

EXPERT GROUP ON POVERTY STATISTICS

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Rio Group

COMPENDIUM OF BEST PRACTICES  
IN POVERTY MEASUREMENT

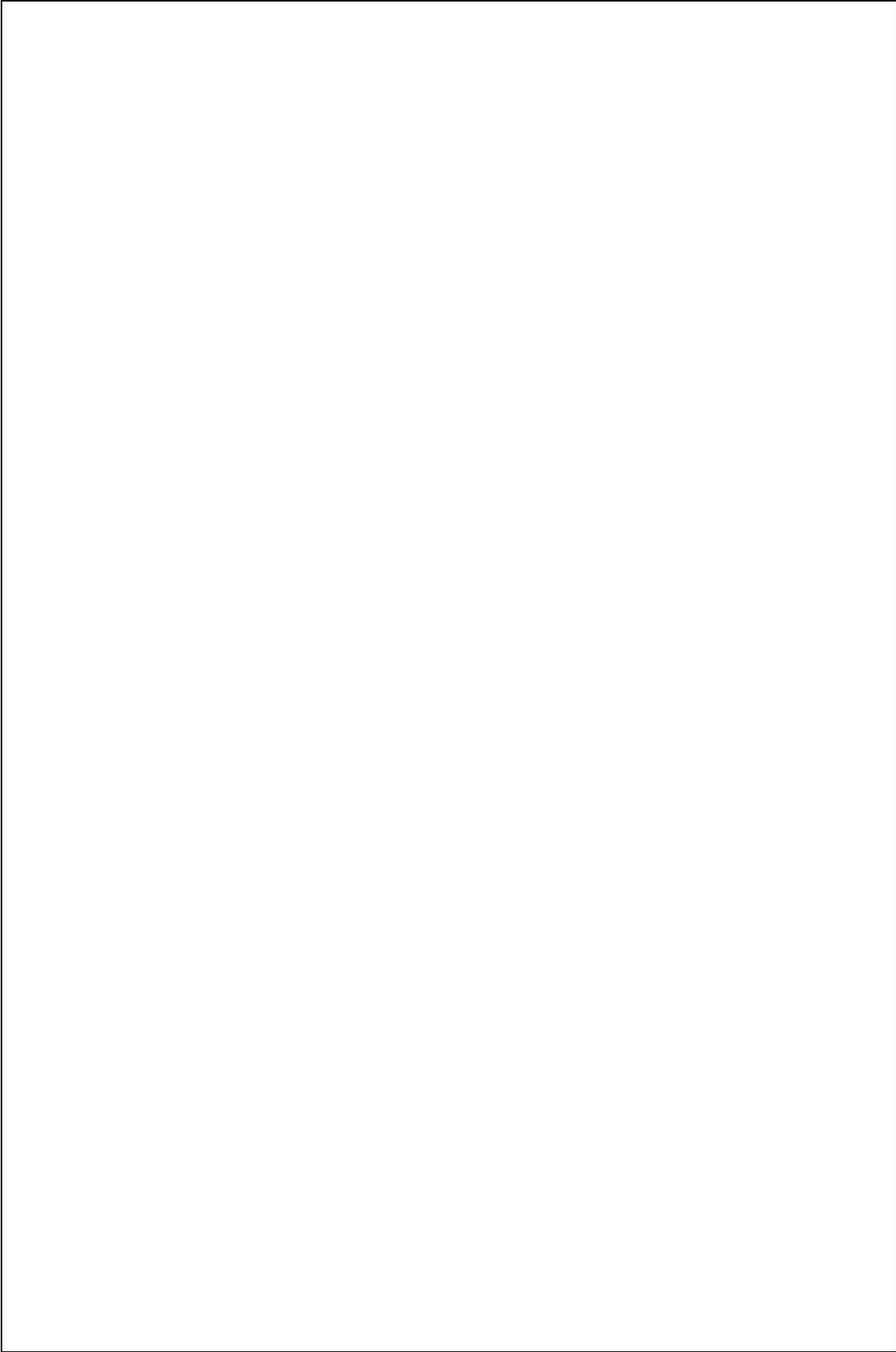
# **Expert Group on Poverty Statistics**

Rio Group

## **Compendium of best practices in poverty measurement**

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# Preface

In its session of 1996, and following a recommendation made by a group of experts, the Working Group of the Statistical Commission decided to hold the Seminar on Poverty Statistics in Santiago, Chile, in May 1997 and to create the Expert Group on Poverty Statistics (Rio Group), to be chaired by the Brazilian Institute for Geography and Statistics (IBGE), with the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) serving as its secretariat.

The Rio Group on Poverty Statistics was established in order to analyse the status of poverty statistics and to study possible courses of action for improving these measurements and for moving towards more standardized procedures. It was included in the category of “city groups”, which gives it an ample degree of functional freedom.

A large number of countries and institutions participate in this city group. In all, 22 countries and 18 regional or international institutions have been represented at one or more of the seven meetings that took place between 1997 and 2004.<sup>1</sup>

The decision to produce a compendium of best practices was not taken at the start, but rather emerged as an outgrowth of the work conducted by the Group. The first three meetings’ deliberations were based on a broad agenda covering many different aspects of poverty measurements and related issues. After an extensive dialogue, the

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<sup>1</sup> **Countries:** Argentina, Australia, Belarus, Bolivia, Botswana, Brasil, Canada, Chile, France, India, Indonesia, Mexico, Netherlands, Nigeria, Peru, Portugal, South Africa, Spain, Turkey, United Kingdom, United States of America and Uruguay. **Institutions:** Economic Commission for Africa (ECA), Latin American and Caribbean Demographic Centre (CELADE), Economic Commission for Latin America and the Caribbean (ECLAC), Economic and Social Commission for Asia and the Pacific (ESCAP), Statistical Office of the European Communities (Eurostat), Inter-American Development Bank (IADB), International Labor Organization (ILO), Latin American and Caribbean Institute for Economic and Social Planning (ILPES), Luxembourg Income Study Project, Organisation for Economic Co-operation and Development (OECD), Pan American Health Organization (PAHO), Partnership in Statistics for Development in the 21st Century (PARIS 21), Townsend Centre for International Poverty Research, United Nations Development Programme (UNDP), United Nations Population Fund (UNFPA), United Nations Children's Fund (UNICEF), United Nations Statistics Division (UNSD), and the World Bank.

Group arrived at a consensus that the state of the art and the very unequal availability of statistical instruments across countries was not conducive to the preparation of a universally applicable handbook. Nonetheless, it was also obvious that, despite the heterogeneity of their methodologies and degrees of sophistication, most countries around the world were involved in the measurement of poverty. Activity in this field steadily gained momentum during those years, as the World Summit for Social Development and later the Millennium Declaration systematically focused attention on the need not only for poverty figures but, even more challengingly, for comparable ones.

With this in mind, the Group embarked upon a major effort to collect information on different experiences and then to systematize that information. It was found that most practices fit quite well into a small number of categories. But it was also seen that less statistically developed countries had to use “shortcuts” in terms of procedures and calculations due to their lack of statistical infrastructure and experience. The Group therefore decided that, rather than describe those shortcuts in detail, it would be more useful to concentrate on specifying the best practices in the field so that disadvantaged countries could evaluate the steps or stages needed to move towards better measurements. This led to the decision to produce a compendium of good practices and the establishment of a systematic plan for working towards that objective.

From the fifth meeting on, information about different measurement approaches and procedures was collected and classified. This included the identification of similar concepts that were labelled in different ways, research on available statistical instruments and the identification of shortcomings and operational problems that needed to be solved. At the last meeting, a tentative index was drawn up, and a group of primary authors started preparing the first drafts. The substantive editorial work in English was finished at the end of 2005.

The fact that the majority of group members come from national statistical offices guided the compilation of material towards measurement practices implemented in relation to their institutional context (even though they did not necessarily represent the official figures of the country in question). This excluded from the discussion those issues or proposals that pertained exclusively to the academic sphere, even though it was recognized that most of the now-widespread measurement approaches originated there. In addition, the shortage of resources limited the participation of many national institutions other than statistical offices, such as NGOs or government social agencies.

Nevertheless, the compendium is considered to be representative of most well-developed practices in poverty measurement.<sup>2</sup>

Within this context, the definition of what a “good practice” is takes the following aspects into account:

- (a) It has a clear definition of the relevant standard and its units of measurement.
- (b) It is based on an existing source of information that meets minimum quality standards.
- (c) It has been applied more than once, ideally for the same country or region. If, however, calculations have been carried out only once but for many countries, then they may still qualify.
- (d) It produces information that is a useful input for public policies or that is related to aspects falling within the purview of those policies.

As a consequence, this Compendium offers a “menu” of poverty measurement approaches and methodologies. A discussion is also provided of the most important aspects relating to their implementation. In cases where no measurement method has been adopted, this menu should allow the reader to choose among the available options based on his/her needs and constraints. It is also, however, intended to provide a general guide for the improvement of measurement methods that have not been fully applied.

This Compendium contains an introduction and five chapters. The introduction, written by professor Peter Townsend, recalls the important role that the academic field plays in furthering the progress of the profession and in championing the right to freedom of opinion that the United Nations defends. It also expresses the Group’s appreciation for the academic world’s contribution in making abstract concepts operative for policy purposes.

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<sup>2</sup> A description of poverty measurement practices in different world regions can be found at the websites of the regional workshops organized by the United Nations Statistics Division between 2003 and 2004 in Africa ([unstats.un.org/unsd/methods/poverty/Workshop%20ECOWAS.htm](http://unstats.un.org/unsd/methods/poverty/Workshop%20ECOWAS.htm)), Latin America and the Caribbean ([unstats.un.org/unsd/methods/poverty/Workshop%20ECLAC.htm](http://unstats.un.org/unsd/methods/poverty/Workshop%20ECLAC.htm)), Asia and the Pacific ([unstats.un.org/unsd/methods/poverty/ReportManilaWorkshop\(15Nov2004\).doc](http://unstats.un.org/unsd/methods/poverty/ReportManilaWorkshop(15Nov2004).doc)), and Western Asia ([unstats.un.org/unsd/methods/poverty/Workshop%20ESCWA.htm](http://unstats.un.org/unsd/methods/poverty/Workshop%20ESCWA.htm)).

Chapter 1 provides an overview of the importance of poverty measurements in the current global political and social context. Chapters 2 through 4 have been structured around three main poverty measurement approaches: Chapter 2 refers to the poverty line approach, which includes the absolute, relative and subjective perspectives; Chapter 3 corresponds to the unmet basic needs or deprivation indicators approach; and Chapter 4 reviews practices involving the use of a combination of poverty lines and deprivation indicators. It is important to stress that this classification of practices is just one analytical possibility among many others, but it is one that the Rio Group members consider to be an adequate operative framework for a discussion of the different methodologies available. Finally, Chapter 5 addresses the link between social policy and poverty measurement and briefly discusses some of the elements required for international comparisons and enhanced information sources.

More specifically, Chapter 2 deals with practices in which a household is classified as poor if its resources are less than the value of a given monetary threshold (“poverty line”). The poverty line represents the aggregate value of all the goods and services considered necessary to satisfy the household’s basic needs. Three different perspectives are presented. The main point on which these approaches diverge has to do with which basic needs are considered. The “absolute” viewpoint takes into account only the household’s most basic necessities as they relate to the subsistence of its members. According to the “relative” view, a person’s basic needs are determined by what the individual requires to take part in society and therefore includes other aspects besides mere subsistence. Finally, the “subjective” perspective leaves the determination of the cost of satisfying basic needs up to the individuals themselves.

