INCORPORATING SOCIAL (MINIMUM) SERVICES IN THE MEASUREMENT AND ASSESSMENT OF POVERTY: CONCEPTUAL AND POLICY ISSUES WITH AN APPLICATION TO CHILE

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Abstract: Income poverty refers only to those needs which are addressed with market commodities, excluding social services which are distributed in a subsidized basis to the middle and low income population. However, access to education, health care and housing are also essential determinants of the standards of living of the population. This paper addresses the issue of incorporating the notion of minimum social services in the measurement and assessment of poverty, from a conceptual and policy applied perspectives. The first section presents some analytical considerations, including the evaluation space, the measurement of multidimensional poverty, the resource vs output debate and the role of public policies guarantees and rights. The second section discusses a set of possible indicators to measure the lack of access to health, education and housing. Section three presents the case of Chile, where the National Foundation for Overcoming Poverty –an important non government organization- has developed two comprehensive proposals that guaranteed the access of the population to minimum social services. Some of these initiatives have been transformed in public policies, such as the guaranteed health package, a progressive per student subsidy to finance public and private subsidized schools, and twelve years of compulsory schooling.

Keywords: social services, multidimensional poverty, guarantees and rights

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This paper addresses the issue of incorporating the notion of minimum social services in the measurement and assessment of poverty, from a conceptual and policy applied perspectives.

The social minimums are thresholds that individuals need to reach in order to achieve a minimum standard of living in a society. Those who do not make these thresholds are considered poor, a condition which is evaluated as unacceptable by most societies. Poverty thresholds are defined in relation to the development level of a country, both because the acquisition cost of goods and services varies depending on per capita income and because some needs are socially determined.

The paper is organized in three main sections. The first section presents some analytical considerations, including the evaluation space, the measurement of multidimensional poverty, the resource vs output debate and the role of public policies guarantees and rights. The second section discusses a set of possible indicators to measure the lack of access to health, education and housing. Section three presents the case of Chile, where the National Foundation for Overcoming Poverty – an important non government organization – has developed two comprehensive proposals that guaranteed the access of the population to minimum social services. Some of these initiatives have been transformed in public policies, such as the guaranteed health package, a progressive per student subsidy to finance public and private subsidized schools, and twelve years of compulsory schooling.

I. Analytical Considerations

1. Evaluation Space

The question to be explored in this section refers to the evaluation space for evaluating poverty. A person is said poor when suffers deprivation in areas that are considered fundamental in order to live a minimally decent life. The answer to what these fundamental aspects are depends on the normative approach which is utilized to evaluate the social order. The most relevant approaches for these issues today are utilitarianism, Rawls´ justice as impartiality and the capabilities and functionings approach of Sen.
Utilitarianism

The normative postulates of economic theory are based on utilitarianism. This is a doctrine of the individual good and the common good, developed by authors such as Bentham in the 18th Century and Mill, Sidgwick, Edgeworth and Marshall in the 19th Century. Utilitarianism contends that the individual good lies in the satisfaction of individual welfare; while the common good is to be found in maximizing the aggregation of individual welfare.

Utilitarian theory corresponds to the teleological tradition. They define firstly what is “desirable” or “good” (what is sought after, such as maximizing the sum of individual utilities), and then they define the actions that are required to forward those ends as rights. In this sense, utilitarianism is a highly rational theory, understood as the consistency between means and ends. It “seeks the best actions to obtain the defined objectives”. In fact, Harsanyi (1982) contends that classic utilitarianism is the only ethical theory that is consistently guided by the principle that moral issues must be decided by rational criteria and that moral conduct is a form of rational behavior. Thus, the rules of conduct that each society establishes are those that most favor its own development.

Utilitarianism assumes that all concepts that matter to individuals (rights, ideals, etc) can be represented by (reduced to) preferences. These must be based on informed judgments of the reality, carried out by autonomous individuals, with full mental faculties, and excluding their antisocial preferences.

The utility or welfare of individuals is not an observable or quantifiable variable. However, it is assumed that utility is a function of observable variables, as in the case of income. Income “produces” utility to the extent that it represents the purchasing power to acquire the goods and services that satisfy individual preferences. Thus, income has been the traditional variable for evaluating the well-being of individuals in economic analysis. As such, the development level of a country is measured by means of its per capita income, inequality is measured by means of income distribution and poverty is measured through the lack of income.

The relationship between well-being and income is represented by means of an increasing concave function. This implies that a higher income level represents a higher level of well-being, but the gains in well-being decrease as incomes increase. This property is referred to as the decreasing marginal utility of income and is an important characteristic when deriving income-based inequality and poverty indicators.
In the utilitarian approach, poverty is defined in terms of a minimum level of welfare that each person should achieve. The impossibility of measuring welfare leads to the measurement being carried out through its income equivalent, such as through the poverty line or the minimum income threshold.

The measures of income poverty can be easily adapted to consider needs. For instance, the poverty line can accommodate differences in the cost of living among different regions of a country. Within households, equivalence scales can be used to take into account the varying needs depending on the demographics of household members.

It should also be noted that the utilitarian based approach can also be easily adapted to include dimensions other than income in the definition of poverty thresholds. This is the case when one considers that welfare depends on variables such as health, education and housing, which are not acquired through income if they are distributed freely or subsidized through social policy.

A fundamental point to be kept in mind is that the evaluation of poverty should be made against an objective concept of welfare. This does not consider individual preferences, but rather a constant relation between income and welfare across individuals. Thus, a person is considered poor when his/her income level lies below the poverty line, independently of personal preferences (but can accommodate differences in needs). Otherwise, poverty would depend on personal tastes; a person with expensive tastes would be considered poor even with a high income; a person with cheap tastes could be considered not-poor even with a very low income. This representation of poverty is not relevant for public policy; since a society certainly does not have to allocate greater resources to certain individuals simply because they have expensive tastes. It would be devoid of any moral or political base to transfer income or resources to “poor” individuals that would not be considered so by using a socially acceptable criterion.¹

The use of social welfare functions that add identical individual utility functions is standard procedure in the analysis of poverty in economics (Atkinson, 1987, Deaton 1999, Fields 2001). This methodology is a shift away from traditional utilitarianism, based on individual preferences, and closer to the next approaches.

¹ This without considering the additional problem of asymmetry of information associated to basing poverty on individual preferences, given that there would clearly be incentives to declare expensive tastes and thereby receive public transfers.
Primary goods in Rawls

The theory of justice as impartiality developed in Rawls (1971) is the most influential work of political philosophy in recent decades. This is recognized by his most important critics, including Nozick (1974) who writes: “Political philosophers must now either work within Rawls’s theory or explain why not”, as well as Sen (1992) who affirms: "By far the most influential theory of justice......among those presented in this century is the theory of John Rawls on "justice as impartiality".

Rawls contends that a society is a cooperative association, whose participants have a common interest in the benefits derived from social cooperation, as well a conflict over the distribution of the benefits and responsibilities associated to life in a society. The resolution of the conflict involves the principles of justice. Thus, the principles of justice determine the basic structure of society. Justice therefore constitutes "the first virtue of social institutions".

The subject of justice in Rawls is the basic institutions of society, which have fundamental and lasting effects on the distribution of the benefits and costs of social cooperation. The achievement of justice is therefore defined in the design of these institutions, since they determine the terms of the social cooperation among individuals.

The methodological perspective of Rawls when deriving the principles of justice is contractarian. The guiding question behind the analysis is: What principles of justice would individuals in society have contracted initially, when the terms of future social cooperation would have been defined?

In order to derive principles of justice with moral value it is necessary to establish conditions that ensure minimum standards of impartiality and equality in the original position, so that the terms of the agreement may be "fair". To achieve this, Rawls indicates that the social contractors should be covered by a "veil of ignorance" regarding their own situation and interests, that the deliberation should occur in a state of equality and that the contractors be rational.

The principles of justice are the result of this process of deliberation. The first principle determines the equality in the distribution of the fundamental rights of individuals. Meanwhile, the second principle accepts inequality in the distribution of socioeconomic goods (income, wealth, power, etc) to the extent that that condition benefits all. The principles of justice are ordered
lexicographically. Thus, the first principle precedes the second in the sense that political and civil liberties established there cannot be switched for gains in socio-economic aspects.

Rawls’s theory of justice is based on the distribution of primary goods, defined as resources of the broadest use, which individuals will desire independently of their life projects. In this respect, Rawls’s theory differs from those that are based on ends, as in the case of welfare economics and utilitarianism.

The use of primary goods as a guide for social evaluations offers two advantages over end-result variables such as utility or welfare. Firstly, it avoids the problem of interpersonal comparisons of utility, which is the source of serious methodological difficulties in the utilitarian tradition (Elster and Roemer, 1991). Secondly, working with an objective variable such as primary goods avoids the discussion on the relevance of the use of subjective variables as a guide for the welfare of individuals and/or societies.

