source: Instituto Nacional de Estadísticas (1999).

Improvements in population health

As in education, the state has had a longstanding policy of investment in public health. Although the first hospital was founded in Chile in 1552 (San Juan de Dios) and immunization campaigns began early in the nineteenth century, state involvement in health care delivery began in 1887 with the creation of the 'Junta General de Salubridad' (General Commission of Sanitation), as an arm of the Ministry of the Interior to advise the Government on public health issues (Giacconi and Valdivia). From this time until the 'Dirección General de Sanidad' (General Office of Sanitation) was founded in 1918, the government was mainly involved in the regulation of the health sector.

In 1924-1925, the Ministry of Hygiene, Assistance and Social Security was established together with three social security institutions for blue-collar and white-collar workers, which formed the core of state-run programmes for health care. These programmes provided health coverage for workers and their families, and were complemented in 1938 by preventive health services. As a consequence of government involvement, health care services facilities expanded during the early twentieth century and continued to grow (see Table 8).

Government involvement in health policy began early in Chile relative to the rest of Latin America and even relative to developed countries. Argentina, Brazil, Chile, Cuba and Uruguay have been characterized as pioneers in implementation of social security systems, including pensions and health care protection (Mesa-Lago, 1978). While Brazil developed a dual system in which about one-half of the population lack coverage, Argentina, Chile and Uruguay evolved toward universal systems (Fleury and Molina, 2000).

This expansion was marked, in Chile, by the creation in 1952 of the Servicio Nacional de Salud (SNS) (National Health Service). The argument for the SNS was that coverage needed to be greatly expanded if health

conditions were to improve, and that this could not be effectively achieved through the social security funds. SNS extended health care services to the population at large regardless of ability to pay. In the years following the creation of SNS, the number of beneficiaries receiving free curative medical services tripled (Raczynski, 1994).

Two National Health Plans were sponsored by the Eduardo Frei-Montalva (1964–1970) and Salvador Allende (1970–1973) administrations. Frei-Montalva's plan focused on reduction of mortality, maternal-child health, nutrition, odontology and epidemiology. Allende's plan dealt with maternal health, children and adolescents, adults, old age, and odontological services (Raczynski, 1994).

It is estimated that by the 1960s 65% of the population used health care state-run programmes, and by the late 1970s 85% of the population was covered by public services, 10% by private providers working on a fee-for-services basis and 5% by the Armed Forces medical programmes (Henriquez, 2000).

In 1980, the SNS was transformed into the 'Sistema Nacional de Servicios de Salud' (National System of Health Services) covering all of Chile's regions, and the 'Fondo Nacional de Salud' (Health National Fund) was established to manage this and other public health funds. Municipalities became responsible for delivering primary health care. In addition, private institutions were allowed to participate in providing health services to the population. Consequently, the number of private health plans increased in 1980.

The development of Chile's health policy shows continuous evolution to address problems as they arose, from lack of coverage for workers and poor people to meeting the need for an extended public system. Nevertheless, Chile's public health system has often been criticized, mainly for poor quality of service, inadequate facilities and long waiting periods for non-emergencies. Nevertheless, the system does treat emergencies with immediate attention and has developed specific health programmes for particular areas, such as prenatal and postpartum care, immunizations, and nutrition and hygiene campaigns. As a result, the population's health status has significantly improved along the years (see Tables 8, 9 and 10). In addition, by 1990 93% of the population had access to health care services, 93.7% children younger than 12 months had been immunized against DPT and poliomyelitis, and, in 1995, prenatal and delivery coverage by trained personnel was 100% (Pan-American Health Organization, 1998).

Conclusion

The debate on Chile's poverty reduction process has regularly focused on the respective roles of economic growth versus social policy. Using sophisticated techniques and comparing distributions close in time, it has been argued that most of the effect should be credited to growth. However, given that the labour market is the main way in which growth acts on poverty, it is important to address the question of how people can secure employment and economic opportunities that keep them out of poverty. In

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TABLE 9. Birth, mortality and infant mortality rates, 1900-1997

Year	Birth rates (per 1000 inhabitants)	Mortality rates (per 1000 inhabitants)	Infant mortality rates (per 1000 living births)
1900	38.4	36.2	342.5
1910	39.0	31.9	267.3
1920	39.5	31.1	263.4
1930	39.8	24.7	234.4
1940	33.2	21.5	217.2
1950	32.4	15.7	153.2
1960	37.5	12.5	119.5
1970	26.4	8.7	82.2
1980	22.2	6.7	33.0
1990	23.2	6.0	16.0
1997	18.7	5.4	10.0

Source: Instituto Nacional de Estadísticas (1999).