Chapter 3 examines the use of deprivation indicators. This approach identifies as poor those people or households that do not meet the standards established for a set of deprivation indicators related to the satisfaction of basic needs. One of its main differences with the poverty line approach is that it measures the effective satisfaction of needs, rather than the availability of resources to satisfy them.

The use of a combination of poverty lines and deprivation indices is discussed in Chapter 4. Initially, the Group considered the possibility of treating this approach as an extension of the previous two and including it in one of the preceding chapters. Ultimately, however, it decided to discuss this topic in a separate chapter because the practices it describes seek to integrate poverty-line and deprivation-indicator measurements rather than simply cross-tabulating their results and

because some countries have been pursuing a combined strategy as their official approach to the measurement of poverty.

The final chapter is of a different nature than the preceding three. While Chapters 3-4 provide a technical analysis of the approaches and make no specific reference to their appropriateness in particular circumstances, Chapter 5 explores some of the considerations that are weighed when deciding which specific method to adopt and examines the relationship between measurement methods and public policies. It also reviews some of the existing practices for the production of internationally comparable poverty figures. Finally, some strategies for the improvement of poverty statistics are discussed.



# Chapter 1

## Introduction

By Professor Peter Townsend<sup>3</sup>

In advancing towards the eradication of poverty and improving the living conditions of the world population, achieving a better definition of the problem and devising an internationally comparable approach for its measurement are very important elements. A necessary step in this process is taking stock of current practices in poverty measurement and portraying their advantages and limitations. This task has been accomplished by the Rio Group, and the results of its work are presented in this report. It will contribute to reaching further agreements about the measurement of poverty and its importance in the construction of more effective policies. It will also offer those with less experience in the field the possibility of learning more about methodological options, data requirements and costs.

The topics that I will discuss in this introduction refer to an historical perspective of the concept of poverty, with reference to what I regard as the basic characteristics of the evolution of poverty in the last 25 years and how policies at the international and national level have influenced that evolution.

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<sup>3</sup> This introduction has drawn in substantial part from contributions of the author to the *Social Science Encyclopaedia* (Adam Kuper and Jessica Kuper, eds.) and *World Poverty: New Policies to Defeat an Old Enemy* (Peter Townsend and David Gordon, eds.).

## 1.1 Poverty - An historical perspective

Understanding the different approaches to the measurement of poverty requires an examination of their historical developments and circumstances. By building on historical investigations of poverty and innovations that have been introduced into research and action, there can be a rational exchange among a majority of people leading to scientific and public agreement. If achieved, this can have great benefits in the future.

From the earliest days, poverty was related to income, and income has remained at the core of the concept's meaning. At this juncture, this deserves to be explained. There are advantages in maintaining that feature of the concept. But "income" is itself no less of a problematic concept than "poverty" and has to be carefully and precisely elaborated. Once this is done, scientists come to understand why there have been temptations to stray into other features of meaning. It is a difficult and costly exercise. If the income equivalent of assets, free public services and subsidies to employment have to be added to cash income to arrive at a comprehensive but accurate measure, then the task of assembling an accurate measure becomes daunting. I will endeavour to explain.

First it will be helpful to summarise the conclusion. When people lack or are denied the income and other resources, including the use of assets and receipt of goods and services in kind equivalent to income, to obtain the conditions of life—that is, the diets, material goods, amenities, standards and services—to enable them to play the roles, participate in the relationships and follow the customary behaviour which is expected of them by virtue of their membership in society, they can be said to be in poverty. They are deprived because of their poverty. The key to understanding is the definition and measurement of the two variables that can be shown to be closely related—"income" and "deprivation." The determination of a poverty line cannot be based on an arbitrary selection of a low level of income. Only scientific criteria independent of income can justify where the poverty line should be drawn. The multiplicity and severity of different types of deprivation can constitute those criteria. The aim of investigation is therefore to define a threshold of income below which people are found to be increasingly deprived. The two measures are not easily decided. The relevant measure of "income" should include the value of assets and income in kind that can be treated as equivalent to income—"resources" sometimes being used to denote this wider interpretation. Secondly, the measure of multiple deprivation must be decided on the basis of evidence about each and every sphere of human activity (again, not arbitrarily chosen spheres): at work, where the means that largely determine an individual's position in several spheres of activity are

earned; at home, in a person's neighbourhood and family; during travel; and in a range of social and individual activities outside work and the home or neighbourhood where people perform a variety of roles in fulfilment of social obligations. The degree of material and social deprivation relative to income is the basis for the "relative deprivation" method of ascertaining the threshold amount of income ordinarily required by households of different compositions to surmount poverty. The application of this method permits conclusions to be reached about trends in poverty in and across different countries (Townsend, 1979, p. 31; 1993, pp. 33-36). In the twenty-first century, this approach can allow a scientific and international consensus to finally be reached about the concept and its uses.

There are historical antecedents that have to be traced and qualifications that have to be made in reaching the above conclusion. The understanding and relief of poverty have been a major preoccupation of human beings for many centuries. In England, various laws to regulate and maintain the poor were enacted before the time of Elizabeth I (Lambarde, 1579), and the first recorded body of "Commissioners for the Poor" started work in 1630 (HM, 1630). Attempts were made both to assess conditions throughout England and to trace corresponding conditions across Europe (see, for example, Eden, 1797; Himmelfarb, 1984; and Woolf, 1987). In the late eighteenth century, governments and ruling groups grudgingly came to feel obliged to define the needs of the poor in relation to the income of the poor. In Britain and much of Europe, those in charge of small areas, such as parishes, developed forms of indoor and outdoor relief for the poor long before the industrial revolution. Economies newly based on manufacturing industries and a wage system posed new problems of estimating and regulating the amounts to be received by the poor outside as well as inside Poor Law institutions. The costs of maintaining institutions and their inmates had been a cause of concern for ruling groups and figured in the formulation of a new scheme to manage the poor starting in 1834 in Britain. The principle of "less eligibility" played a crucial part in the thinking both of politicians and those undertaking scientific enquiries.

"The first and most essential of all conditions, a principle which we find universally admitted, even by those whose practice is at variance with it, is, that [the pauper's] situation on the whole shall not be made really or apparently so eligible as the situation of the independent labourer of the lowest class" (Report from His Majesty's Commissioners, 1834, p. 228).

The rate-payers wanted the costs of maintaining the able-bodied and non-able-bodied poor to be kept as low as possible. Those in charge of the economy and many employers wanted the poor to be prepared to accept the lowest wage rates on offer. The history of

poverty has not been one of a dispassionate search for the precise amount of resources required to surmount deprived conditions of life, but one of continuing struggle between dispassionate investigation and the prejudiced certainties of those who have accumulated valuable fixed interests. Compromises were reached both about necessary income and the extent of appropriate investigation. Sometimes limited relief was provided in the form of bread and other benefits in kind, and sometimes in cash, or a mixture of cash and bread, especially for the non-institutionalized poor. Need, and therefore the benefits to meet need, depended on perceptions of how many of the poor were "deserving." But with the enlightenment and the evolution of the modern industrial State, there were demands for the rationalisation of the methods and amounts of relief that were deemed to be customary.

For such reasons, governments and administrators became concerned with defining the minimum needs of institutional inmates and of the able-bodied poor outside institutions. They sought justification for their decisions from independent scientific enquiries. The early work of nutritionists in Germany, the United States and Britain addressed such questions. In Germany, for example, there was the work of Kuczynski and Zuntz (see Leibfried, 1982; Hoffmann and Leibfried, 1980; and Leibfried and Tennstedt, 1985). In the United States, historical work by Aronson (1984) also revealed the powerful influence of such early nutritionists. The scale and variety of nutrients to maintain life became an important area of public inquiry. A new stage of relatively scientific work on poverty had arrived.

From the 1880s to the present day, three alternative conceptions of poverty have evolved as a basis for international and comparative work. They depend principally on the ideas of subsistence, basic needs and relative deprivation. In Britain the "subsistence" standard developed in two stages, first in conjunction with the work of nutritionists by means of surveys carried out by entrepreneurs like Rowntree (1901 and 1918) and then in the war years 1939-1945 by means of a report on social security drawn up by Sir William (later Lord) Beveridge (Beveridge, 1942). Formerly, under the old Poor Laws, the needs of the poor had been measured in terms of quantities of bread or bread-flour or their cash equivalent, and in some parishes allowances for the addition of other necessities had become common practice (see from His Majesty's Commissioners, 1834, p. 228). Now, as a result of work prompted by the nutritionists, families were defined to be in poverty when their incomes were not "sufficient to obtain the minimum necessities for the maintenance of merely physical efficiency" (Rowntree, 1901, p. 86). A family was treated as being in poverty if its income minus rent fell short of the poverty line. Although allowance was made in calculating the income level for clothing, fuel and some other items, this allowance was

very small, and food accounted for much the greatest share of subsistence.

The investigations of Rowntree, Bowley and others during the 1890s and the early decades of the twentieth century influenced scientific practice and international and national policies for the rest of the century. Examples are the statistical measures adopted to describe social conditions, at first within individual countries but later with wide application by international agencies such as the World Bank. Beveridge's particular interpretation of "subsistence" was carried over into the post-war years after 1945 as a means of justifying the low rates of national assistance and national insurance that were then adopted. The idea of subsistence was freely exported to member States of the former British empire. Thus, the wages of blacks in South Africa were partly legitimated by the "poverty datum line" (Pillay, 1973; Maasdorp and Humphreys, 1975). In framing development plans, former colonized territories such as India and Malaysia drew heavily on the subsistence conceptualisation (India, 1978; Malaysia, 1986). In the United States, "subsistence" remains the lynchpin, even if today elaborately formulated, of the government's measures of poverty (United States Department of Health, Education and Welfare, 1976; Fisher, 1998; Citro and Michael, 1995).

The use of "subsistence" to define poverty later came to be criticized (Rein, 1970; Townsend, 1979). The chief criticism was that, within that approach, human needs are interpreted as being predominantly physical needs - that is, for food, shelter and clothing - rather than as social needs. According to this argument, people are not simply individual organisms requiring replacement of sources of physical energy. They are social beings expected to perform socially demanding roles as workers, citizens, parents, partners, neighbours and friends (Lister, 1990). Moreover, they are not simply consumers of physical goods but producers of those goods and are also expected to act out different roles in their various social associations. They are dependent on collectively provided utilities and facilities. These needs apply universally and not merely in the rich industrial societies. The lack of elaborate social institutions and services in low-income countries and their scant resources direct our attention to whether or not the most basic material subsistence needs can be met in those countries. Meeting such needs as the satisfaction of hunger is widely accepted as a priority. Such needs have been included in the categorisation of "absolute" poverty. Further research has, however, shown that the adjective "absolute" would better be replaced by "extreme" or "severe." And physical needs turn out, upon examination, to be subject to rapid change because of shifts in patterns of activity and the social construction of successive forms of material consumption. Material goods are not, after all, fixed or unvarying. And even the amount and kind as well as the cost of the food that is eaten depends on the roles

people play and the dietary customs they observe socially. So, in the final analysis, material needs turn out to be socially determined in different ways.

By the 1970s a second formulation —that of "basic needs"— began to exert wide influence. Basic needs were said to include two elements. First, certain minimum requirements of a family for private consumption: adequate food, shelter and clothing, as well as certain household furniture and equipment. And second, essential services provided by and for the community at large, such as safe drinking water, sanitation, public transport and health care, education and cultural facilities (ILO, 1976, pp. 24-25; and ILO, 1977). Particularly in rural areas, the concept of basic needs was also extended to include land, agricultural tools and access to farming.