The definition of the primary goods in Rawls is broad and covers liberties and opportunities, income and wealth, power and self-respect. The latter is the main primary good in Rawls since it refers to the capacity of individuals to have and develop life projects. The principles of justice must ensure the existence of the social bases that lead to the development of self-respect among all members of society. Specifically, it is necessary that an individual and his/her life project be recognized and appreciated by his/her peers, through the various associations that bring them together. In a well-ordered society self-respect is favored by the status of equal citizenship for all and by the sense of justice of the members of the society.

Functionings and capabilities

In the utilitarian approach, welfare is an achievement that is reached through means such as income. For Rawls, the achievements or results are defined by the life projects of each person, while the means are the vectors of primary goods that are functional to obtaining these ends.

For Sen, there is an intermediate category, named functionings that bridges the gap between means and achievements. As such, Sen’s approach is sometimes referred to as midfare, since it emphasizes a component that lies in the middle between resources and welfare. For Sen, the functionings are the constituents of individual well-being: to be healthy, well-nourished, to

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have education, to participate in the culture of the society, to be integrated into society, etc. The emphasis here is on activities – beings and doings – rather than on havings.

For Sen, capabilities are a vector of functionings that allow people to live one type of life or another in accordance with their individual life projects. The capabilities thus deliver “freedom to live one type of life or another” or freedom to live the type of life that people have reasons to live.

In Sen’s approach, freedom has an intrinsic as well as instrumental value. It is instrumental in the sense that it provides the possibilities to live one type of life or other. However, freedom can also be understood as a functioning in itself. Two people may be eating the same quantity of food which falls below the normal nutritional requirements. One does so due to a lack of means with which to buy the food, the other, because he is on a diet. Clearly, the latter individual is in a better position since he is exercising his freedom to choose whether he eats or not, while the former individual does not have that freedom.

Applied to poverty, Sen’s approach presents this condition as deprivation of capabilities. This refers to deprivation in aspects that are essential for well-being, that take away from people’s freedom to live long, healthy, socially integrated lives, etc. The most relevant dimensions would be the capacity to avoid premature death, sickness and malnutrition, social integration capacity through literacy and numerical skills, the capacity to be shielded from the harshness of the weather, and the capacity to be employed.

Sen recognizes lack of incomes as an important but incomplete dimension of poverty. Incomes have an instrumental end, since they are a means for achieving the capabilities that provide liberty to individuals to live the lives that they have reasons to value. However, there are other determinants of capabilities, so income is not the only input required. Moreover, the relation between income and capabilities is far from simple, since it is mediated by individual, social and environmental characteristics. There may also be coupling of the disadvantages, in so far as a lack of income may lead to a greater degree of poverty when it is associated to deprivations in other dimensions (health).

The lack of employment illustrates why income is not informative about relevant capabilities. An unemployed person can be eligible for monetary subsidies that compensate the lack of income associated to the loss of a job. However, that does not compensate the loss of other capabilities associated to having a job. For instance, permanent unemployment is
associated to problems such as a lack of self-esteem, loss of self-respect, problems in family relations and others. Income does not provide information on the loss of these other capabilities, thus offering an incomplete dimension of the deprivation of capabilities.

Sen’s approach has been criticized because it lacks clarity in aspects such as the criteria for choosing the functioning and its aggregation in an integrated measure of well-being (for example, Srinavasan 1994, Sugden 1993). Sen contends that the issues of well-being and inequality are intrinsically complex and that they are “ample and opaque” concepts, and as such there is no point in trying to be too precise in these aspects if we do not want to oversimplify the problems. According to Sen, it is better to be ambiguous but right, than precise but wrong.

Regarding the choice of the capabilities that would make up the social evaluation space, Sen contends that it is an exercise in social choice that should occur through democratic mechanisms. This may be a long and complex procedure, but it is preferable to a technocratic solution.

2.- The Measurement of Poverty: from income poverty to multidimensional poverty

Poverty has traditionally been measured based on income. This has benefited from the development of a conceptual framework that answers the fundamental questions for the measurement of poverty, also called the income poverty paradigm (Bourguignon, 2003). Meanwhile, poverty measurement incorporating other dimensions has been restricted to counting the poor in each variable, as is the case of the Basic Needs approach, and the more recent measurement of the UNDP by means of the Human Poverty Index. Nevertheless, significant conceptual developments have been made in recent years in the measurement of multidimensional poverty.

The income poverty paradigm

The traditional poverty measurement measures income deficits. The conceptual framework of income poverty has two main dimensions: (i) the identification and aggregation of the poor in indicators that possess a range of desirable properties; (ii) the comparison (ranking) of income distributions according to poverty intensity.

A first approach to the issues of identification and aggregation may be found in Sen (1976). The identification is carried out on a household level and consists of conditions that
indicate when a household is to be considered poor. For this purpose, an income threshold or poverty line is defined. Individuals whose household income in per capita terms or in equivalence scales is below this poverty line are classified as poor. This represents the income necessary to acquire a basic basket of goods and services for the members of a household. The poverty line can be calculated based on an absolute standard (US$ 1 or US$ 2 per day, measured in PPP); as a measure relative to the level of income of the country (50% of the income median); or through the cost of a basic food basket.

The aggregation problem lies in deriving a poverty indicator that provides information on the population as a whole. Sen (1976) proposed a range of axioms or desirable properties that such an indicator would have to fulfill. These include (i) monotonicity: a reduction in the income of any poor individual will lead to an increase in the poverty measure; (ii) weak transfer: a transfer from a higher income poor person to a lower income one (that does not change the relative position) reduces poverty; (iii) symmetry: the poverty indicator is anonymous; (iv) invariant to scale: if all incomes and the poverty line are multiplied by a positive constant, the value of the indicator does not change; (v) invariant to replication; the indicator does not change with changes in population size that do not modify income distribution; (vi) focus: the poverty measure does not change when the income of the non-poor changes.

Different poverty indicators can be evaluated depending on their compliance with the desirable axioms. Interestingly, the percentage of poverty or headcount does not fulfill all of the desirable properties of a poverty indicator, since the indicator does not change with variations in incomes below the poverty line, and thus does not comply with the monotonicity axiom.

The second dimension of the income poverty paradigm is poverty partial ordering. This refers to ordering or ranking income distributions by poverty intensity, where the distributions that are being compared correspond to the same population in different time periods or to different populations in the same time period (Atkinson, 1987; Foster and Shorrocks, 1988). Distribution A is said to have first order dominance over distribution B if the intensity of poverty measured by any monotonic poverty function is lower in A. This is an important result, because it establishes a result that is robust to the choice of poverty indicator. A necessary and sufficient condition for this to occur is if the percentage of poor is less in A for all income thresholds below the poverty line. An analogous result, termed second order dominance, is applied to monotonic and concave poverty functions.
According to Bourguignon (2003) the income poverty paradigm is practically complete, thanks to numerous contributions made over 30 years. There are various reviews of this literature, among others, Ravallion (1994), Foster and Sen (1997) and Jantti and Danzinger (2000).

Experiences in the measurement of poverty in various dimensions

Poverty measurements that incorporate other dimensions aside income are less well developed conceptually. There are numerous empirical applications that consist in counting the number of dimensions in which deficits may be found. For instance, four welfare dimensions can be defined (income, education, housing and employment), minimum thresholds in each dimension are defined, households or individuals with deficits in each of the dimensions are identified and then information is given on the percentage of the population with deficits in the various possible combinations. Two particularly interesting cases are where individuals are lacking in all dimensions (intersection approach) or when they are lacking in any of the dimensions (union approach).

A more elaborate measure of multidimensional poverty is the Human Poverty Index (HPI) of the UNDP. This measure is derived from earlier experience with the Human Development Index, which evaluates countries (regions) through indicators that measure average gains in three basic dimensions of human development: a long and healthy life, measured by means of life expectancy; knowledge, measured by means of adult literacy and primary and secondary education coverage; decent living standards, measured by means of per capita income (PPP US$). In 1997, the UNDP introduced the Human Poverty Index (HPI), that measures privations in the three human development dimensions mentioned (Anand and Sen, 1997).

The HPI has two versions depending on the development level of the country, which is justified by the relative nature of deprivations. The classic quote in this regards was made by Adam Smith who wrote that in England, a woman is considered poor if she walks barefoot, while in Ireland that is not the case. This issue is also related to self-respect, which is one the main primary goods in Rawls.

The HPI-1 measures human poverty in developing countries in the dimensions of long and healthy life, knowledge and a decent standard of living. The respective indicators are: the probability at the moment of birth of not living longer than 40 years; adult illiteracy rate and an
average of the percentage of the population without improved water and the percentage of children who are underweight for their age. The latter group substitute income poverty due to the difficulty in having sensible poverty lines for each country: a single poverty line does not take into account the differences in the command on goods and services in each country, while the lines used by each country are subject to domestic political considerations.

Meanwhile, the HPI-2 is applied in developed countries and its respective indicators are: the probability of not living longer than 60 years, the percentage of the adult population (15-65) lacking functional literacy skills and the percentage of the population below the poverty line (measured as 50% of the adjusted median income of the household). The HPI-2 also includes social exclusion as a relevant poverty dimension, which is measured by means of the 12 month or over unemployment rate.