TABLE 10. Life expectancy at birth (in years of age), 1950-1995

Year	Total	Male	Female
1950- 1955	53.7	51.9	55.7
1960-1965	58.0	55.3	60.9
1970-1975	63.6	60.5	66.8
1980-1985	71.0	67.6	74.6
1990-1995	72.0	68.5	75.6
1998	75.4	72.4	78.4

Sources: Organización Panamericana de la Salud (1994), Pan-American Health Organization (1998).

this respect, it has been shown that to have a sufficiently high likelihood of not being poor (over 85%), people need to complete 12 years of education (Olavarria-Gambi, 2001b). This paper has argued that to escape poverty, people need to exhibit a certain minimum level of human capital accumulation, which is a task of social policy.

While sound economic policies are essential to fight poverty, growth alone cannot accomplish this end, and investment in social development is essential in the human capital accumulation necessary for poverty reduction.

This paper has sought to demonstrate that, in Chile's case, growth together with higher than average schooling and good health reduces poverty. Being healthy reinforces the effect of higher schooling. On the other hand, illness and the inability the access treatment, low schooling and minimum literacy are positively related to poverty.

Chile's longstanding investment in social development is associated with higher indicators relative to those of Latin America, particularly in terms of secondary school coverage and completion, years of average schooling, and health status. In other words, the investment in social development has decisively contributed to a comparatively high human capital in education and health, which is related to poverty reduction.

The comparative analysis has shown that fast growth and comparatively low poverty are observed where there are relatively high indices in education and health over a long period of time. Conversely, fast growth is not related to faster social development or poverty reduction in those countries with low achievements in social sectors — countries where there has been little policy intervention in social affairs.

In the case of Chile, poverty reduction did take place in a context of fast growth and comparatively high achievements in education and health, indices that had already been high before the fast growth era came. Indeed, achievements in social development contrast with the rather modest economic performance of Chile through the twentieth century. Finally, the comparative analysis showed that, in a context of low achievement in education and health, economic growth is not associated with poverty reduction.

The analysis suggests that sustained social policy interventions are necessary to create the social development foundations and human capital accumulation for poverty to decline in response to the stimulus provided by economic growth. This conclusion, however, is only valid in the context of the cases reviewed. Further research is necessary to confirm whether a similar relationship between poverty, growth and social policy can be found in contexts different to that of Latin America, such as those of Asia and Africa. If similar results are obtained, the policy implication is the need to invest heavily in social affairs — perhaps re-orienting national priorities — as well as tight co-ordination between economic and social policy so that people can take advantage of growth.

Economic growth and social development are both needed to generate higher levels of well-being for all. Economic growth generates opportunity but those who take advantage of that opportunity are the ones exhibiting relatively high levels of schooling, good health and the ability, when sick, to access medical care.

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Notes

- 1 The National Council to Overcome Poverty was created by President Eduardo Frei with the purpose of advising government authorities and engaging the civil society in the task of overcoming poverty. The Council brings together entrepreneurs, scholars, practitioners and representatives of the Catholic Church, grassroots organizations, non-governmental organizations, and foundations related to the issue.
- 2 Average years of schooling for population 15 years of age and older have been as follows:

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- 8.3 years in 1987, 9.0 years in 1990, 9.0 years in 1992, 9.2 years in 1994, 9.5 years in 1996, and 9.7 years in 1998 (MIDEPLAN, 1999, p. 42).
- 3 The Human Development Index shows the average achievements of a country considering three factors: longevity, as measured by life expectancy at birth; educational attainment, as measured by a combination of adult literacy (two-third weight) and the combined first-level, second-level and third-level gross enrolment ratio (one-third weight); and standard of living, as measured by real GDP per capita (PPP\$) (see UNDP, 1998). The Human Poverty Index shows the average deprivation in a country. It takes three basic variables: the percentage of people expected to die before the age of 40; the percentage of adults who are illiterate; and overall economic provisioning in terms of the percentage of people without access to health services and safe water, and the percentage of under-weight children younger than 5 years of age (see UNDP, 1997).
- 4 The nitrate boom was a period of expansion of nitrate exports. Between 1880 and 1920, nitrate exports grew at average rate of 6.1 percent a year. This jumped from US\$6.3 million in 1880 to US\$96 million in 1914 and then reduced to US\$70 million by 1928. Nitrate exports represented around 30% of Chile's GDP between 1900 and 1920. Also, Chile accounted for 70% of the total nitrate exports from 1900 and 1914 (see Meller, 1996, pp. 23-31).