The concept of "basic needs" played a prominent part in a succession of national plans fostered by the big powers and by international agencies (see, for example, Ghai and others, 1977 and 1979) and in international reports (see, for example, UNESCO, 1978; and the Brandt Report, 1980). Evidently the term is an extension of the subsistence concept. In addition to material needs for individual physical survival and efficiency, there are the facilities and services – for health care, sanitation and education —required by local communities and populations as a whole.

The attractions of the "subsistence" concept included its limited scope and therefore limited implications for policy and political action. It seemed easier to restrict the meaning of poverty to material and physical needs than to also include the non-fulfilment of social roles, given the overriding emphasis on individualism within the revival of neo-classical economics and liberal-pluralism. The attraction of the "basic needs" concept, on the other hand, has been the emphasis on establishing at least some of the preconditions for community survival and prosperity in all countries. For example, the initiatives taken by the International Labour Organization (ILO), World Health Organization, United Nations Children's Fund (UNICEF) and United Nations Educational, Scientific and Cultural Organization (UNESCO) in their role of expanding access to basic health and education, or addressing the needs of children, have advanced this process. At certain times this has involved such organisations in major struggles. However, the more that social aspects of needs come to be acknowledged, the more it becomes necessary to accept the relativity of need to the world's as well as to national resources, because as time passes these are increasingly found to be under the control of transnational companies and international agencies. The more the concept of poverty is restricted to physical goods and facilities, the easier it is to argue that the growth of material wealth nationally is enough to deal with the phenomenon and

that a complex combination of growth, redistribution and reorganisation of trading and other institutional relationships involving the reconstitution of traditional institutions and the addition of new social associations is unnecessary.

In the late twentieth century, a group of social scientists turned to a third social formulation of the meaning of poverty - that of relative deprivation (Townsend, 1979, 1985 and 1993; Chow, 1982; Bokor, 1984; Mack and Lansley, 1984; Ferge and Miller, 1987; Desai and Shah, 1988; Luttgens and Perelman, 1988; Saunders and Whiteford, 1989; Lister, 1991; Scott, 1994; Nolan and Whelan, 1996; Øyen, Miller and Samad, 1996). Some of the authors of this research came to appreciate that peoples' subjective reports on their conditions and experiences correlated reasonably well with painstaking objective observation and offered a short-cut, that was nonetheless reliable, to those methods of research, which were undoubtedly expensive and time-consuming (see, especially, Gordon and others, 2000). Although "subjective" and "objective" poverty are of course distinct in principle, they overlap in detailed exposition. Methods of inquiry often assume that a continuum exists between the two and that points on that continuum can be chosen for particular scrutiny and the extraction of information.

"Relativity" applies to both resources and to material and social conditions. Societies are passing through such rapid change that a poverty standard devised at some historical date in the past is difficult to justify under new conditions. People living in the present are not subject to the same laws and obligations as well as customs that applied to a previous era. Globalisation is remorselessly interrelating peoples and their standards of living at the same time as inequalities are growing in most countries. There are, therefore, major objections to merely updating any historical benchmark of poverty on the basis of some index of prices. Over many years the "relativity" of meanings of poverty has come to be recognized, in part if not comprehensively. Adam Smith, for example, recognized the ways in which "necessities" were defined by custom in the early part of the nineteenth century, citing the labourer's need to wear a shirt as an example (Smith, 1812).

Nor is it enough to describe poverty as a condition applying to those whose disposable income is low relative to that of others. This is to fail to distinguish conceptually between inequality and poverty. Poverty may best be understood as applying not just to those who are victims of a maldistribution of resources but, more exactly, to those whose resources do not allow them to fulfil the elaborate social demands and customs which are placed upon citizens of that society in the first place. This is a criterion which lends itself to scientific observation of deprivation, measurement and analysis.

The driving motivation for putting forward the idea of poverty as "relative deprivation" could be said to be both scientific and international. There are respects in which the "subsistence" concept minimizes the range and depth of human need, just as the "basic needs" concept is restricted primarily to the physical facilities of the communities of the Third World. As with any formulation, there are problems in defining poverty operationally. Under the "relative deprivation" approach, a threshold of income is envisaged, according to size and type of family, below which withdrawal or exclusion from active membership of society become disproportionately accentuated. Whether that threshold exists or not depends on the scientific evidence which can be marshalled on its behalf and whether sociological and economic approaches may be reconciled (for an introduction to the controversy, see Townsend, 1979, Chapter 6; Desai and Shah, 1988; Desai, 1986; Sen, 1983 and 1985; Townsend, 1985; and Townsend, 1993, Chapter 6). Reconciliation is some distance away. Despite the influence of Sen's contributions to development studies, for two decades his ideas on capabilities had "not penetrated into the mainstream of poverty analysis among economists" (Kanbur, 2003). There are forms of impoverishment, for example through social exclusion, when individual capabilities to overcome poverty are not at issue. Those capabilities are also identified as originating within the individual rather than with groups or nations collectively or being determined externally. Capabilities are also different from perceptions. Perceptions sometimes offer a valuable correction to independent investigation and analysis of behaviour and living conditions.

While subjective judgements and reports by cross-sections of population may offer a short-cut to representative calculations about poverty (see, for example, Gordon and others, 2000; Nolan and Whelan, 1996; Mack and Lansley, 1984), elaborate objective observation of behaviour and of material and social conditions remains the necessary and fundamental task. Detailed and comprehensive scientific observation is needed to demonstrate both the extent and severity of non-participation among those with low incomes and meagre supplies of other resources because people play different roles during their lives and may have complex patterns of association.

Attempts by international financial organisations to define poverty operationally have turned out to be short-term expedients rather than being of continuing value. Thus, the World Bank adopted a rule-of-thumb measure of US\$ 370 per year per person at 1985 prices (the "dollar a day" poverty line) for all the poorest developing countries. This was temporarily convenient as a crude indicator but was not subsequently converted into the measure said to be necessary by the Bank in 1990.

A consensus on approaches to poverty was in fact reached after the World Summit for Social Development in 1995 and was set forth in the Copenhagen Declaration on Social Development and the Summit's Programme for Action, signed by 117 countries (United Nations, 1995). In planning to defeat poverty, governments agreed to issue frequent reports on the extent of poverty in their own territories that were to be based on measures of both "absolute" and "overall" poverty. This has the potentiality to cut through the problem created by the current pursuit of different regional measures of poverty and act as a bridge for comparable investigations in countries at different levels of development. This will provide genuine measures of the scale of extreme and overall poverty in the world and of the success or failure of different policies in alleviating poverty. Consistency of meaning across all societies has become the top scientific issue of the twenty-first century. Reports on poverty in poor countries during the late twentieth century were more critical, and theoretically more convincing and radical, than those about poverty in rich countries. Ideological self-deception about the absence of poverty was a marked feature of a number of rich societies after 1939-1945. But the process of social polarisation in most countries, in combination with globalisation, suggests that the supposed absence or extremely small extent of poverty in a number of those countries had been a convenient illusion that could be maintained no longer. The tendency to restrict meanings of poverty to particular regions of the world has undermined the power of the concept. Divergence of meaning has produced, or reflected, divergence in the methodologies of measurement, modes of explanation and strategies of amelioration. As new work on child poverty has shown, empirical data for all countries can now be marshalled consistently in relation to multiple forms of material and social deprivation (Gordon and others, 2003).

As this document shows, the current status of poverty measurement does not necessarily go together with the evolution of the conceptual treatment of the problem, as described in the preceding section. The criticism of certain approaches presented in this historical perspective should not be transferred mechanically to operational measurement. "Absolute" (or extreme) poverty lines have become a very widespread method for gauging the barest adequacy of resources, and their application has increasingly moved away from the idea of "subsistence", giving more room to needs that are socially determined. The basic needs approach has also embraced new areas of deprivation that are closer to the notion of social needs. In fact, in the definition of absolute or extreme poverty lines and unmet basic needs, many members of the Rio Group have introduced methods that capture elements of relativity in the definition of standards. Furthermore, and unfortunately, there are many countries in which large parts of the population go hungry and

experience subsistence-related deprivations and where some elementary basic needs continue to be left unaddressed.

## 1.2 Poverty and policy

The level of world resources is huge and still growing. In 1985, average world GDP per person per day was US\$ 13.60 and approximately US\$ 16 in 2002 (also measured at 1985 prices). These figures show that there is considerable scope for policies of redistribution to raise everyone above the World Bank's one dollar per person per day poverty standard.

Nevertheless, there has been a deterioration in terms of world social problems, as illustrated by the increase of mass poverty in some regions, sometimes as a direct consequence of avoidable conflict or war, and the generalized growth of social polarisation. Mass poverty has remained or become more extensive in some countries in Latin America and in Sub-Saharan Africa, especially in those which were formerly colonies and have undergone civil war and, in some such instances, genocide. Mass poverty has arrived in many countries of the former Soviet Union, as attested to in a stream of new reports (UNDP, 1998; Atal, 1999; Braithwaite and others, 2000; UNICEF, 2001). As one research team put it, "incomes tumbled, poverty 'exploded' and the safety net organised around enterprise-provided protection 'evaporated'" (Braithwaite and others, 2000, p. 164).

Underlying this account of changes is a deepening social division or stratification, apparent in the growing inequality between and within countries. Reporting in mid-1999, UNDP found that income inequality had increased "in most OECD countries during the 1980s and into the early 1990s. Of 19 countries, only one showed a slight improvement" (UNDP, 1999, p. 37). Data on income inequality in Eastern Europe and the Commonwealth of Independent States "indicate that these changes were the fastest ever recorded. In less than a decade income inequality, as measured by the Gini coefficient, increased from an average of 0.25-0.28 to 0.35-0.38, surpassing OECD levels" (UNDP, 1999, p. 39). "In China disparities are widening between the export-oriented regions of the coast and the interior: the human poverty index is just under 20% in coastal provinces but more than 50% in inland Guizhou" (UNDP, 1999, p. 3). Other East and South Asian countries that had achieved high growth while improving income distribution and reducing poverty in earlier decades, such as Indonesia and Thailand, were similarly experiencing more inequality (UNDP, 1999, p. 36). In Latin America the percentage of the population below the poverty line increased between 1980 and 1999 from 40.5% to 43.8% (ECLAC, 2004). The gap between countries, as well as within them, has also widened. The latest studies show how the trend has accelerated: the average income of the richest

20% of the world's population was 30 times as much as the average income of the poorest 20% in 1960, but it had risen to 74 times as much by 1997 (UNDP, 1999, p. 36).

The causes of persisting and growing poverty have been insufficiently traced, and much of the analysis has been based on the over-simplistic assumption that, since industrialized countries have lower levels of poverty than developing countries, broad-based GDP growth on its own will alleviate poverty. Recent World Bank analyses by Dollar and Kraay (2000) purport to show that "income of the poor rise one-to-one with overall growth", that is, for every 1% increase in GDP, the incomes of the poorest 20% also increase by 1%. They concluded from these analyses that public spending on education and health is of little benefit to the poor. Nonetheless, scientific analyses of the same data used by Dollar and Kraay by other researchers have, unsurprisingly, shown that there is no simple relationship between GDP growth and the incomes of poor people (Foster and Székely, 2001). In Latin America long-term figures (1980-1999) for seven countries, including the most populated ones, clearly dispute the contention that the poor have maintained their already low share of income distribution. (Sáinz and La Fuente, 2001). Indeed, the existence of a "trickle-down" effect from growth has become difficult to demonstrate (Newman and Thomson, 1989).