The various indicators in the HPI-1 and HPI-2 are combined through a concave combination, which delivers a higher weighting to the indicator with the highest level of deprivation. This is related to the level of substitution of the dimensions in the resulting poverty index. A linear combination, such as the simple average of the various deficits, represents the perfect substitution case among the various dimensions of poverty. Thus, poverty does not change with a 1 percentage point increase in the deficit of a dimension that is accompanied with a 1 percentage point decrease in another dimension. Meanwhile, the convex indicator represents restricted substitution. In the previous example, poverty increases if the deficit rises in a dimension with higher initial deprivation, even if it is accompanied by a reduction of equal amount in another dimension.

**Multidimensional poverty**

In recent years, there have been some theoretical developments in the measurement of multidimensional poverty. In a way, the intention is to generalize the poverty paradigm from one dimension to n-dimensions. It is therefore necessary to solve the identification and aggregation problems, as well as being able to compare different distributions of the attributes of well-being in terms of the poverty measure.

On the identification level, it is necessary to: (i) identify well-being dimensions that will be evaluated in the poverty indicator; (ii) define the minimum thresholds in each case. The selection of the poverty dimensions is essential and requires to identify the aspects of well-being
that are central for people to live a “minimum decent life”. This is the same kind of problem faced by the approaches of Sen (which are the functionings?) or Rawls (what primary goods?). There is no definitive solution of this issue to date. According to Sen, the choice of the dimensions of evaluation, as well as of the minimum thresholds, should be solved through reasoned public debate rather than on a theoretical plane or through some technocratic mechanism.

The greatest progress in the research agenda has been made in the derivation of a multidimensional poverty measure that complies with a set of desirable axioms. Some of the most important studies in this respect are Bourguignon and Chakravarty (2003), Duclos, Shan and Younger (2001) and Tsui (2002).

The work of Bourguignon and Chakravarty (2003) is illustrative of the type of analysis that is carried out to derive a multidimensional poverty measure. The authors define a poor person i in the attribute j if \(X_{ij} < Z_j\), where \(X_{ij}\) is the quantity of attribute j for person j and \(Z_j\) is the minimum threshold level of \(X_j\). Most of the axioms are similar to those used in Sen (1976) in the case of one dimensional poverty, but some are particularly relevant in the multidimensional context. The Strong Focus axiom indicates that the poverty measure does not change with an increase in the quantity of \(X_k\) that individual i possesses if \(X_{ik} \geq Z_k\) even though \(X_{ij} < Z_j\). In other words, the poverty measure does not decrease with increases in the attributes where the person is not poor, even when the person is poor in other attributes. This means that exchanges between not poor attributes and poor attributes on an individual level are not allowed. For instance, an individual that is “poor” in income but “rich” in health (health level over the threshold) does not have a better poverty level when his/her health improves.

Another interesting axiom is the multidimensional transfer principle (MTP) that establishes that poverty can decrease if there are transfers among poor individuals/attributes. Specifically, consider that individuals 1 and 2 are poor in both attributes j and k; but that individual 1 is poorer in j and individual 2 is poorer in k. The MTP property establishes that an exchange of attributes such that each individual obtains more of the most lacking attribute reduces the poverty measure.

A related property (Poverty increasing correlation) establishes that increases in the correlation of attributes among individuals can increase the poverty measure when the attributes are substitutes. Consider individuals 1 and 2 again, both are poor in attributes j and k, but 1 has
less k and 2 has less j. A permutation (switch) in the possession of k makes individual 1 to have more of both attributes and individual 2 less of both attributes. In this case, the correlation of attributes has increased, since the pairs (j, k) among individuals are more similar among each other. The property establishes that poverty increases when the attributes are substitutes and decreases when they are complementary.

The authors propose different functional forms of the poverty measure that comply with the axioms. Notable among these is an extension of the Foster-Greer-Thorbecke measure, in which the poverty index is built based on the gap between the level of attribute x_j and the respective threshold z_j, combining the various dimensions by means of a convex combination.

There have also been some theoretical developments in the comparison of distributions of attributes according to the intensity of poverty. Bourguignon and Chakravarty (2002) present a generalization of the first order stochastic dominance to the multidimensional plane, although the exposition is centered on the case of two attributes (j, k). Its main result establishes that for all poverty indicators that comply with a set of axioms or desirable properties (focus, symmetry, invariant to population replication, decomposition of subgroups, monotonicity and double differentiability) poverty is lower in distribution A and B if: (a) the percentage of poor individuals in dimension j is lower in A for all thresholds less than or equal to Z_j; (b) the percentage of poor individuals in dimension k is lower in A for all thresholds lower than or equal to Z_k; (c) the percentage of poor individuals in both dimensions is lower in A for all combinations of possible lines (below Z_k, Z_j) if the attributes (j, k) are substitutes. For complementary attributes, condition (c) is applied to the union of the groups X_j < Z_j and X_k < Z_k, while, for non-related attributes, conditions (a) and (b) are sufficient.

3. - Public Policy Demands

The information provided by the measurement of poverty provides may be for descriptive purposes only or it may place a demand on public policy. This latter interpretation is consistent with the moral obligation that overcoming poverty places on governments and societies. Nevertheless, public policy can influence only some of the determinants of the well-being of individuals. Therefore, public policy actions occur in variables that are different from the final achievements and can be subject to different degree of commitments.
**Resources vs. results**

The social evaluation may be carried out at the level of resources or outcomes (means or ends). The primary goods of Rawls are an example of the first type, while the utilitarian school evaluates people according to results obtained in terms of welfare or utility. However, most of the variables of the social evaluation correspond to points in a continuum rather than to pure categories of resources or outcomes. For instance, Rawls primary goods include items such as self-respect, that is closer to an achievement than to a resource. In the case of health, access to medical care represents a resource; the lack of disease is in between resources and achievements, while the years of healthy life lived represent an outcome. Interestingly, this last variable represents a resource in the utilitarian perspective, as long health is a component of individual welfare.\(^3\)

For expository purposes, the following discussion refers to resources versus achievements, but they should be considered relative categories rather than absolute ones.

The first relevant question is whether the social minimums should be measured in terms of resources or achievements. Is it more relevant to measure health through access to medical services when needed or through the number of years lived in good health? In the case of education, do we measure the years of schooling attained or the effective level of literacy and numerical skills?

The relation between resources and achievements depends on third variables, which can be subject to different degree of individual control. For example, the number of years lived in good health depends on variables under the individual’s control, such as lifestyle, and on more exogenous variables, such as the environmental conditions of the city of residence.\(^4\) Consider the case of two premature deaths, one is due to an accident while engaged in an extreme sport, and the other is due to problems related to the environment. In both cases there is a deterioration of life that has to be captured by an indicator that measures health deprivations, but they represent different situations from a social responsibility perspective.

It is therefore reasonable to make a distinction between the measurement of well-being and the demands made on public policy, be it in the form of guarantees, rights or other  

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\(^3\) The classic treatment of health as a component of utility is the human capital model. See Grossman (2000). The discussion on normative approaches applied to health appears in Hurley (2000).

\(^4\) Once again, the endogenous/exogenous nature of these variables should be understood as relative rather than absolute categories (e.g., the habit of smoking has an exogenous component; the city of residence has some degree of endogeneity).
approaches. Public policy can provide access to the resources that people need to obtain acceptable living standards, but it cannot assure the achievement of results that are subject to personal choices. However, access to public resources should compensate for exogenous disadvantages in the capacity to achieve outcomes. In the above example, health policy should provide greater resources to people who live in polluted environments, other factors constant.\(^5\)

A brief schematic exposition is useful here to clarify the relationship between achievements, resources and third factors. Let us consider that outcome \((y)\) is a function of resource \((w)\) that is provided by public policy, exogenously determined private resources \((d)\) and individual effort that we assume to be under individual control \((e)\). The relationship between these variables may be expressed through a function \(y(.)\):

\[
y = y(w, d, e)
\]

Firstly, we consider a case where effort is not a relevant factor. Besides, let us assume that the relation between variables \(y\) and \(w\) is increasing and concave (graph 1) and that private resources can take two values, so that there are rich individuals \((d^r)\) and poor individuals \((d^p)\) such that:

\[
y(w, d^r) > y(w, d^p), \text{ with } d^r > d^p
\]

That is, the outcome is greater for individuals with higher private resources, given equality in the distribution of publicly provided resource \(w\).

Now, let \(y_o\) denote the outcome level that society considers as the minimum acceptable. In order to achieve that minimum, public policy must provide a distribution \((w^r, w^p)\) such that:

\[
y_o = z(w^r, d^r) = z(w^p, d^p); \text{ with } w^p > w^r
\]

Thus, when outcome \((y)\) does not depend on individual decisions (the private resource is exogenously determined) it is reasonable to have a social minimum that: (i) provides information on well-being; and (ii) represents a public policy objective. In this case the public policy should

\(^5\) For related issues, see Roemer (1998) and Bourguignon (2003).
allocate resources in such a way as to compensate the disadvantages in private resources, so that no individual falls below the minimum $y_0$ (graph 1). This implies allocating greater public resources to individuals with fewer private resources. The policy rule assumes that there is sufficient information available to determine the individual endowments of the private resource.\footnote{Otherwise, there is moral hazard problem, given that individuals R will have incentives to present themselves as P in order to obtain the resources $w^R > w^P$. The asymmetries of information are an important issue in the social policy design. See Besley and Coate (1992), Barr (1992).}

Now consider the case where outcome $y$ depends on public resources and on effort, not on private exogenous resources. Assume that there are two types of individuals as regards effort: those who exert high effort for outcome $y$ (effort $e_1$) and those who exert low effort ($e_2$). Type 1 individuals behave in such a way as to ensure a higher level of outcome $y$ with regard to type 2 individuals, with an equal distribution of the public resources.