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Appendix 1: Poverty, economic growth and human capital (correction for heteroscedasticity and autocorrelation included)

Independent variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
GDP per capita	-0.2245 (0.002)	-0.2300 (0.002)	-0.2511 (0.000)	-0.2305 (0.004)	-0.2179 (0.002)	-0.2769 (0.000)	-0.3079 (0.000)	-0.2723 (0.0000)	-0.2760 (0.000)	-0.2404 (0.000)	-0.2996 (0.000)	0.2011 (0.002)	-0.2022 (0.002)
Schooling > than average (high average)	-0.2295 (0.056)	-0.2176 (0.077)	0.1571 (0.003)	-0.3310 (0.074)									
Schooling > than average but low average								0.03439 (0.680)	0.0489 (0.564)	0.1424 (0.000)	0.1783 (0.383)	0.0070 (0.934)	0.0164 (0.848)
Schooling > than average (high average)					0.2454 (0.015)								
Literate population						0.1704 (0.012)	1.1532 (0.000)						
Sick people	1.5041 (0.000)				0.7623 (0.000)	0.5114 (0.020)		0.9458 (0.000)	0.9231 (0.001)			1.0506 (0.000)	
Sick receiving medical help		1.5168 (0.000)								24.1291 (0.000)			1.0476 (0.000)
Sick not receiving medical help			28.0142 (0.000)										
Healthy people				0.4779 (0.000)			-0.7663 (0.000)				0.1362 (0.442)		
CASEN year												Yes	Yes
Constant	172797.3 (0.000)	176896.1 (0.000)	189501.4 (0.000)	155221.2 (0.001)	156087.3 (0.000)	198650.9 (0.000)	238342.6 (0.000)	201744.9 (0.000)	204205 (0.000)	176033.9 (0.000)	213475.7 (0.000)	295647.6 (0.000)	299197.4 (0.000)
Wald χ^2	398.97	386.25	449.99	325.70	412.09	414.82	502.39	378.58	370.25	493.86	313.65	479.23	471.12
Pr > χ^2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Number observed	78	78	78	78	78	78	78	78	78	78	78	78	78

Dependent variable: number of poor people.

Note: Each regression presented includes a simultaneous correction for heteroscedasticity and autocorrelation. Statistical significance is given in parenthesis. Data is from the six CASEN surveys (1987, 1990, 1992, 1994, 1996 and 1998). Dummy variables for each CASEN year have been included in regressions 12 and 13. The unit of analysis is the region. Regressions have been performed on a panel data of 78 observations, built with data from Chile's 13 regions. See third section of the text for a further description of the included covariates.

Appendix 2: Controlling for regional differences, presidential period, CASEN's year, marital status & age (correction for heteroscedasticity and autocorrelation included)

Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
GDP	-0.4054 (0.000)	-0.4090 (0.000)	-0.5100 (0.000)	-0.3752 (0.000)	-0.3758 (0.000)	-0.4981 (0.000)	-0.9202 (0.151)	-0.4341 (0.000)	-0.0959 (0.129)	-0.3779 (0.000)			
GDP per capita											-0.1548 (0.019)	-0.1558 (0.020)	
GDP per capita variation													-4034.55 (0.001)
Schooling > than average (low average)	-0.4764 (0.000)	-0.4736 (0.000)	-0.11563 (0.052)	-0.4608 (0.000)	-0.4620 (0.000)	-0.11462 (0.118)	-0.4470 (0.000)		-0.4094 (0.000)		-0.2805 (0.016)	-0.2778 (0.020)	-0.7090 (0.000)
Literate people								0.3020 (0.020)		0.1767 (0.219)			
Healthy people								-0.5385 (0.000)	-0.5184 (0.000)	-0.4189 (0.000)			-0.4369 (0.000)
Sick people	0.4509 (0.000)			0.4522 (0.000)							1.6318 (0.000)		
Sick receiving medical help		0.4521 (0.000)			0.4590 (0.000)							1.6684 (0.000)	
Sick not receiving medical help			6.9100 (0.000)			6.2780 (0.000)							
Regional Differences	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Presidential periods	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CASEN year													
Marital status													
Age													
Constant	2810142 (0.000)	2823677 (0.000)	2616688 (0.000)	2724791 (0.000)	2735344 (0.000)	2595370 (0.000)	4785852 (0.000)	2917636 (0.000)	4639955 (0.000)	3244179 (0.000)	262446.6 (0.000)	268239.6 (0.000)	-112475.9 (0.000)
Wald χ^2	7584.62	7424.70	7457.59	8617.74	8484.48	7688.34	11186.53	8276.57	12127.23	9375.89	520.37	508.92	4344.69
Pr > χ^2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Number observed	78	78	78	78	78	78	78	78	78	78	78	78	78

Dependent variable: number of poor people.
 Note: Each regression presented includes a simultaneous correction for heteroscedasticity and autocorrelation. Statistical significance is given in parenthesis. Data is from the six CASEN surveys (1987, 1990, 1992, 1994, 1996 and 1998). The unit of analysis is the region. Regressions have been performed on a panel data of 78 observations, built with data from Chile's 13 regions. When stated, dummy variables have been included for each region, CASEN year and presidential period. These presidential periods are: Pinochet, 1987; Aylwin, 1990 and 1992; and Frei, 1994, 1996 and 1998. See third section of the text for a further description of the included covariates.