In order to understand the deterioration in the living conditions of a large part of the world, a basic element that needs to be accepted is the increasing impact of international developments on national subgroups and local populations. By this I mean to say that familiar problems having to do with gender, ageing, disabilities and families with children, for example, now display an overriding influence from international determinants. I also argue that local problems, such as conflicts in inner-city housing estates, drugs, closure of local factories and unsatisfactory privatisations of local services, are generated or enlarged by global market and other international factors.

Major policies of a number of international agencies, national governments and transnational corporations, for which a powerful consensus had been built up during the 1980s and 1990s, include the stabilisation, liberalisation, privatisation and welfare-targeting and safety net programmes adopted as a result of the worldwide influence of monetarist theory. For example, the so-called stabilisation and structural adjustment programmes that were advocated and supported by international agencies have entailed the reduction of subsidies on food, fuel and other goods, retrenchments in public employment, cuts in public-sector wages and other deflationary measures. This not only generates recession, but also distributional outcomes that are more adverse in poorer countries than in industrialized countries, where wage systems are strongly institutionalized and self-protecting, and where

long-established social security schemes provide a better cushion from downturns in the economy. Policies to cut public expenditure and to target welfare for the poorest groups have increased inequality and perpetuated poverty, especially in countries where, because of globalised trade and the growing influence of transnational corporations, there has been a particularly rapid concentration of wealth.

In recognizing what policies have brought about greater inequality within and between countries, we have to understand the similarity of the programmes that are influencing developments throughout the world, at the same time as we recognize that they are calculated to vary in extent and force in different regions. Governments as well as international agencies are often eager to adopt new names for conformist (rather than “convergent”) policies, especially when evidence that they are not working begins to accumulate.

A second element that needs to be considered is the concentration of hierarchical power. Due to government deregulation and privatisation, often at the behest of international agencies, control of labour markets has veered away from States and towards transnational corporations. There are serious shortcomings in both national and international company and social law in relation to transnationals. While such corporations are capable of contributing positively to social development, one review has found that few of them are doing much of consequence. The activities of some have been positively harmful (Kolodner, 1994). Recent books on transnational corporations (see, for example, Korten, 1996) have been assembling a case that governments and international agencies are going to find hard to ignore.

One feature of mergers between companies and the absorption of overseas workforces into corporate subsidiaries has to do not just with the size of the labour force accountable to management, but also with the development and scale of the hierarchy of pay and rights existing in such corporations. There are many layers in a workforce consisting of scores of thousands of employees working full-time, part-time, permanently and temporarily in 50, 60 or even more countries. This can be characterized as increasing vertical control while diminishing horizontal participation and reciprocation. Moreover, the evolving hierarchy comprises new occupational sets, ranks and classes, which are manifested internationally as well as nationally and locally.

Privatisation is another element that helps to explain the increasing degree of social polarisation. It has been argued that privatisation will enhance global market competition, reduce the cost of state and government taxation, and give greater freedom to private companies to manage their affairs as they want. However, the proponents of this idea have adopted a very narrow interpretation of the economic good and

have tended to ignore the fact that economic development is an integral part of social development. Academic reviews, as in the United Kingdom, have failed to furnish evidence of privatisation being successful in terms of growth and price. There are, indeed, examples either way (see, for example, Parker and Martin, 1997).

The last element I would like to mention refers to the shortcomings of targeting and safety nets. In structural adjustment programmes, an effort has been made to balance out the unequal social consequences of liberalisation, privatisation and cuts in public expenditure with proposals to target help for the most vulnerable groups in the population. For some years, and still to a large extent today, this has been presented within the context of means testing. Even if coverage were poor, large sums of money would be saved if the “almost poor” were no longer subsidized by public funds.

Critics have now concluded that many countries which took part in the Enhanced Structural Adjustment Facility “have experienced profound economic crises: low or even declining growth, much larger foreign debts and the stagnation that perpetuates systemic poverty”. Some IMF studies provide a “devastating assessment of the social and economic consequences of its guidance of dozens of poor nations” (Kolko, 1999, p. 53).

The problem is fully applicable to rich countries as well as poor ones. The biggest struggle of the coming years is going to be between the restriction of social security, or “welfare”, largely in relation to means-tested benefits. Those who have assembled evidence for different European countries over many years point out that such policies are poor in coverage, administratively expensive and complex, lead to social divisions, are difficult to square with incentives to work and tend to discourage forms of saving.

Policy proposals to cope with these negative trends have been formulated. For example, Townsend and Gordon (2002) propose a series of actions as part of the construction of an anti-poverty strategy. I will not discuss them here, as they exceed the nature and objectives of this Compendium, except for one that directly relates to the subject of this book.

A better definition and measurement of poverty are an important step towards eliminating it. Therefore, an international poverty line defining a threshold of income (including the value of income in kind) ordinarily required in different countries to surmount material and social deprivation should be agreed upon. As a first step, the agreement reached in 1995 in Copenhagen (United Nations, 1995) to introduce (and monitor) measures of absolute and overall poverty in every country must be fulfilled. It is only upon such a baseline that an effective anti-

poverty strategy can be developed. As a second recommendation, anti-poverty policies must be monitored and evaluated regularly. Further steps have to be taken to fulfil the agreements concerning anti-poverty measures that were reached in 1995 in Copenhagen at the World Summit for Social Development and to regularize the publication of annual anti-poverty reports by governments, as well as the corresponding reports by the United Nations and the principal international financial agencies.

The assessment of poverty-related phenomena and their impact on living conditions requires studying their consequences for the primary distribution of income, the labour market, the level and composition of social public expenditure and patterns of consumption, including the value that the population attributes to the satisfaction of needs. The Compendium prepared by the Rio Group on Poverty Statistics includes an in-depth review of procedures for improving those measurements that are now in use, together with a guide covering the resources and costs involved.

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# Chapter 2

## The poverty line approach

This is perhaps the most widely used method and the one adopted in the first attempts to attain quantitative assessments of poverty. According to this approach, a household —the unit generally considered— is classified as poor if its income or expenditure is less than the value of a given poverty line. The poverty line is a normative concept, as it represents the aggregate value of all the goods and services considered necessary to satisfy the unit's basic needs. Therefore, this approach requires, first, determining the poverty line and, second, obtaining data on the distribution of household resources (income or expenditure). Afterwards, one or more dimensions of poverty (incidence or severity, for example) can be synthesized using alternative indices.

Regarding the establishment of the poverty line, three basic approaches can be identified:

- The absolute poverty line
- The relative poverty line
- The subjective poverty line

According to the first of these approaches, the poverty line identifies the amount of money needed to acquire the goods and services that satisfy given absolute minima standards for each of the basic needs.

As mentioned in the Introduction, however, it is frequently argued that the normative criteria used to define poor units should be of a

relative nature. The second approach precisely adopts the view that the poverty line should explicitly refer to the average situation of the society. A person is poor if he/she satisfies the needs in a very unacceptable way relative to what is usual in his/her society. Hence, the poverty line is usually established as a proportion of the mean or median income or expenditure of the whole population. It is not necessarily the case that absolute poverty lines are low and relative lines are high. An important distinction between absolute and relative poverty lines rests also on how their values change as the distribution changes.<sup>4</sup>

The subjective poverty approach differs from the previous two in that it considers that people's perception of what constitutes the minimum necessary household budget is the best standard of comparison for actual incomes or expenditures. In this approach, a survey of a representative sample of the population is carried out to gauge the opinion of the population in order to define the poverty line.

Each of the three approaches for constructing the poverty line is extensively discussed in sections 2, 3 and 4, respectively, of this Chapter. Resources and other aspects common to all three are analyzed first.

## **2.1 Common Issues**

### **2.1.1 The unit of analysis, equivalences and economies of scale**

As is generally in the case with all methods of poverty measurement, the household (or family) —but not the individual— is the unit of analysis. The different methods distinguish between poor and non-poor households (or families), and a person is considered poor if he/she is a member of a poor household (or family).<sup>5</sup> This constitutes one of the shortcomings common to the various methods. It stems from the fact that the intra-household allocation of resources is very hard (and in some cases impossible) to measure, which makes it impossible to assess poverty at an individual level. In the case of the poverty line approach, this limitation is linked to the use of household resources as

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<sup>4</sup> See Foster (1998).

<sup>5</sup> When poverty is defined at the family level (for example, in the United States), all the members of a family have the same poverty status, but that is not necessarily true for all members of the household.

an indicator of welfare, because how much of the resources are allocated to each member cannot be properly determined.<sup>6</sup>

Given the use of that unit of analysis, it is essential that the needs standard put households (or families) of different size and composition on an equal footing. Otherwise, the measure has the potential to be biased. It seems obvious that the poverty line of a two-person household has to be lower than that of a four-person household, as the monetary cost of satisfying the needs of the latter is larger. The simplest alternative for linking the value of the poverty line to the size of the household is to use a per capita poverty line, as most practices currently do. However, this implicitly assumes that the monetary cost of satisfying an individual's needs is homogeneous and that there are no economies of scale in consumption. This runs counter to the evidence that children need a smaller budget than adults to satisfy their food and clothing needs (i.e., there are consumer unit equivalencies). Moreover, it is not compatible with the idea that two persons living together can cover their needs in terms of heating and housing without needing to spend twice as much as a person living alone (economies of scale or decreasing marginal cost when the household size increases).

Unfortunately, no one knows precisely how needs vary with family size and composition. However, since unit equivalencies and economies of scale are essential for poverty measures, different methods for estimating them have been developed and used for producing estimates.

Consequently, poverty lines can be, and have been, built to reflect differences in individual needs (usually according to the age and sex of household members) and economies of scale in consumption. Under this option, poverty line values are obtained for different family sizes and compositions. Household size and composition may be taken into account by constructing a poverty line for a reference family and then adapting it to other family structures using an equivalence scale (see Box 2.1), or different poverty lines may be built separately for each family structure (see Box 2.2). In the latter case, the equivalence scale is a result of the process rather than an a priori formulation.

It should be understood that equivalence scales and economies of scale are important, and the assumption behind them should be regularly revisited and validated.

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<sup>6</sup> The analysis of intra-household disparities is therefore not possible, in particular, the gender and age-specific inequalities that may exist.

### Box 2.1 Equivalence scales

Equivalence scales are indices that measure the relative cost of living of families of different sizes and compositions, in comparison with a reference unit, usually an adult or a family of four. They usually consider two elements: the consumer unit equivalence (which takes account of the needs of the household members according to their characteristics) and the economies of scale (decreasing marginal cost with the addition of new members to the household).

A very straightforward way of applying equivalence scales is through an explicit functional form. A first example is given by the expression  $n^\theta$ , where  $n$  is the number of members in the household and  $\theta$  is the parameter for economies of scale ( $\theta = 0$  corresponds to absolute economies of scale;  $\theta = 1$  corresponds to the absence of economies of scale). The Organization for Economic Co-operation and Development (OECD) and the Statistical Office of the European Community (Eurostat) regularly employ this type of scale (with  $\theta = 0.5$ ) in the measure of relative poverty.

Another example of a parametric scale that considers consumer unit equivalences is the OECD scale, which can be written as  $[1.0 + 0.7(A-1) + 0.5K]$ ; i.e., the first adult has a value of 1.0, each additional adult is equivalent to 0.7 of the first adult, and each child under 14 is equivalent to 0.5 of the first adult. In a similar fashion, in Canada's Market Basket Measure the oldest person in the family receives a factor of 1, the second oldest a factor of 0.4, all other family members age 16 and over a factor of 0.4 and all other family members under 16 a factor of 0.3.

An interesting functional form was proposed for the construction of the United States poverty line (Citro and Michael, 1995). This scale has the form  $(A + pK)^F$ , where  $A$  is the number of adults in the family,  $K$  is the number of children,  $p$  is the proportion of a child's needs compared with those of an adult and  $F$  is the economies of scale factor.