In this case, ensuring an outcome level $y_0$ requires the allocation of greater quantities of public resources to individuals with low effort. This would be a questionable public policy rule, since it would be necessary to argue that the effort is exogenous to the individual. A more reasonable policy rule is to allocate resources $w_1$, which is sufficient for type 1 individuals to achieve the social minimum outcome. Type 2 individuals do not achieve this threshold, but this is due to personal choice, since they could have achieved the minimum if they had so wished (graph 2).

In the general case, outcome $y$ depends on exogenous private resource and effort. Assuming two types of individuals according to the distribution of the private resource ($R, P$) and two types of individuals according to effort (1, 2), we obtain the following policy rule:

\begin{align*}
\text{Otherwise, there is moral hazard problem, given that individuals R will have incentives to present themselves as P in order to obtain the resources $w^R > w^P$. The asymmetries of information are an important issue in the social policy design. See Besley and Coate (1992), Barr (1992).}
\end{align*}

\begin{align*}
The model may be extended to include individuals that decide to acquire resource $w$ in the market. This occurs with individuals with a greater purchasing power (the rich) that prefer (and can afford) a level of $y$ above the social minimum To see this, let us assume that $w$ may be privately acquired at a unit price of $p$; $d$ denotes now the individual’s income level, a continuous but exogenous variable. If the utility of the individual depends on a consumption good $c$ and on outcome $y$, then the individual acquires $w$ in the market if: $U(d-pw, y(c, w)) > U(d, y(0, d))$. It can be shown that there is a $d^*$ such that $w$ is acquired in the market ($w^* > w^0$) when $d > d^*$.
\end{align*}
The policy rule would be to allocate $w$ so that all individuals can achieve the minimum $y_0$ if they so wish (that is, if they behave with type 1 effort). This is a more favorable allocation for the poor, subject to type 1 preferences. In this case, there may be poor and rich individuals who do not achieve a sufficient level due to personal choice (type 2 effort), but all had the same opportunities of achieving the social minimum.

**Rights and Guarantees**

Reducing poverty is a widely held public policy objective shared by countries and international organizations. A recent example is the agreement on millennium goals of the year 2000, when 191 member countries of the United Nations made a commitment to reduce extreme poverty by half within 15 years, as well as to universalize primary education, reduce infant mortality by half and maternal mortality by two thirds, among others goals.

Despite the above, poverty persists over time. The World Development Report of the World Bank of the year 2000 estimated that 2.8 billion people live with less than US$ 2 a day and 1.2 billion with less than US$ 1 a day (with a global population of around 6 billion).

There are various reasons accounting for the persistence of poverty. On the one hand, it takes time to change the substantive aspects underlying poverty, such as the lack of human capital or the lack of productive employment. On the other hand, the political rhetoric is not always backed by consistent action in terms of public policies. An important explanation for this is the lack of capacity of the poor to influence policy decisions. Being poor implies, among other things, having very little voice, minimal participation in society and, consequently, being neglected in the public policy agenda. This lack of representation may be the most relevant aspect behind the persistence of poverty. Alluding to this fact, Sen stated that if poverty were contagious, it would have been already solved (given that the means exist and are only subject to the will).

One way of ensuring the representation of the problems of the poor in the public agenda is by means of social and economic rights. In its strict meaning, a right is a demand of the people
that governments are duty-bound to ensure. This is the case with civil and political rights, included in national constitutions, which guarantee aspects such as the right to life, the right to political and religious freedom of thought, the right to choose public representatives as well as to be chosen, among others. These rights were embraced by the global community of nations in 1948 (The Universal Declaration of Human Rights of the UN). Meanwhile, economic and social rights include aspects such as the right to education, health, and housing among others. In 1966, a group of countries signed the UN declaration that confirms these rights. This declaration has been signed by most UN member states to date.

Civil and political rights are also termed negative rights, since they require spaces of liberty that the State is duty-bound to protect. Social and economic rights are termed positive rights because they represent a demand for certain goods and services. Civil and political rights are clear and precise; they are not subject to interpretation by countries nor can they be implemented half-ways. In comparison, social and economic rights are broad categories and permit partial coverage. What, for instance, is understood by the right to “education”? This ambiguity in economic and social rights is related to the economic cost of providing them. While the right to freedom of opinion does not require economic resources for its implementation, ensuring the right to “health” has opportunity costs, given that it requires the allocation of production factors with alternative economic uses. The notion of scarcity, which is an essential characteristic of economic goods, may be contradictory with the notion of universality associated to rights. This fact has led to the relativization of the content of economic and social rights, incorporating concepts such as “maximum resources available”, “progressive implementation”, “maximum attainable achievement in health”, etc.\(^8\)

The aspects related to incentives are another issue that is discussed in the economic analysis of economic and social rights. In other words, ensuring that people possess certain goods and services may lead to an increase in existing needs. A widely quoted example is the proliferation of unemployed people that live off monetary subsidies. In this case, the supposed solution to a problem (lack of income due to unemployment) induces more people to be unemployed (if the subsidy is generous and not contingent on other conditions).

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\(^8\) Article 12 on the right to health (our italics), in the International Covenant on Economic, Social and Cultural Rights, UN, 1966
Economic and social rights represent an opportunity to ensure the coverage of basic needs and to make progress in overcoming poverty. Nevertheless, the potential benefit of these rights requires that its implementation be compatible with the notions of scarcity of resources and endogenous behaviour.\(^9\) Otherwise, they are likely to have little impact on the social reality.

II. Measurement Issues

The measurement of income poverty is based on solid grounds. The recollection of income data through household surveys is common in most countries nowadays. Data collection on consumption spending is less common, but there is also a well-established tradition through the LSMS surveys of the World Bank. Furthermore, income and spending data are well-defined categories, which can be used directly in the measurement of income poverty. On the other hand, there are no well-established standards for the measurement of other well-being dimensions. This section reviews the most salient issues in the measurement of health, education and housing, from the perspective of defining social minimums in these dimensions.

1.- Health

Health has several dimensions and there are a considerable number of indicators that may be used for measuring it. The traditional measures focus on population averages, such as life expectancy, general mortality rate, infant mortality, maternal mortality, morbidity rates, etc. For example, the World Health Organization Report compares health among countries around the world through life expectancy at birth and related indicators, such as infant mortality for minors under 5 years of age and the probability of death between 15 and 60 (WHO, 2005).

A popular indicator among epidemiologists for summarizing the health status of a population is quality adjusted life expectancy. Life expectancy indicates the number of years that a person should live on average if the current mortality structure by age groups holds constant.\(^{10}\) The quality adjustment multiplies the years of life by a coefficient less than one when there are discapacities to leading a normal life. A closely related indicator is the DALY’s (Disability Adjusted Lost Years), which can be calculated for every major disease or cause of premature

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\(^{10}\) The calculation is made based on the current survival rate of each cohort (inverse to the mortality rate).
death, and be used to prioritize the allocation of health resources towards more cost effective treatments.

For the purpose of measuring multidimensional poverty it is more relevant the use of individual health indicators that can be recollected through health surveys or household surveys. These types of indicator can be utilized in estimating the joint distribution of well-being dimensions, as well as to examine the interrelation among them and their relationship with socioeconomic and demographic variables of the household.

Furthermore, the survey data can provide a better profile of the risk and health conditions of the population than statistics based on administration registers of the health systems. This is because the former are based on representative samples of the population, while the administrative data is subject to selection bias arising from restrictions in the access to health services. Thus, morbidity rates have been observed to rise after an increase in the supply of health services, an apparent paradox which is explained by the strengthening in disease detection and treatment capacities (Wilson, 1981; Dasgupta, 1993).

There is a set of alternatives with regard to health indicators that can be measured through surveys (Case and Deaton, 2003; Gertler, Rose and Glewe, 2000).

A first indicator is height and weight, which are useful for measuring child health. Height for a given age is a summary measure of the accumulated nutritional condition, whose deprivations are predictors of future health problems, while the weight/height ratio summarizes the current nutritional condition of the child. However, weight and height indicators are not very informative of the health of adult populations.

Another type of indicator is the report of medical conditions based on previously made diagnosis (“Has a doctor diagnosed a condition X?”). This indicator is not recommended since it subject to serious selection bias in as much as access to medical check-ups is not evenly distributed throughout the population. The indicator is also dependent on the quality of patient-doctor communication, as well as on people’s capacity to understand and retain the information given by health professionals.