There are numerous methodologies for estimating the values of the equivalence scales on the basis of observed behavior. The Engel method, for example, assumes that if two households spend the same proportion of their budgets on food (a proxy for their level of well-being), then the relation between the total expenditures of the two households will give an index of the cost of maintaining the first household compared with the second; this index constitutes the equivalence scale. Instead of expenditure on food, Rothbart (1943) suggested using a group of goods consumed only by adults, termed adult goods. Both methods have been criticized in the literature for their limitations (see Nicholson, 1976; Deaton and Muellbauer, 1986; Tsakloglou, 1991; Gronau 1988). Other more complex methods for the estimation of equivalence scales include Prais and Houthakker (1955), Barten (1964) and Gorman (1976).

Nevertheless, these econometric methods face an identification problem that limits the proper estimation of equivalence scales (Deaton, 1997).

The determination of the values for the parameters of the equivalence scales is still an area of debate. The equivalence scales currently in use are more a product of consensus rather than an accurate representation of the living cost differences among different family types.

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**Box 2.2**  
**Constructing poverty lines with consumption equivalence and economies of scale**

Although there are relatively few experiences, consumer unit equivalences and economies of scale may be incorporated during the process of construction of the poverty line. In the case of the food poverty line, consumption unit equivalences tend to be considered more relevant than economies of scale. Since the food poverty line represents the monetary cost of acquiring a certain number of calories, they derive directly from the specific requirements by age and sex.

Concerning the non-food poverty line, two approaches are described as an illustration of the possibilities in this area:

**The INDEC proposal for a new poverty line in Argentina**

The methodology explored by Argentina's National Institute of Statistics and Censuses (INDEC) calculates different Orshansky multipliers, distinguishing among items that only have economies of scale, items that only have consumer unit equivalences and items that don't have either.

In the case of items with economies of scale only, such as household utilities and equipment, the non-food component is  $FPL_{ih} * \alpha_h$ , where  $\alpha_h =$  [Expenditure in equipment of h-sized households in the reference population/expenditure in food of h-sized households in the reference population].

In the case of items with consumer unit equivalences only, which are those used only by some household members, the expenditure in non-food items is given by  $FPL_{AE} * \alpha_i * n_i^j$ , where  $FPL_{AE}$  is the food poverty line in adult equivalent units and  $n_i^j$  is the number of persons in household i that use good j;  $\alpha_i$  is calculated as [(expenditure in good j of the reference group / number of persons in the reference group that consume good j) / (expenditure in food of the reference group / number of adult equivalents in the reference group)].

**Kakwani and Sajaia (2004) proposal for a poverty line in Russia**

Instead of calculating Orshansky multipliers, Kakwani and Sajaia (2004) estimate the total amount of non-food expenditures to be allocated to each household according to the following methodology. The mean non-food poverty line (MNFPL) is the sum of the mean expenditure in a given number of components (j), for example, clothing, housing, furniture, etc.:

$$MNFPL = \sum_j (MNFPL)_j,$$

where  $(MNFPL)_j$  is the mean of the j-th component.

The total consumption of the  $j$ -th component by the  $i$ -th household is given by

$$(NFPL)_{ij} = k(MNFPL)n_i^{(\theta_j-1)},$$

where  $n_i$  is the size of the household,  $\theta_j$  is the parameter of economies of scale and  $k$  is a constant. If  $\theta_j$  is equal to 1, every household will be allocated the same per capita expenditure of  $(MNFP)_{ij}$ , implying no economies of scale for the  $j$ -th component. If  $\theta_j$  is equal to 0, the  $i$ -th household will be allocated the per capita expenditure of  $(MNFP)_{ij}/n_i$ .

The parameter  $k$  is determined so that the mean of  $(NFPL)_{ij}$  across all households is equal to  $(MNFP)_{ij}$ . The adjustment for economies of scale thus does not change the population mean of each component. The per capita non-food poverty line for the  $i$ -th household is given by

$$(NFPL)_i = \sum_j (NFPL)_{ij}.$$

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### 2.1.2 Resources

The categorization of a household as poor or non-poor is determined by comparing available household resources, for a given period of time, with the value of the poverty line. A household's resources for attaining a certain standard of living are represented by either total income or total consumption for a given period, usually one month or one year.

In the measurement of poverty, no consensus has been reached as to the most appropriate indicator to measure the level of living. The debate combines conceptual arguments and practical considerations regarding the quality of the measurements, making it very difficult to arrive to a definitive solution. While it is not the purpose of this

document to discuss the extensive list of arguments in favour of income or consumption, some general considerations are reviewed.<sup>7</sup>

From the conceptual perspective, if it is assumed that a person's level of utility depends exclusively on his or her present consumption, then current consumption is the most suitable welfare indicator, independently of its source of financing.<sup>8</sup> Income should then be considered only as a proxy of the level of living. According to this view, current income may overstate the level of living (when the family is saving, as not all the income translates into current consumption) or understate it (when current consumption is not constrained by income, through dissaving or borrowing) (Atkinson, 1991).

Nevertheless, it is debatable whether welfare should be measured only in terms of a utility function determined solely by present consumption. There are also theoretical arguments for preferring income over consumption as an indicator of the level of living. For instance, given that the level of future consumption is also a determinant, income has the advantage of including current saving, which will become future consumption (Altimir, 1979). In addition, income reflects the consumer's opportunities rather than actual outcomes. It therefore provides a better basis for comparing welfare by focusing on *access* to resources, not just their *use* (e.g., voluntarily low consumption expenditure does not indicate poverty). Moreover, income is a better indicator if poverty is defined in terms of minimum rights to resources, where "people are seen as entitled, as citizens, to a minimum income, the disposal of which is a matter for them" (Atkinson, 1991).

From an empirical perspective, there is evidence that "consumption is not closely tied to short-term income fluctuations, and that consumption is smoother and less variable than income" (Deaton and Zaidi, 2002). This makes consumption a better indicator than income, especially when the data collection period is short. This does not mean that consumption is not subject to seasonal fluctuations, but these are supposedly smaller than seasonal income fluctuations. Nevertheless, expenditures volatility may be high under some circumstances, for example when the population makes purchases in large volumes and

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<sup>7</sup> For further discussion on income versus consumption as welfare indicators, see, for instance, Atkinson (1991), Chaudhuri and Ravallion (1994), Fields (2001) and Glewwe and van der Gaag (1990).

<sup>8</sup> Nevertheless, it is not the concept of consumption measured in empirical studies, as they actually survey expenditures.

low frequency, or in agricultural societies, whose incomes and expenditures are highly correlated with the production cycles. The problems of seasonality and instability of both income and consumption tend to diminish as the data collection period is lengthened.

Even if incomes can be more volatile than expenditure levels (since the latter can be sustained—as just mentioned—out of accumulated savings or borrowings), this generally occurs in the short-term and does not reflect the actual underlying circumstances. However, some groups—such as households with high a level of wealth or, perhaps more importantly, older households—may sometimes plan to supplement their incomes (e.g., retirement income) by reducing their savings.

Another practical element in the debate involves the difficulties of obtaining accurate information from respondents. According to Deaton and Grosh (2000) “it is also generally thought that respondents are more reluctant to share information about their income and (to an even greater degree) their assets than about their consumption, which means that they are more likely to give deliberately inaccurate answers to questions about their income than to give the same kind of answers to questions about their consumption.” The measurement of consumption also poses several obstacles, however. Some are related to the difficulties of quantifying out-of-household expenditures, which are increasingly important in household budgets; others concern the effect of big purchases—that is, the acquisition of household items that will be used for a period longer than the reference period. Additional biases derive from recall errors on the part of the respondents, such as the telescoping effect, in which households tend to remember certain acquisitions as occurring more recently than they were actually carried out, or the tendency to forget certain expenditures (Spanish National Statistics Institute, 1996).

An additional element that has been taken into account in the choice of income over consumption is the former’s correspondence with a complete conceptual framework such as the System of National Accounts of 1993 (Commission of the European Communities, IMF, OECD, UN and World Bank, 1993). No such instrument is available for evaluating the consistency of household consumption, as the SNA would be incomplete for that purpose (for example, it does not register household possession of durable goods, which are a central element in the construction of the consumption aggregate).<sup>9</sup>

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<sup>9</sup> According to the *System of National Accounts*, “final consumption consists of the use of goods and services for the direct satisfaction of human needs or wants, individually or

In the end, the choice of income or consumption is highly dependent on the particular characteristics of the country where the poverty measurement is performed. The availability of information and its frequency are often more relevant than the conceptual issues. Examples of relevant factors include the completeness of the definition of the variable; the ability to measure the selected variable on a regular basis (e.g., yearly); and the existence of large differences in the periodicity of expenditures on durable and non-durable consumer goods and the difficulties of measuring it accurately. Moreover, assumptions concerning savings, self-production or permanent income might vary considerably across low income or consumption groups in different countries and regions. Consumption and income are also subject to different measurement biases (Medina, 1998).<sup>10</sup> All of these elements make it essential that users be aware of the accuracy, quality and precision of the data employed.

### 2.1.2.1 Income as resources

The concept of income most broadly accepted in the international statistical community is the one included in the National Accounts (according to the System of National Accounts of 1993). The operational aspects of this concept have been broadly discussed in the Canberra Group Report (Canberra Group, 2001).<sup>11</sup> Many statistical offices or agencies in charge of national accounts are working towards implementing the recommendations of the Canberra Group.

In practice, the greatest difficulties for household income estimation are how to value and distribute free public services received by households, together with other non-market-valued goods, services or

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collectively" (paragraph 1.53). In this context, "in practice, the System measures household consumption only by expenditures and acquisitions. This means that the only way in which the repeated use of durables by households could be recognized would be to extend the production boundary by postulating that the durables are gradually used up in hypothetical production processes whose outputs consist of services. These services could then be recorded as being acquired by households over a succession of time periods. However, durables are not treated in this way in the System" (paragraph 9.40).

<sup>10</sup> Empirical evidence associated with the statistical precision of the measurement of income and expenditures in budget surveys may be found in Spanish National Statistics Institute (1996) and Medina (1999).

<sup>11</sup> The Canberra Group on Household Income Statistics is an expert group formed in 1996, within the scope of the United Nations Statistical Commission. Its aim is to improve national statistics on household income distribution and enhance the quality of international comparison in this area.

labour. Self-produced and consumed goods (especially food in rural areas), imputed income for owner-occupied dwellings and unpaid family workers are relevant examples of these non-monetary forms of income. Imputed values do not differ according to the choice of an indicator of resources (income or consumption). For example, the imputed rent simultaneously represents an increase in income and in consumption for a given household. To maintain consistency, every concept that is added to the household's resources as an imputed value should also be included in the poverty line value.

In the most extended practices, two dimensions account for the bulk of the difference in income estimates. The first is whether to include only monetary income or to accept imputed income to varying degrees. The second relates to the concept of disposable income, which depends on the degree of discretion in the use of income and on the kinds of transfers paid and received by the household.

A first prototype used in many countries is to consider only the monetary incomes received by the families. This definition includes wages, self-employment income, received transfers (such as public assistance income), pensions (as well as disability and survivor payments), income from assets (interest, dividends, rent and royalties), educational assistance, child support payments, alimony and financial assistance from outside the household, as well as other forms of monetary income. It does not include the effect of taxes or non-cash benefits (such as subsidized rent or food stamps), imputed rental income for homeowners or imputed values of free public goods and services. This definition of resources is currently used for poverty measurement in, for example, the United States, the European Union and many Latin American countries. With regard to the exclusion of taxes, most poor pay no direct taxes, at least in developing countries.<sup>12</sup> In any case, this definition of income is not as comprehensive as the income concept recommended by the Canberra Group.

A second prototype also includes only monetary components, but it excludes some non-discretionary expenses in order to arrive at the concept of disposable income. In this case, total income refers to income from all monetary sources, including government transfers, less income taxes paid, social contributions (such as employment insurance or contributions to registered pension plans) and child and spouse

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<sup>12</sup> This is relevant for absolute measures of poverty, but for relative measures of poverty, all types of government income redistribution have a significant impact on the determination of poverty thresholds.

support payments. As the remaining income should be spent by household members at their discretion, other non-discretionary expenses are also deducted, such as work-related child care and out-of-pocket medical expenditures. This prototype is found, for example, in the Canadian Market Basket Measure (MBM) income concept.

A third prototype pursues a much wider concept of income that implies surpassing the monetary limit by imputing non-market-valued items (such as imputed income for owner-occupied dwellings and self-consumption) and including non-cash transfers, in line with the most extended concept of available income in the National Accounts. The reduced availability of operative methodologies and data limit the possibility of including an imputed value for free public goods and services; nevertheless, some developed countries have considered these resources in the estimation of poverty.

The general trend in the use of income as an indicator of resources is to move towards the concept of disposable income and the imputation of non-monetary incomes. In this way, two families with a similar autonomous monetary income that receive different transfers or have different access to free or subsidized goods and services would not be considered equally capable of coping with poverty. The described tendency allows improving the measurement of the effects of the non-market economy and of redistributive policies.

A good example of this tendency is found in the recommendations of the U.S. National Academy of Sciences (NAS), which aim towards a more comprehensive definition of resources than the present official U.S. poverty measure (total pre-tax monetary income). The recommended measure includes all sources of monetary income together with the value of non-cash benefits (such as food stamps, free school lunches and subsidized rent). Given the importance of the freedom of choice, the NAS panel also recommended that necessary expenses should be deducted from income. These expenses include income and payroll taxes, child care and other work-related expenses, child support payments, and out-of-pocket medical costs. The latter item has sparked debate in the United States, where differences in the treatment of health costs and benefits can have a sizable impact on poverty measures.<sup>13</sup>

Countries in the European Union have been improving the definition of income used for poverty measurement through a modification of the

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<sup>13</sup> See Section 2.2.5 on the inclusion of health expenditures for poverty measurement.

information source, which will allow greater compliance with the Canberra Group recommendations. Starting from a definition of income that included net monetary income from work, private income from investment and property and social transfers received directly, the new source allows the definition of disposable household income to include in-kind income from work, imputed rent and value of goods consumed from own production.

According to the Canberra Group Report, many developing countries are undertaking an effort to expand the content of statistical instruments and increase the comprehensiveness of the income concept.

### **2.1.2.2 Consumption as resources**

Following Deaton and Zaidi (2002), the construction of the consumption aggregate may be decomposed into four main categories: food items, non-food items, durable goods and housing. Although most household expenditure surveys contain the four categories, the number and type of specific items included under each may vary considerably.

The food consumption aggregate is obtained as the sum of food consumption from every possible source, including market-purchased food, home-produced food, food items received as gifts or remittances from other households and food received as payment from employers. The total value of meals outside the household should also be added to the food consumption aggregate.

The construction of the non-food aggregate should exclude certain items. This is the case of taxes (which are considered a deduction from income and not an expenditure), large expenditures that are not part of the regular pattern of consumption of the household, gifts and remittances sent to other households, and occasional expenses (such as expenditures at weddings or funerals). The exclusion of health expenditures is a topic subject to debate.

Regarding durable goods, the optimal case is to have data on the current price of the item, the price at the time of purchase and the date of purchase. With this information, a depreciation rate for each durable good can be estimated, in order to determine the value that should be assigned as expenditure in the relevant measurement period. When less information is available, certain assumptions have to be made.

The acquisition of a house is a large and relatively rare expenditure and should not be included in the consumption total. Instead, the consumption aggregate reflects the monetary value of the service provided by the dwelling to the homeowner that is, the rent, whether

actual or imputed. The literature proposes different procedures for estimating this information when it is not available in the survey. Expenditures on water, electricity, gas and other utilities should be included in the housing category.

### **2.1.3 Sources of information for the measurement of resources**

#### **2.1.3.1 Household surveys that include income**

Household income data may come from different types of surveys. Income and expenditure surveys are usually the most accurate, and they are regularly used in some countries for the measurement of poverty (including most developed countries and a few developing countries). Given their high costs, however, such surveys are less frequent in most developing countries, and they are therefore unsuitable for medium- or short-term poverty monitoring.

Labour surveys, which are regularly used to measure unemployment, are very frequent. Their main drawbacks for the measurement of welfare are restricted geographic coverage, small sample sizes and short questionnaires. These features limit their ability to capture adequate information on incomes. Nevertheless, their high frequency and relatively low cost have made them a commonly used source for poverty measurement.

Another common source of information on household incomes, particularly in developing countries, is the multi-purpose household survey. These surveys are very heterogeneous in their content and quality, but they usually collect data on household characteristics, employment, education, access to basic services and household incomes, and they may include additional modules on health or other specific topics of interest. This source is normally less frequent than labour surveys, but it is the preferred option for measuring poverty, especially when income is used as the welfare indicator.<sup>14</sup>

The income concept measured in multi-purpose surveys varies among countries, but most concentrate on monetary figures. Labour income is common to all, but there are clear differences in the measurement of other components, such as contributions to social security or revenues from family-type businesses. Public and private monetary transfers are captured in very heterogeneous degrees.

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<sup>14</sup> In fact, many multipurpose surveys were originally established as labor surveys.

Income from capital ownership is one of the weakest measured components in most countries, but its importance for poor households is not significant in most cases. Specific questions designed to estimate imputed income from owner-occupied dwellings are not frequent.

### 2.1.3.2 Household surveys that include expenditure

Income and expenditure surveys are the most accurate source of expenditure data. They generally collect information on the amount paid for items acquired, and some of them also register quantities purchased. As mentioned above, however, the low frequency or unavailability of these surveys in most developing countries makes them unsuitable for poverty measurement.

One of the most common sources of information when consumption is used as the welfare indicator is the Living Standard Measurement Study (LSMS) surveys developed by the World Bank. These surveys are basically a multi-purpose household survey, with the characteristic that they always collect information on household consumption. This makes it possible to use a single source of information to estimate the value of both the poverty line and household resources.

The surveys include questions on consumer items bought during a short period of reference, such as the last two weeks, and for a representative month.<sup>15</sup> When this is the case, it has to be decided which of the two measures will be used. The longer period of reference may be less biased, but it may also have a greater variance than the shorter period. In addition, even though the shorter period may be more accurate for measuring certain types of expenditure, it ignores purchases made outside the period of reference. Most practices tend to prefer the information measured for a longer period of reference. For non-food expenditures, surveys usually provide longer periods of reference, depending on the expected periodicity of the purchase.

This program was established in 1980 to explore ways of improving the type and quality of household data collected by government statistical offices in developing countries. The first two LSMS surveys

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<sup>15</sup> The period of reference and other design features of the surveys, such as the type of questionnaire and its length, have been identified as key factors in poverty measurement. Chapter 5 of the forthcoming *Handbook on Poverty Statistics*, being prepared by the United Nations Statistics Division, revises some of the evidence regarding the measurement of expenditures. It cites examples in which the average expenditure significantly increased when a diary was used instead of a recall questionnaire and also when a long questionnaire was used instead of a shorter option, among others.

were fielded in Côte d'Ivoire in 1985 and in Peru in 1985-1986. Other LSMS surveys were made in Ghana in 1987-1988 and in Mauritania, Bolivia and Jamaica in 1988. There are currently numerous experiences with the use of consumption as the indicator of welfare, such as Guatemala, El Salvador, Nicaragua, Peru and Paraguay in Latin America or India and Indonesia in Asia.

These sources are discussed further in Section 2.2.2.

### **Box 2.3**

#### **The use of survey and census data to estimate poverty at the microeconomic level**

Measuring poverty in small geographic areas has become a priority for many national and local governments. Household surveys are usually representative only for large sub-national contexts and thus cannot be used for that purpose. Several researchers have proposed a way to overcome this limitation by combining this source of information with population censuses, which are usually a poor source of information on household resources but allow very detailed disaggregation of data.

The method consists in estimating income or expenditure in the survey using a set of explanatory variables that is also available in the census. The equation with the estimated parameters is then applied to census data to obtain the predicted value of income or expenditure for any sub-group of the population (for a detailed description of the methodology, see Hentschel and others, 1998, and Elbers, Lanjouw and Lanjouw, 2003).

The proposed method has been officially applied in some countries for the construction of poverty maps. For example, Statistics South Africa (2000) obtained monthly household expenditure from the 1995 income and expenditure survey (which had previously been merged with data from the 1995 annual October household survey to obtain information on educational attainment and access to services), and then compared it with equivalent data from the 1996 census.

In the United States, model-based poverty estimates are produced annually for sub-national areas (counties and school districts), based on current survey data, poverty data from the most recent census and administrative data (from sources such as tax returns). For more information, see <http://www.census.gov/hhes/www/saipe/index.html>.

This method should be viewed as a complement to the wealth of accumulated experiences in the construction of poverty maps based on the satisfaction of basic necessities. (For example, Statistics South Africa also draws poverty maps based on a household infrastructure index and a household circumstances index.) This practice is described in detail in the chapter on Unmet Basic Needs.

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**2.1.3.3 National accounts**

The System of National Accounts provides a sound conceptual framework for the generation of economic aggregates, and it also keeps record of all the transactions in a country's economy. The SNA may thus be used to check the consistency of the information measured by household surveys.

The total income and expenditures measured by surveys usually do not match, and mostly underestimate, the SNA aggregate figures. Using data from 127 countries, Deaton (2004) finds that the ratio of survey estimates of per capita consumption to the value of the same variable taken from national accounts is 0.86. He also adds that "income measured in the survey is on average larger than consumption measured in the surveys, but is in most cases less than national accounts consumption."

There are several reasons for the discrepancy between surveys and national accounts. Among the most important are non-response (whether specific to the income portion of the questionnaire or the refusal to be interviewed) and underreporting on income questions in the survey and the differences in the definition of the measured variable between the two sources.

Some Latin American countries and ECLAC have maintained a long-term practice of evaluating the different income sources measured in household surveys and adjusting them upwards to match the Household Account totals in the National Accounts (see Box 2.4). This is done to enhance the conceptual comparability of the resources variable across countries and to reduce the instability of results that

arises from changes in the survey methodology.<sup>16</sup> The aggregate differences are proportionally distributed among households, implying that the divergence of the two data sources is distribution neutral, an assumption that has received criticism.<sup>17</sup>

Adjusting household survey income or expenditure data to National Accounts totals is a second-best option—that is currently subject to much debate. National Statistical Offices should mainly aim to enhance their primary information source, the household surveys.

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<sup>16</sup> The process of adjusting income figures to match National Accounts is different from the correction for survey non-response, and it is usually performed after the latter. Many methods are available for imputing missing values (for example, through linear regression, “hot-deck” and multiple imputation methods). It is also possible to calibrate survey weights so that they add up to demographic benchmarks. Non-response correction does not aim to produce income figures that are compatible with National Accounts.

<sup>17</sup> See, for example, Korinek, Mistiaen and Ravallion (2005).