A different type of indicator is based on recent health problems, as well as access to health services (“Have you had any health problem in the last three months? If affirmative, did you look for and find medical treatment?”). This indicator is also subject to selection bias, as the information reported depends on socioeconomic factors (e.g., the perception threshold for health
problems). Moreover, it does not identify the seriousness of the problem or its permanent or temporary nature.

Another type of indicator is a health scale that is built on the basis of activities of daily life: Can the person walk unaided? Can the person eat unaided? Can the person go up the stairs unaided? Can the person go out on the street and use public transport unaided? etc. This may be a more satisfactory indicator of some aspects of the health status. However, problems in this dimension are not always perceived as deprivations in well-being; Deaton and Case refer to the case of obese women in South Africa for whom it is a status symbol to be attended due to their inability to carry out certain physical operations.

A simple but useful indicator is self-reporting on general health (“Do you consider your health to be in excellent, good, regular, bad or very bad condition?”). This is a very low-cost to produce indicator, which has proven to be quite consistent with “harder” health indicators, including life expectancy. Nevertheless, as with the other self-reported indicators, it is dependent on individual characteristics that can affect the threshold between good vs. regular, regular vs. bad health etc. This problem can be treated utilizing hypothetical situations that make people to reveal their thresholds scale, and using this information to standardize the self-reporting of general health (Sadana et al, 2002).

Finally, there are health surveys that include medical exams and laboratory tests, which provide objective diagnosis on individual’s health conditions in aspects such as blood pressure, cholesterol and glycemia levels, cardiovascular risk, obesity, arthritis, chronic respiratory illnesses, etc. A related procedure is identifying biological markers, which indicate possible health problems. Health surveys that include check-ups and medical tests tend to be expensive and specialized. Noteworthy examples of these are the USA and the UK National Health Surveys. However, a recent experience in Chile demonstrates that such surveys could be implemented successfully and at reasonable costs in developing countries.

2.- Education

Traditional indicators of educational attainment of the adult population are the literacy rate and the average years of schooling. The sharp increase in schooling coverage that has

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11 The National Health Survey was implemented in 2002. It considered a sample of 3600 people and a battery of check-ups and laboratory tests (see Table 2). See Universidad Católica (2004)
characterized many developing countries in recent decades makes educational indicators vary significantly with population age. For instance, in Chile the average years of schooling of the cohort 25-30 years old is 46% higher than of cohort 55-60 (12.0 vs 8.3). An open question is whether the definition of the social thresholds should take into consideration the changing endowment of schooling across generations. This would the case if graduating from secondary education constitutes today a social minimum (at least in intermediate and upper developing countries), as graduating from primary school was the social minimum 40 years ago.\(^{12}\)

The literacy rate and years of schooling of the adult population are typically measured by means of population censuses and socioeconomic surveys, so they lend themselves readily to analysis in a multidimensional context. The vast availability of databases that include information on education and income contributes to explain why the estimation of the rate of return of schooling on wages is one the most recurrent empirical studies in economics.\(^{13}\)

Nevertheless, the indicators described may not provide much information on the quality of education. Years of schooling may be subject to considerable variance in terms of the quality of education obtained. An illustrative point is given by the Card and Krueger study (1996), which estimates the effect of the quality of education on wages in the United States, after measuring quality through spending on education that was made in the state where the individuals studied before entering the workforce. The authors found that for every US$ 1 of additional spending on education there is an expected gain of US$ 0.15 in wages, comparing workers with the same number of years of schooling. This is a substantial effect that advices about the limitations of years of education as indicator of educational achievement.

On the other hand, the literacy rate based on self-reports may sharply understate the effective literacy skills of the adult population. This latter aspect has been measured by means of the Survey of International Adult Literacy. Chile has been the only Latin American country included in the second round of the survey (OECD, 2000). The official statistics in Chile for that year show that only 4.6% of the population aged 15 years or over admits not being able to read or write; however, over 50% of the population falls into level 1 of the SIALS survey, which represents a very low level of comprehension of written texts, equivalent to a condition of functional illiteracy (Bravo, Contreras and Larrañaga, 2002).

\(^{12}\) The issue also arises when years-of-schooling is used as a measure of socioeconomic status, which a frequent case when data on income is not available (i.e., population censuses)

\(^{13}\) Card (2002) includes an updated review of the causal effect of education on salaries.
Education can also be measured in terms of access and achievements of the current student population. The traditional indicator measures educational coverage, which is the percentage of school-goers in a given age range. A related indicator is the percentage of the young population that graduates from an educational level (primary or secondary). Both types of indicators can be measured through household surveys.

An instrument that can assess the quality of education is standardized tests that evaluate the attainment of educational standards. On an international level, the TIMSS and Pisa tests are available. Many countries have national tests, but these do not always measure standards, instead they often simply rank students according to relative attainments. There is a growing literature which studies the effectiveness of educational inputs based on the results in standardized tests, together with socioeconomic data of students and school input.

The educational attainment measured in national tests is a natural indicator for consideration in the measurement of multidimensional poverty. Individuals with low achievement in relation to standards represent cases with deprivation in education; the distance between the individual score and the standard measures the intensity of the deprivation. In the context of multidimensional poverty, this information should be linked to other dimensions of well-being. One alternative is to integrate the data of the educational tests with the data in household surveys, which would require a common identifier of individuals.\(^{14}\)

3.- Housing

The measurement of housing characteristics is more developed than that of health or education. The population censuses generally include a module that gathers information on the type and quality of the housing materials, number and type of rooms, as well as its access to improved water, sewer system and electricity. This module is also included in the household surveys, which sometimes also add information on community infrastructure: proximity to schools, health centers, police stations, green areas, etc.

The estimate of deprivation in housing is straightforward, after defining standards or thresholds in variables such as housing materials, access to public utilities, crowding and community infrastructure.

\(^{14}\) This is the case of Chile, where each individual, including students, has an identification number that is used in the databases of the civil registry, educational tests, internal taxes, etc.
III. The Chilean experience: social minimums and public policy guarantees

1.- The Foundation for Overcoming Poverty (FNSP)

The FNSP is a private non-profit public interest institution, established in 1995. Its mission is to contribute to overcoming poverty, fostering the creation of a culture of solidarity at the service of sustainable human development of people that live in conditions of inequality, poverty, vulnerability and social exclusion. It carries out direct social interventions and designs public policy proposals for overcoming poverty.

In the view of the Foundation, poverty is a situation that infringes the rights of people and relativizes their citizenship, since it violates the principles of equality and non-discrimination which are basic rights that have to be guaranteed for all. The approach to poverty from the perspective of rights is a central axis of the ethical-political framework of the Foundation and a specific form of understanding social and economic development and of making concrete commitments of extending opportunities for the integration of people that live in conditions of poverty.

The Foundation, from its inception, has encouraged broad political and social debate on a public level to reach agreement on "social minimums" that ensure the exercise of certain economic and social rights, for all Chileans. These are citizenship thresholds guaranteed by society as a whole, implemented through the State in each of the dimension of social integration: health, education, housing, participation, protection and social security. There also subjective and psycho-social aspects involved, that plays a significant role in reproducing poverty. These are related to situations of low self-esteem, feelings of insecurity and uncertainty, desperation, etc. Looked at from this perspective, poverty is much more complex than the simple lack of income to consume one or two basic food baskets.

The FNSP has made two important proposals of social minimums (Fundación de Superación de la Pobreza, 1999 and 2005). Both proposals promote guarantees of access to education, health and housing, aimed at providing minimum standards of coverage and quality of these services. They also propose changes in the measurement of income poverty; specifically, regarding the poverty line used in the country. Additionally, the 2005 proposal incorporates guarantees in terms of social participation, employment and income for old age.
The proposals of the FNSP have had a significant degree of acceptance in the community and among social and political agents. As a matter of fact, there have been changes made to public policy in education and health that have reflected the 1999 proposals of the Foundation. As such, the proposals of the FNSP have not only been theoretical, they have also had a real impact on public policy in the country.

This capacity to influence public policy is due to three main factors. Firstly, the board of directors of the FNSP brings together people with a high public profile from various social and political sectors, which contributes to the development of proposals founded on the common interest. Secondly, the proposals of the FNSP have been made on presidential election years, and have formed part of the discussion agenda for future government programs. Thirdly, the proposals of the FNSP have been grounded in solid technical analysis, incorporating issues such as its funding and consistency with other public policies.

A selective synthesis of some of the proposals of the FNSP in the areas of health, education, housing and income poverty are presented as follows. The objective of the presentation is to illustrate the type of proposals that are formulated and their impact on public policy. A detailed coverage of the proposals can be found in Fundación de Superación de la Pobreza (1999, 2005).

2.- Health

The Chilean Health system is organized into two main components. The public system is funded by individual health contributions and state subsidies, the benefits are not related to contributions, and the supply of health care services is provided by a network of public providers comprised of primary health centers and hospitals. The private system is organized around individual health insurances and a private health provider network; benefits are related to individual contributions. Health contributions are mandatory and represent 7% of employee salary, which may be paid into the public system or into private insurance. (The public system also serves the population caters to people without incomes, so the whole population is covered by the health system.)