**Box 2.4****ECLAC's practice in the use of national accounts to adjust household incomes**

One of the outstanding characteristics of the absolute poverty measurements produced by the Economic Commission for Latin America and the Caribbean (ECLAC) is the adjustment of incomes measured in the household surveys to the National Accounts. This practice has been justified for two central reasons. The first is to enhance the comparability of income data across surveys, which otherwise is severely limited as a result of important differences in the income concept measured, not only across countries but also in the same country over time. The second is to reduce the bias due to underreporting in the surveys.

The procedure consists basically in scaling each income source by a constant so that they match their corresponding aggregate from the Household Account of the National Accounts (both expressed in per capita terms). In general, this procedure is only applied when the source total from the survey is below the National Accounts total.

The method assumes that the underreporting of incomes depends more on the type of income than on the household income level, and also that the underreporting of incomes has a unitary income elasticity. The only exception is cash property incomes, whose difference with the National Accounts is imputed entirely to the highest quintile.

**Source:** Economic Commission for Latin America and the Caribbean (ECLAC), "Magnitud de la pobreza en América Latina en los años ochenta", *Estudios e informes de la CEPAL series*, No. 81 (LC/G.1653-P), Santiago, Chile, 1991. United Nations publication, Sales No. 91.II.G.10.

**2.2 Absolute poverty lines****2.2.1 Standards: the poverty line****2.2.1.1 Constructing the poverty line**

Absolute poverty lines represent the cost of buying a basket of essential items that allows one to meet the absolute thresholds of satisfying certain basic needs. The definition of the normative basket should therefore entail, first, deciding on absolute thresholds for each of the basic needs; second, defining the type and quantities of the goods and services that are necessary to meet each of those standards; and, third, pricing those goods and services.

In nearly all known experiences, the establishment of the poverty line has not closely followed these successive steps. The value of the normative set of goods has only been directly estimated in the case of

one or —more rarely— a few basic needs. For all the other needs, an aggregate value corresponding to the normative budget has been calculated indirectly. This means that no specific efforts are made to define thresholds for many basic needs. This procedure is adopted chiefly for practical considerations. However, it also reflects, on one hand, the difficulties in reaching widespread consensus on what should be considered as basic needs and their level of satisfaction and, on the other, the relevance of an aggregated income value where substitution possibilities might allow the satisfaction of basic needs.

In most cases, the direct estimation of the normative basket — entailing the definition of absolute standards— is restricted to food items. In this case, the sufficiency of food intake has an inherent threshold to which it can be compared (namely, the satisfaction of nutritional requirements), while there is no such obvious criterion for the evaluation of non-food needs. Given the usual difference in the methods employed for establishing the food and non-food components of the poverty line, they are discussed separately below.

The diverse methods presented in this chapter differ with respect to how normative or how positive they are. This distinction may be drawn in two separate dimensions: satisfaction of the need and selection of items for the satisfaction of the need. The food basket provides a clear illustration of these aspects. In most of the methodologies reported here, the food poverty lines are normative in the first sense because they represent the cost of satisfying a nutritional standard, which is an externally imposed norm. Nevertheless, when it comes to selecting the contents of the basket, there are numerous alternatives that range from being mostly normative (a basket that guides people towards healthier eating) to mostly positive (a basket that adheres to consumption habits, even if they are not healthy or economically efficient). As a general rule, the less normative the criteria used by a methodology, the closer the methodology gets to a relative poverty measurement approach.

#### **(a) Food poverty line (FPL)**

Adequate nutrition is one of the most basic human needs, and it is therefore a central element in the construction of absolute poverty lines. In addition, food is the only category that is common to every country's or organization's practice examined for this report.

Practices for constructing an absolute food poverty line can be classified into two groups:

- (1) Normative FPL: represents the cost of a food basket that provides proper nutrition and is healthy, but whose primary

purpose is not poverty measurement and that may not necessarily represent consumer habits.

- (2) Semi-normative FPL: represents the cost of a food basket that is anchored to certain nutritional guidelines according to the consumption habits and market prices faced by the population.

The measurement methods pertaining to the first category employ a food basket produced for purposes other than poverty measurement. Although the baskets may have been constructed following methods similar to the semi-normative methods described below, they are grouped separately because the researcher does not have the option of modifying the characteristics of the basket. The only available practices presented to the Rio Group that relate to this category are the United States' current poverty line (developed by the U.S. Department of Agriculture)<sup>18</sup> and Canada's Market Basket Measure (Health Canada's Nutritious Food Basket).<sup>19</sup>

The second category refers to those practices in which the food poverty line represents the cost of attaining nutritional requirements while simultaneously respecting observed consumer habits (in different degrees). It is the most widespread method for measuring absolute poverty in the world, although it is applied with many methodological variations.

In what follows, the general structure for the construction of a food poverty line that respects consumer habits is described.

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<sup>18</sup> The official U.S. poverty line is based on the least costly of four nutritionally adequate food plans designed by the U.S. Department of Agriculture and intended only for short-term use. For a detailed description of how the U.S. poverty lines were developed, see Fisher (1992) and Orshansky (1963, 1965).

<sup>19</sup> According to the available information, the process of constructing the basket may in fact consider the preferences and tastes of the population. The Canadian basket "is neither 'an ideal diet' nor the cheapest diet that meets nutritional requirements. Instead it represents a nutritional diet which is consistent with the food purchases of ordinary Canadian households. The basket contains healthy foods that 'people like to eat.' It is designed to be 'socially acceptable and contain sufficient variety to be nutritionally adequate and palatable over the long term.' It does not exclude more costly 'basic processed foods such as yogurt or bread... since a family would not normally prepare these foods from raw ingredients'" (Hatfield, 2002, citing Lawn, 1998).

### **Step 1: Determining energy requirements**

Estimates of the energy (caloric) requirements for the population under analysis are generally based on internationally agreed recommendations (FAO/WHO/UNU, 1985 and 2004). According to them, the basal metabolic rate (that is, the “minimum calorific requirement needed to sustain life in a resting individual”) is initially calculated, using data on the height and weight of the population. Then, the required daily kilocalories are computed for different groups of persons defined according to sex, age and level of activity.<sup>20</sup>

The complete estimation of the caloric requirements described above is rarely performed by the same institution that builds the poverty lines.<sup>21</sup> Most practices make use of the estimated values already produced by another of the country’s institution.

Given the caloric requirements established for different types of persons, the total requirements for a household can be determined. A weighted average of the caloric requirements for the whole population is sometimes computed, taking into account the structure of the population. This then results in an average caloric requirement per person.

### **Step 2: Selecting a reference group**

Constructing a food basket that is compatible with a certain consumption pattern requires finding the reference group whose habits will be represented. At one extreme, the whole population could be used as the reference group, but this would result in an enormous variance in the basket structure. Therefore, a smaller subgroup is usually selected to correspond to those families whose nutritional consumption is in the vicinity of the minimum threshold.

The prevailing international criterion for selecting the reference group is to choose a (statistically representative) group of households that satisfies, on average, the caloric requirements with the lowest income. This procedure requires calculating the caloric consumption of each household (which, in turn, requires transforming the household expenditure collected by the survey into food quantities consumed and

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<sup>20</sup> For further details, see ECLAC (2000).

<sup>21</sup> ECLAC is one of the few institutions that has fully developed this practice. The experience is described in ECLAC (1991).

then into calories) and ranking the households according to the size of their income or expenditure (either per capita or adult-equivalent).

With regard to the conversion of expenditures into quantities and calories, it is worth stressing that the surveys used as a source of information on the population's food consumption may record data on the quantities bought and the associated expenditures, or it may only record expenditures. If the latter is the case, the monetary values have to be converted into quantities using information about prices, generally obtained from consumer price index data. The quantities of each type of food are then translated into their caloric equivalent. This process requires information on the nutritional contents of each food item.

Another issue that has to be considered is how to proceed when reference groups are to be selected for more than one subnational context; discussion on this topic is included in the following Section 2.2.1.2.

Alternative methods for selecting a reference group have also been used, in which the caloric consumption of the group is not considered (for example, selecting the first two deciles in the income distribution) or in which the position of the group is determined by the prior poverty measurements.

### **Step 3: Contents and cost of the food basket**

To determine the cost of the food basket, two different procedures can be identified: constructing an explicit food basket and then pricing it, or estimating the cost of the food basket without listing its contents.

The latter method, which is employed in some countries in Asia, determines the cost per calorie directly from the reference population. In this case, the food poverty line would be obtained as the caloric requirement (on average or for each household) multiplied by the cost per calorie faced by the chosen reference group.<sup>22</sup> This option fully respects consumer habits, thus limiting the use of normative elements.

The first procedure, however, is the most common, being intensively used in Latin America, Africa and some parts of Asia. In this case, an average food basket (i.e., the quantities of different products) is assembled for the reference group. Some countries use the basket with

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<sup>22</sup> See National Economic and Social Development Board (2004), Kakwani and Sajaia (2004) and Vidyaratne (2004).

its original number of products, while others select the most representative items for each food category and then adjust their quantities according to the reference group's consumption structure. Food categories normally include cereals, tubers, sugar, legumes, vegetables, fruits, meats, fish and seafood, milk and dairy products, eggs, beverages, and oils and fats. In any case, some decisions must be taken regarding the type of goods to include in the basket:

If the desired objective is to obtain a minimum basket, it may be necessary to replace rarely consumed or extremely costly goods with more common, less expensive items within the same category. An item that requires special attention—as it may eventually be replaced—is food consumed in restaurants. Other goods that are not a healthy source of calories (such as cola drinks or alcoholic beverages) may also need special consideration.

The food basket may be built to meet not only caloric requirements, but also other parameters of nutritional quality. All of these processes introduce normative elements in the basket, so it will not be fully representative of consumer habits.

Once the content of the basket has been established, it has to be valued. When the survey that was used to build the basket contains information on both quantities and expenditures, the implicit unit values may be used to cost each item in the basket. When this is not the case, an external source will be necessary, such as the consumer price index disaggregated by product. This possibility implies that the items included in the basket have to be comparable with those in the CPI basket. Particularly in developing countries, data on prices are usually available only for the main cities or the whole urban area, thus creating the need for a strategy to estimate rural prices.

The resulting product of the whole process is a detailed food basket that specifies quantities of each food item, their total cost and the final cost per calorie. This information is used to obtain the food poverty line (FPL) in different ways. The most common is that the FPL represents the per capita cost of the basket (which provides the average caloric requirement of the population), but it could also be expressed in adult-equivalent terms (by considering the differences in household composition).

#### **(b) Non-food poverty line**

In the case of the food basket described above, most practices use the nutritional level to provide an objective criterion for what is considered a minimum. There is usually no such anchor available for

non-food items. It is therefore not very common to determine the quantities and prices of the items in the basket, as they are highly dependent on external recommendations from experts, subject to a high degree of debate.

One of the few exceptions is Canada's Market Basket Measure, which is one of the most complete examples of establishing normative standards for non-food items. Other experiences include those of Mexico<sup>23</sup> and Indonesia.<sup>24</sup> The Market Basket Measure explicitly includes clothing, shelter and transportation. The clothing basket is formulated to provide a complete wardrobe of essential clothing, with prorating for items that normally last for more than one year. It identifies quantities and dollar costs, based on the consumer price index. In the case of shelter, the basket consists of rental accommodation for a reference family, including utilities (electricity, heat and water) and some amenities (refrigerator, stove, washer and dryer). The rental unit is based on the average of the median two-bedroom and three-bedroom units. Subsidized rents are included in the calculation, but those paying no rent are excluded. Finally, the basket includes a component to meet the basic transportation needs of the reference family members for work, school, shopping and participation in community activities. In areas served by public transit, the basket includes the costs of fares; otherwise, the cost of purchasing a used car once every five years plus the expenses of operating the vehicle are considered.