By the end of the 1990s, Chile showed good results in indicators such as infant mortality, maternal mortality, infant malnutrition and life expectancy. These achievements are the result of successful public health policies which dated back to the 1950s, including immunization
programs, mother and child health, and child nutrition programs, among others. However, the health system was facing new challenges that need to be solved. The change in the burden of the disease as non-contagious conditions started to take priority (cancers, heart attacks, etc) required changes in priorities, more funding, and active policy regarding the lifestyles of the population. On the other hand, the organization of the health system was inadequate to guarantee health care when required. This was the outcome of a public provider system organized through a bureaucratic system, in which the user does not have well-defined rights to health services. In the private system, short term insurance with limited coverage was the norm, implying lack of coverage for the most important health problems.\(^\text{15}\)

One of the main proposals of the 1999 FNSP Proposal was the implementation of a guaranteed health plan, through which users would acquire access rights to a range of priority treatments in contractually stipulated conditions that would specify waiting periods, medical protocols and pay caps. This initiative implied a radical change in the health system, since it restructured its operation into a user-rights oriented system. It required the modification of structural aspects of the existing health system. In the public health sector was needed a shift from a bureaucratic supplier system to a user-centered system; in the private sector, it implied the introduction of a floor on the insurance policies offered, guaranteeing effective coverage to users in case of long-term or expensive treatments.

The Plan Auge introduced in the Health Reform of 2003 coincides closely with the FNSP proposal. Plan Auge consists in a guaranteed access to treatments for the 56 most important health problems, which account for around 70\% of the burden of the disease (lost years of healthy life). Plan Auge is mandatory in both the public and the private system. The list of health problems that the Plan Auge covers will be expanded.

The Plan Auge prioritizes health problems that have to be solved, based on the effectiveness and feasibility of solutions. For each problem, it defines the steps to follow in the various levels of health care, emphasizing prevention, early detection and primary care. Additionally, the maximum waiting periods are also defined for each stage (opportunity guarantee), as well as the set of activities, necessary procedures and technologies to solve the problem (quality guarantee) and the maximum co-payment that must be paid (financial protection guarantee). The latter is calculated based on family income, including gratuity in the

\(^{15}\) The health problems of the Chilean health system are described in Larraña (1999).
case of low income households, a maximum annual co-payment of 12% of annual income for middle incomes and up to 25% for high incomes.

Table 1 illustrates the treatment of a health problem in the law that establishes the Plan AUGE. The case refers to a cataract surgical procedure. The requirements for providing that treatment are detailed, as well as the maximum period of solution and the co-payment according to socioeconomic condition.

The Plan AUGE establishes explicit healthcare guarantees. This is an enormous change with respect to the previous system, in which the user that required a treatment was subject to the supply restrictions in the public sector or subject to the coverage of their individual health plan in the private system.

In the definition of Plan AUGE, all health problems were reviewed and ranked according to frequency, severity and cost. The main ordering criterion was the years of healthy life lost, which quantifies the burden of the disease in an indicator that combines premature mortality and disabilities that affect the quality of life. This last factor makes it possible for mental health problems to be prioritized, as an example of problems that do not kill but produce significant deterioration in the quality of life. Other criteria that were used in defining the Plan Auge were the effectiveness of the treatment to modify the health problem as well as the citizen perceptions of the severity of health problems (as was the case with cystic fibrosis).

The law indicates that in the future the priorities shall be defined by an Advisory Council comprised of experts with proven public credibility. This Council shall refer to studies and public hearings to ensure the guarantees that are defined effectively cover the needs and priorities of the population.

One main challenge pending is public health interventions and prevention programs that modify unhealthy lifestyles and provide early detection of health problems. Thus, just as Plan Auge is an effective answer to the treatment of illnesses, the pending policies should contribute to the production of health. This is a requirement for both improving the quality of life of the population and increasing the effectiveness of the resources that are allocated to the health sector.

The production of health is perhaps a more difficult challenge than treating illnesses, since it is necessary to intervene in areas that go beyond the spheres of operation of health service providers, such as the eating habits of the population, excessive alcohol and cigarette
consumption, sedentary life and systematic prevention check-ups. Likewise, it is also necessary to modify the environmental conditions that deteriorate health, including the physical surroundings and the social factors that add to people’s permanent stress levels.

*Health deprivations*

The 2002 National Health Survey (NHS) measured for the first time the effective health condition of the population, since it interviewed, examined and gathered samples for laboratory tests on a group of 3,600 people that were representative of the national population. Its results provide a photograph of the state of health of Chileans, whether or not they faced an illness. Table 2 presents a summary of the main findings of the NHS. Results are reported for three socioeconomic strata, according to the educational level of each person.

Belonging to the lower socioeconomic strata is associated with greater problems of hypertension, obesity, sedentary behavior, diabetes, angina, muscular-skeletal problems (non-traumatic), depression, chronic respiratory illness, hearing problems, gastroesophageal reflux disease and cognitive deterioration.

There are no significant cases where health problems affect high socioeconomic strata to a higher degree, followed by middle strata and lastly by lower strata. There are however specific situations where health problems affect to a higher degree the middle and upper strata, such as higher levels of cholesterol, smoking, renal functioning disorders and high prostate antigen levels.

Another indicator of the health conditions of the population is self-reporting of general health status in the population over 15 years of age, recollected in the CASEN household surveys. As established in the previous section, the specialized literature considers this indicator a good proxy of the individual health condition. Table 3 presents the percentage of the population who reported bad health, by age groups and household income quintiles. The reporting of bad health is three times higher in the 20% lowest income group than in the 20% highest income group (10.7% versus 3.3%). Meanwhile, individuals from the medium-low strata (quintiles 2 and 3) exhibit an incidence rate of bad health of approximately 8%; the corresponding rate in the medium-upper strata (quintile 4) is 5.8%. The condition of bad health is correlated to people’s age; nevertheless, low-income groups have more health problems across all age groups.
3.- Education

The Chilean education system is organized in three main components: preschool, which includes a variety of alternatives for children less than 5 years of age; primary and secondary level, which is the core of the educational system; and the higher or tertiary education level, which includes universities and technical training institutions. These components vary in rules of access and funding, and all of them have been the subject of proposals from the FNSP.

In Chile the primary and secondary education is supplied through public and private subsidized schools that receive a public subsidy per student.\textsuperscript{16} This is a simple and impartial funding mechanism, which automatically finances enrollment expansions in any school or geographical area. Under this system, every child or youth has guaranteed access to schools funded by the State. In practice, coverage is practically universal at the primary level and near 90\% at the secondary level.

However, the guaranteed access to primary and secondary schools do not assure the quality of the education. In fact, in international tests (TIMSS, Pisa) Chilean students obtain results below other countries with a similar level of economic development. The results are especially deficient in the case of students from low socioeconomic levels. The quality deficit has different causes, including problems in teacher training, in school administration and in the availability of educational inputs.

The subsidy per student varies with the type of education and geographic location of the schools. However, the subsidy does not vary with the socioeconomic status of the student household. Moreover, the final distribution of resources among schools is regressive due to the presence of two complementary source of funding that favors higher socioeconomic level schools; these are voluntary contributions of local government (municipalities) to public schools and family co-payments to private subsidized schools.

In 1999, the FNSP proposed a reform in the financing of education, which introduces a positive discrimination system such that lower income students would receive a substantially higher funding. This would advance two types of objectives. Firstly, the new funding policy would compensate for the disadvantages in learning capacities of children from lower

\textsuperscript{16} There are also private schools which are fully funded by family payments. These represent around 10\% of total primary and secondary education.
socioeconomic households, allowing schools to incorporate greater and better educational inputs in these cases. Secondly, the new funding policy would modify the incentives that schools have to attract and keep lower socioeconomic strata students. Altogether the proposed reforms imply a significant change in the relation between the educational system and the poor, reversing the traditional neglect of the latter.

Six years later, in 2005, the Chilean government embraced the FNSP proposal, by sending a draft law for parliamentary approval that establishes a 50% increase in the school subsidy aimed at the 40% lowest income students.

Another deficiency in the functioning of the educational system is the practice of student selection by schools subsidized by the State. This may take the form of interviews of parents, expulsion of students with attainment or behavior problems, among others. The FNSP proposal contends that there should be equality of access to subsidized schools, be they public or private. Schools should only be able to select students through impartial mechanism when they face an excess demand for vacancies. Furthermore, subsidized schools must make a commitment to educate all students, minimizing exclusions for attainment or behavior problems.

On the other hand, higher education is mainly funded by tuition fees. Access to most universities depends on the results obtained in a national admission test. The average annual fee in a university is approximately 40% of the Chilean per capita income. Students from middle and low income families receive funding through a system of grants and loans, but these were only available to students of the traditional universities.

In 1999 The FNSP proposed the extension of student loans from traditional universities to all eligible population in the higher education system. The eligibility for loans was to be based on socioeconomic condition and a minimum score obtained in the university admissions exam. A significant part of this proposal was embraced in a new University loans law (2005) that extends the group of universities eligible for state-guaranteed loans.\footnote{However, the loan repayment conditions differ with respect to the traditional universities, where there is an income-based repayment system.}

However, the resources for student financing aid are usually below existing needs. The reason for this is that the loans supply is determined by the public budget of each year as well as by the amounts repaid from previous loans made, in a system in which each university administers its own loans fund. The FNSP proposal in 2005 states that funding should be
guaranteed for all students who fulfill the eligibility requirements. This proposal takes the form of percentages of the tuition fee that has be to guaranteed by financing aid according to the socioeconomic strata and academic performance in the entrance test.

With regard to preschool education, the FNSP (2005) proposed that there should be a guarantee of access for children through a range of alternatives depending on children’s ages. The objective of these proposals is to ensure that all preschool children can achieve appropriate levels of psychosocial development, which comprises emotional, social and cognitive aspects that determine the future success in school and most dimensions of adult life. As the country succeeded in earlier years in reducing infant mortality and malnutrition to a minimum, it is now time to drastically reduce the psychosocial deficiencies that endanger the development of the person. The task in hand is significant, given that 40% of children from low socioeconomic strata display deprivations in these planes.

For these purposes it is necessary to guarantee the universal access of children from low socioeconomic strata to three types of preschool education programs: (i) an early psychosocial development program aimed at children 0-2 years old, to be based on primary health care centers, targeted at identifying deprivations, educating parents and direct intervention when necessary; (ii) children aged between 2 and 3 years old should be guaranteed free access to day care facilities that would provide integral care in education, health and nutrition; (iii) children aged between 4 and 5 years old should have guaranteed free access to preschool education at the pre-kindergarten and kindergarten level.

Education deprivations

Table 4 presents a set of indicators related to access and achievements in the various levels of the educational system. The data show that education is still far from being an efficient vehicle for equalizing opportunities in the country. Children and young people from low income households display significant gaps as regards coverage and achievements in relation to higher income groups.

Preschool education coverage for children aged 4 approaches 44.3% in the first quintile of household per capita income and 74.9% in the fifth quintile; a difference of 30 percentage points against those who need more support in psychosocial development. As already mentioned, studies show that around 40% of children from low income families suffer deprivation in
psychosocial development (particularly in language). This is a deprivation that needs to be compensated in preschool education.

At fourth, eighth and tenth grades, all students are required to take a national standardized test (Simce) which assesses achievements in language and mathematics. In the fourth grade test the probability that students from the lowest income quintile of getting scores in the superior 20% is 4.5 lower than students from the top income quintile. This gap shows a serious inequality of opportunities at the level of children around 10 years of age. However, the Simce test does not report absolute attainments; instead it ranks students according to relative attainments. It is necessary to develop thresholds defined in terms of absolute standards to have a definitive evaluation of the educational attainment of Chilean students.

About one fifth (20.6%) of the 16 years old population who belong to the poorest income quintile is not in secondary education, either because they have dropped-out of the educational system or because they have been held back in the primary education level. The gap is huge with respect to the fifth quintile, where only 3.5% of the 16 years old population is in a similar situation. Regarding the results in the Simce test of 10th graders, the probability of being in the superior 20% is over seven times higher for students of the highest income quintile compared with the lowest quintile.

As a result of the reported educational gaps, 45.5% of the young population from the poorest income quintile does not graduate from secondary school, compared to only 3.9% of the richest quintile. This is a difference of 11.7 times against the first group. If we only consider those who take the university admissions test, which is a subgroup among those who graduate from secondary education, the gap is 7 times in favor of students from the richest income quintile when it comes to obtaining a good result (over 600 points in the university admissions test or the superior 21% of the distribution) with respect to students from the poorest quintile.

The attendance to higher education by income quintile reflects the previous inequalities in access and results in education. 80.6% of 21 years old from the highest income quintile is studying in higher education, compared to only 12.6% from the poorest quintile.

The above data shows that educational attainments are strongly determined by family income. In turn, there is an important feedback of educational inequalities on income inequality. Consider the household heads, aged 25 to 39, with higher education studies; there is a probability
of 77.5% that the household belong to the highest income quintile, and almost nil probability (1.4%) of belonging to the lowest income quintile.

4.- Housing

The housing public policy in Chile comprises a wide number of programs, aimed at populations of different socioeconomic strata and capacity to pay. At one end, there are programs targeted at families in extreme poverty, who obtain a housing solution by means of a subsidy that covers all or almost all of the cost of the dwelling. At the other end, the programs aimed at middle income groups subsidize less than 10% of the cost of the dwelling.

This policy has been very successful as measured by the growth in the number of dwellings in the country, as reported in the Population Censuses of the years 1992 and 2002. The number of dwellings in this period grew 30.6%, while the population only did so by 13.3%. Therefore, the number of dwellings per 1000 inhabitants increased from 252 to 291. The housing public policy has been a crucial factor behind this trend, since around 60% of total dwellings built in the country belong to subsidized housing programs.

The predominant model of social housing consists of standardized solutions in large building projects, located in peripheral locations as a response to the ever increasing price of urban land. This model has negative lateral effects; among these is the spatial concentration of poverty in areas with limited access to urban infrastructure and services, which reduces employment opportunities, creates cultural ghettos, and socially stigmatizes parts of the city and its inhabitants.

The main proposals of the FNSP as regards housing have been guaranteeing housing solutions for low income families, ensuring minimum standards in terms of materials and size of dwelling, as well as in terms of the surrounding community infrastructure.

A set of policy actions has been proposed in order to achieve these goals. Among these are, increasing funding for building more dwellings aimed at low income families; widening the scope of public policy to include the buying of used dwellings and the refurbishment of dwellings in addition to the building of new dwellings; setting minimum standards in terms of

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18 National studies show that less than 8 m² of built surface area per person in the dwelling leads to pathological behavior in the dwellers; the critical threshold of surface area per person lies between 8 and 12 m², and over 12 m² of surface area is considered adequate. The current built surface area of basic housing in Chile is 9.5 m² per person, so increasing this to 12 m² is an ambitious objective.
construction materials and dimensions of the dwelling; providing resources to municipalities in proportion to the number of new dwellings built, so that the necessary community infrastructure and services can be provided.

**Housing deprivations**

The deprivations in housing are evaluated in eight variables corresponding to three housing dimensions: overcrowding, materials and access to infrastructure. Minimum thresholds are defined for each of the variables and the population is classified in terms of whether their dwellings comply with those minimums or not. About one third of the population lives in dwellings with some type of deficiency. This percentage rises to 61.8% in the case of the first income quintile and 42.2% in the second quintile. Thus, around half of the population of the two lowest income quintiles presents deficiencies in their dwelling.\(^{19}\)

The overcrowding dimension is measured as the relation between number of residents and number of bedrooms in the household; the situation is defined as inadequate when there are three or more people per bedroom\(^ {20}\). The results presented in Table 7 show that 11.6% of the population live in a situation of overcrowding in the country. This rate rises to 27.9% in the lowest income quintile and to 15.5% in the second quintile. There are no significant differences as regards overcrowding between urban and rural areas, in contrast to other housing dimensions.

The dwelling materials dimension includes four variables: walls, floors, roof and type of dwelling. A situation is classified as inadequate when the materials used are bad quality or are in poor condition, as well as dwellings that are shacks, shelters or tenement rooms. 19.5% of Chileans live in dwellings with some type of deficiency as regards construction materials; this affects 37.7% of individuals in the first income quintile and 23.7% in the second quintile. In this dimension, there are significant differences between geographic areas, since the rural deficit doubles the deficit in urban areas (34.2% versus 17.2%).

The infrastructure dimension includes access to electricity, improved water and waste disposal systems. A deficiency in infrastructure access is defined as a shortcoming in any of the variables. In 2003, this applied to 14.7% of the population. This percentage increases to 31.8% in

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\(^{19}\) An optimistic interpretation would suggest that half of all poor people have solved their housing problem.  
\(^{20}\) The CASEN 2003 survey provides household level information, since it asks about the number of bedrooms used by each of the households that share a dwelling.
the first income quintile and 19.0% in the second quintile. The infrastructure situation varies radically depending on geographic area; in urban areas, the shortfall only affects 5.2% of the population, while in rural areas, 76% of the population suffers shortfalls in this dimension. This situation applies to all income quintiles, showing that the deficit responds to high costs of public utilities infrastructure in rural areas, rather than to the individual socioeconomic condition.

5.- Income poverty

The poverty line is the income level required to acquire a basket of goods and services that satisfies basic needs. The most traditional indicator of the income gap is the headcount or percentage of the population with income below the poverty line. This indicator shows that 18.8% of the population could be classified as poor in the year 2003. This rate is a great leap forward with respect to the levels of around 45% in the year 1987, when the first measurement was carried out using the current methodology (poverty line calculated by ECLAC).

The systematic reduction of poverty levels in the country (Graph 3) occurred in two stages; between 1990 and 1998, poverty declined 21.6 percentage points, equivalent to an average rate of 2.0 points per year. Meanwhile, between 1998 and 2003, the reduction in poverty was 4.4 percentage points, or 0.9 points on average per year. The poverty reduction rate is closely related to the per capita income growth of the economy, which reached 5.9% in the first period and then dropped to 1.3% in the second period. It has also been said that reducing residual poverty is a lot harder and slower, and that this would explain the change in the reduction rate of this indicator.

Poverty levels depend on the criterion used to measure it. The FNSP contends that the poverty line should be readjusted to take into account the changes that have occurred in the consumption structure since 1987, when the current poverty line was first applied. Graph 4 presents estimations of the effect of higher poverty lines. Thus, a poverty line of $50,000 (20% higher than the current level) raises the percentage of poverty from 18.8% to 26.8%; while a line of $ 60,000 raises the rate to 35.0%. The large response of the percentage of poverty to changes in the threshold reflects the presence of many households with incomes closer to the current poverty line.

Updating the poverty line is not merely a formality; it is a key determinant of the level of effort and resources that the country must dedicate to the solution of poverty.
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Sen, Amartya: Development as Freedom, Alfred Knopf, 1999


TABLE 1: An example of Auge guarantee:

<table>
<thead>
<tr>
<th>Health problem</th>
<th>Intervention</th>
<th>Cost $</th>
<th>Copayment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract that require surgical</td>
<td>Diagnosis</td>
<td>28.120</td>
<td>20%</td>
</tr>
<tr>
<td>procedure</td>
<td>Surgical procedure</td>
<td>585.820</td>
<td>20% 117.160</td>
</tr>
</tbody>
</table>

CATARACT SURGICAL PROCEDURE

Definition: Eye opacity that decreases or distorts vision.

a. Access:
Each person with symptoms will have access to diagnosis

If diagnosis is positive, treatment is guaranteed.

Inclusion criteria:
Surgery will be realized when visual sharpness is equal or lower to 0.3 with optical correction.

Exclusión criteria:
Visual sharpness equal or greater than 0.4.

Blindess, total or absolute

b. Opportunity:
Diagnosis
Within 180 days since symptoms

Treatment
Unilateral: within 180 days since diagnosis
Bilateral: first eye within 180 days since diagnosis; second eye within 180 days since first surgery

c. Financial protection:
Table 2
Socioeconomic differences in health conditions, Chile 2002 (1)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Socioeconomic strata</th>
<th>Statistical significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Middle</td>
</tr>
<tr>
<td>Hipertensión prevalence</td>
<td>1.7</td>
<td>1.4</td>
</tr>
<tr>
<td>High cholesterol (total)</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Obesity</td>
<td>1.6</td>
<td>1.2</td>
</tr>
<tr>
<td>Diabetes</td>
<td>3.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Smoking</td>
<td>0.7</td>
<td>1.2</td>
</tr>
<tr>
<td>Sedentarism</td>
<td>2.8</td>
<td>1.3</td>
</tr>
<tr>
<td>Metabolic syndrome</td>
<td>1.0</td>
<td>0.8</td>
</tr>
<tr>
<td>Chardiovascular risk</td>
<td>1.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Possible angina</td>
<td>2.97</td>
<td>2.02</td>
</tr>
<tr>
<td>Muscular-skeletal problems</td>
<td>1.56</td>
<td>1.35</td>
</tr>
<tr>
<td>Depression</td>
<td>1.63</td>
<td>1.43</td>
</tr>
<tr>
<td>Altered renal functions</td>
<td>0.56</td>
<td>0.66</td>
</tr>
<tr>
<td>chronic respiratory illness</td>
<td>2.24</td>
<td>1.41</td>
</tr>
<tr>
<td>Test susurro alterado</td>
<td>3.16</td>
<td>1.85</td>
</tr>
<tr>
<td>gastroesophageal reflux disease</td>
<td>1.26</td>
<td>1.04</td>
</tr>
<tr>
<td>cognitive deterioration</td>
<td>16.9</td>
<td>2.07</td>
</tr>
<tr>
<td>prostate antigen</td>
<td>1.7</td>
<td>2.4</td>
</tr>
</tbody>
</table>

Source: Final Report, Nacional Health Survey, Public Health School, Universidad Católica, 2004

Notes: (1) coefficients measure the relative risk adjusted by sex and age.
Table 3: % of population who self reports bad general health condition

<table>
<thead>
<tr>
<th>Ages</th>
<th>Quintiles of per capita household income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>15-29</td>
<td>2.9</td>
</tr>
<tr>
<td>30-44</td>
<td>6.3</td>
</tr>
<tr>
<td>45-64</td>
<td>19.2</td>
</tr>
<tr>
<td>65 y más</td>
<td>24.6</td>
</tr>
<tr>
<td>total</td>
<td>10.7</td>
</tr>
</tbody>
</table>

Source: Casen Survey 2003
### Table 4: Access and results in education

<table>
<thead>
<tr>
<th></th>
<th>Quintiles of per capita household income</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>% of 4 years old who attend preschool</td>
<td>44.3</td>
<td>45.6</td>
</tr>
<tr>
<td>% in superior 20% in fourth grade Simce test</td>
<td>9.0</td>
<td>12.6</td>
</tr>
<tr>
<td>% of 16 years old who attend secondary school</td>
<td>79.4</td>
<td>84.5</td>
</tr>
<tr>
<td>% in superior 20% in tenth grade Simce test (1)</td>
<td>6.7</td>
<td>12.8</td>
</tr>
<tr>
<td>% of 21 years old who have not graduated form secondary education</td>
<td>45.5</td>
<td>30.1</td>
</tr>
<tr>
<td>% with 600 or more points in the university admission test</td>
<td>4.9</td>
<td>6.9</td>
</tr>
<tr>
<td>% of 21 years old in higher education</td>
<td>12.6</td>
<td>24.1</td>
</tr>
<tr>
<td>% distribution of heads of households with higher education</td>
<td>1.4</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Sources: Casen 2003 survey; SIMCE database, PSU database
Table 5

% of the population with deprivation in housing, by household per capita income quintiles, 2003

<table>
<thead>
<tr>
<th>Country</th>
<th>Quintile 1</th>
<th>Quintile 2</th>
<th>Quintile 3</th>
<th>Quintile 4</th>
<th>Quintile 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overcrowding</td>
<td>27.9</td>
<td>15.5</td>
<td>8.5</td>
<td>4.7</td>
<td>1.4</td>
<td>11.6</td>
</tr>
<tr>
<td>Materials of dwelling</td>
<td>37.7</td>
<td>23.7</td>
<td>18.6</td>
<td>11.6</td>
<td>5.7</td>
<td>19.5</td>
</tr>
<tr>
<td>Access to infraestructura</td>
<td>31.8</td>
<td>19.0</td>
<td>12.7</td>
<td>6.5</td>
<td>3.7</td>
<td>14.7</td>
</tr>
<tr>
<td>Any of the above</td>
<td>61.8</td>
<td>42.2</td>
<td>31.0</td>
<td>18.9</td>
<td>9.4</td>
<td>32.6</td>
</tr>
<tr>
<td>Urban</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overcrowding</td>
<td>29.2</td>
<td>16.0</td>
<td>8.6</td>
<td>4.6</td>
<td>1.4</td>
<td>11.2</td>
</tr>
<tr>
<td>Materials of dwelling</td>
<td>35.7</td>
<td>21.3</td>
<td>17.0</td>
<td>10.7</td>
<td>5.4</td>
<td>17.2</td>
</tr>
<tr>
<td>Access to infraestructura</td>
<td>14.3</td>
<td>6.7</td>
<td>4.2</td>
<td>2.1</td>
<td>0.9</td>
<td>5.2</td>
</tr>
<tr>
<td>Any of the above</td>
<td>52.7</td>
<td>33.8</td>
<td>24.4</td>
<td>15.0</td>
<td>6.7</td>
<td>25.2</td>
</tr>
<tr>
<td>Rural</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overcrowding</td>
<td>24.0</td>
<td>12.9</td>
<td>7.4</td>
<td>5.3</td>
<td>1.9</td>
<td>14.3</td>
</tr>
<tr>
<td>Materials of dwelling</td>
<td>43.6</td>
<td>34.5</td>
<td>30.0</td>
<td>23.5</td>
<td>12.8</td>
<td>34.2</td>
</tr>
<tr>
<td>Access to infraestructura</td>
<td>84.9</td>
<td>76.6</td>
<td>72.5</td>
<td>64.0</td>
<td>55.2</td>
<td>76.0</td>
</tr>
<tr>
<td>Any of the above</td>
<td>89.1</td>
<td>81.7</td>
<td>77.9</td>
<td>70.3</td>
<td>59.9</td>
<td>80.9</td>
</tr>
</tbody>
</table>

Source: Casen survey, 2003
Graph 1: public resource \((w^p > w^r)\) compensates inequality in exogenous private endowments \((d^p < d^r)\)
Graph 2: public resource \( (w_1) \) guarantees the social minimum when individual makes high effort \( (e^1 > e^2) \)
Graph 3: % of poor, Chile 1987-2003
Graph 4: Headcount and poverty lines

![Graph showing headcount and poverty lines with different income levels.](image-url)