The most commonly used approach for drawing the non-food poverty line is based on the observed Engel-coefficient (the proportion of expenditure devoted to food) for a reference group of the population. The approach consists in multiplying the inverse of this coefficient by the cost of the food basket, such that the non-food basket cost is directly obtained from the consumption habits of the reference population. This methodology is based on the original work done by Mollie Orshansky when drawing the U.S. poverty lines; it is therefore sometimes referred to as the Orshansky multiplier.<sup>25</sup>

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23 The work on a "Normative Basket of Essential Satisfactors" by Mexico's COPLAMAR in 1982 is described in Boltvinik (1984) and Boltvinik and Marin (2003).

24 See Maksum (2004).

25 See Orshansky (1963) and Orshansky (1965). Nevertheless, "Orshansky's 'multiplier' methodology for deriving the thresholds was normative, not empirical—that is, it was based on a normative assumption involving (1955) consumption patterns of the population as a whole, and not on the empirical consumption behavior of lower-income groups" (Fisher, 1992).

Using this procedure has several conceptual implications. First, it “assumes that the households that satisfy their nutritional needs are satisfying, at the same time, the minimum standards of the other basic needs”, something that is not necessarily sustained by empirical evidence (Feres, 1997). Second, Streeten (1989) points out that “there may be an inconsistency in this way of arriving at a poverty line. The minimum food requirements are derived normatively, by calculating how much the minimum requirements would cost; while the non-food items are determined by observing how much people actually spend. In order to remove the inconsistency, we would have to assume that what people actually happen to spend is what they need to spend on non-food items, a clearly unrealistic assumption.”

In practice, there are numerous options for applying the described methodology, including the following:

- Use of a single value for total non-food expenditures or different values for each non-food category.
- Use of the same reference group as for the selection of the food basket or a different reference group.<sup>26</sup> The former option uses the non-food consumption habits of the reference group identified as satisfying their nutritional requirements. It is also possible to select another reference group for the construction of the non-food poverty line, such as households with a level of food expenditure close to the food poverty line.
- Use of a range of non-food poverty lines.<sup>27</sup> Under this option, lower and upper bounds are calculated for the non-food poverty line, as explained in Ravallion (1998). The lower bound is given by the expenditure on non-food items of households with total incomes approximately equal to the food poverty line.<sup>28</sup> The upper bound is given by the

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<sup>26</sup> The first alternative is frequently used, including by ECLAC and most Latin America countries. The second option has been used in some Asian and African countries, such as Cambodia, Gambia, Sri Lanka and Vietnam.

<sup>27</sup> For example, the non-food poverty line of Sri Lanka is based on this method (see Vidyaratne, 2004).

<sup>28</sup> The poverty line adopted by China since 1998 is similar to the proposed “lower bound”. In this particular case, it was estimated by regressing the share of expenditure devoted to food on the logarithm of expenditure divided by the food poverty line, as suggested by Ravallion and Bidani (1994) (see Park and Wang, 2001).

expenditure in non-food items of households with food expenditure approximately equal to the food poverty line.

- Use of a fixed multiplier instead of the currently observed multiplier (ECLAC, Chile, the United States)

### **2.2.1.2 Geographic disaggregation**

Given intra-country differences in prices and consumption patterns, it is sometimes convenient to draw poverty lines for subnational contexts and to reach national poverty figures that reflect these different standards.

A number of issues have to be considered when estimating poverty lines for these contexts. Perhaps the most important is to decide how the reference group will be chosen. One option is to select independent reference groups for each context, sorting out the observations of each subgroup from the beginning (as if the process were being implemented in different countries). This procedure has been criticized because it does not consider the differences in the standard of living among contexts; therefore, if the population in urban areas has more expensive tastes, the urban poverty line will be excessively higher than in rural areas. One proposed alternative is to equate the purchasing power of the incomes of different regions by means of regional PPP index, before selecting the reference group. Afterwards only one national reference group would be selected. Once the group has been chosen, the observations are separated according to the context to which they belong. It is not clear, however, whether this process effectively equates the level of welfare across geographical areas, and it opens ground to debate on how the price deflators should be calculated.

In any case, different reference groups should clearly be used when information is available, and different food and non-food baskets should then be constructed for each subnational context. This possibility is largely determined by data availability. It is not rare to find that the surveys with detailed information on household consumption have a limited geographic coverage. Moreover, detailed information on prices is often only available for urban or even metropolitan areas, which notably limits the construction and updating of the poverty lines for different geographic contexts.

### **2.2.1.3 Updating the poverty line**

Poverty lines can be adjusted either by keeping the quantities of the baskets fixed and updating their market prices or by setting up new baskets. Baskets assembled by following consumption habits are normally based on income and expenditure surveys, which are collected

every five or ten years in most developing countries. Unless poverty is measured exclusively in those years, it will be necessary to update the value of the line to the year in which income information is collected to maintain consistency between them. Price indices are usually employed, disaggregated in as many items as necessary and possible. In most cases, the total value of the food basket is updated according to the variation of the food price index, and a similar criterion is sometimes applied to the cost of the rest of items.

How often the basket itself should be modified depends not only on data availability, but also on the importance of changes in consumption patterns. They may experience considerable modifications when a long period has elapsed since the last poverty line was calculated or when a significant economic change has taken place. Normative baskets developed by experts should be suitable for longer periods, as they are not as closely related to consumption habits.

## **2.2.2 Sources of information**

### **2.2.2.1 Information on consumption patterns**

The main input for the construction of an absolute poverty line is information on households' food and non-food consumption patterns. The two main sources for this are income and expenditure surveys (or budget surveys) and LSMS surveys, which were introduced in section 2.1.3.

While both categories of surveys are not homogeneous and vary considerably across regions and countries, a general comparison of some of their characteristics is possible.

**Level of disaggregation:** Income and expenditure surveys usually have a higher level of detail (number of categories and types of items) than LSMS surveys, especially for food items. A higher level of detail is desirable for calculating the nutritional contents of food items, as not every kind of bread or meat is equally nutritious.

**Expenditure or quantities:** LSMS surveys usually contain information about both the quantities consumed of each item and the expenditure on each item, whereas many income and expenditure surveys do not. The same source of information should ideally provide information on quantities and prices, to avoid the need for an external source of information on prices.

**Collection period:** Income and expenditure surveys commonly collect information during an entire year, allowing the detection of seasonal patterns of consumption. LSMS surveys may also be collected

over a 12-month period, although many of them have shorter collection periods (Scott, Steele and Temesgen, 2005).

Collection instrument: LSMS surveys use direct informants or self-respondents, who are asked retrospective questions. Some budget surveys also use retrospective questions, but many rely on household diaries in which the household records their consumption on a daily basis. The advantage of household diaries is that they minimize dependence on the respondent's memory, but they may not be practical when household members are illiterate.

The comparison of other aspects of these surveys, such as frequency, geographical coverage, sample size or data quality, largely depends on the characteristics of each particular case. The quality of this kind of survey would be expected to be very high in countries with well-established National Statistical Offices and a stable budget survey program, but many developing countries do not present these characteristics.

Many elements thus make it preferable to use an income and expenditure survey, when available, to construct an absolute poverty line. This is relatively obvious, since budget surveys are designed to capture the household income and consumption structure, while other kinds of surveys usually pursue other purposes. Nevertheless, the choice of a particular survey should be based on the characteristics of the available sources of information in each particular country.

#### **2.2.2.2 Information on nutritional requirements**

Most recent international standards of energy and protein needs for specific groups defined on the basis of age, sex and physical activity stem from the recommendations provided by a group of experts in 2001 (see FAO/WHO/UNU, 2004), which replace those previously published (FAO/WHO/UNU, 1985).

Computing the nutritional content of each food item further requires conversion tables produced in each country or, when these are not available, more general tables developed by specialized agencies.

#### **2.2.2.3 Information on prices**

The prices of food items are calculated periodically by National Statistical Offices, as part of their regular consumer price index (CPI) estimation. Three types of prices are usually available for each item: lowest, average and highest. Of these, the second option is preferred for estimating quantities when the expenditure surveys do not provide them, as well as for updating the cost of the basket. Additional

information from national sources is often employed to calculate prices for items not included in the CPI basket.

### 2.2.3 Resources

Once standards have been established, the next key decision is which measure of resources should be used to distinguish those who are in poverty from those who are not. Section I.B above discussed a wide array of considerations concerning the definition of resources as income or consumption. In this section, we make some comments on the necessary coherence between the definition of resources and the necessities represented by the poverty line. Of particular interest are the imputation of the economic benefit of home ownership, the inclusion of non-cash or in-kind benefits, and the subtraction of certain non-discretionary expenditures (such as income taxes, social insurance contributions and health costs) that lead to the concept of disposable income.

Homeowners derive an economic benefit from living in their own homes, and this benefit should be recognized when estimating resources. The measurement of this benefit is difficult, however, and it clearly represents one of the challenges of establishing a resource definition that puts owners and renters on an equal footing.

Many people derive significant amounts of resources from components other than cash income, and their measurement raises several issues. First, since these benefits are usually not paid directly to the recipient, they may not be directly collected on income surveys. Imputation methods must be used to compute their monetary amounts, which adds another source of uncertainty. Second, while benefits received as money income can be used to meet any needs a family may have, non-cash or in-kind components cannot generally be used to fulfil other needs. This may lead to further measurement problems, particularly if the value of health benefits is included in the definition of resources. If in-kind incomes are integrated as part of the households' resources, it is extremely important that the corresponding amount of goods and services received freely –or at a low cost– is also included in the poverty line.

Moreover, not all income is taxed in some countries. In the United States, for example, work-related and property incomes are subject to income taxes, but many types of transfer income are not. So, based on a total pre-tax income definition, workers are actually worse off than they appear (because more of their income is subject to tax). Also, employed persons are more likely than non-workers to have certain expenses (child care, for example). To put different types of families and

individuals on an equal footing, the definition of resources should consider taxes as well as child care and other work-related expenses.

### **2.2.4 Challenges, options and shortcomings**

Absolute poverty lines are based on the premise that it is possible to define a set of needs that is relevant for all families and individuals living in a country and to identify a definition of resources needed to meet these needs.

Before confronting operational challenges, we need to recognize that an important conceptual question of a general character —i.e., relevant not only for the absolute poverty line approach, but also for the others— remains unsettled: the definition of necessity. Physical subsistence or survival is one extreme. Such a measure would only identify goods and services that permit a person to remain physically alive. At the other extreme is the notion of social inclusion, according to which everyone—in addition to remaining alive— should have the right to personal dignity and to be able to function in society to the extent that he/she chooses. How does one choose the point along the spectrum between physical subsistence and social inclusion that is the poverty line? The answer depends on the cultural norms of society; these norms vary geographically (sometimes within countries, but certainly across countries) and temporally. Something viewed as a necessity today may not have been seen as such a century or two ago. It would therefore be difficult to define an absolute poverty measure today in a particular country. To generalize this internationally and to state that it must be robust over time adds considerably to the level of difficulty.

Regarding the definition of standards, an issue that is increasingly drawing attention is the extent to which normative criteria should be applied. A completely normative approach would use a basket that is entirely based on experts' recommendations, but if the basket is not representative of consumer habits, it may not show the true cost of attaining, for example, adequate nutrition. In contrast, baskets may closely resemble the consumption habits of the population, while maintaining a certain consistency with external parameters (nutritional recommendations in the case of the food basket). However, consumption patterns seem to be progressively moving away from what experts consider good nutrition, showing a preference for items with low nutritional content and a high cost per calorie, which could hardly be accepted as pertinent components of a basic food basket.

A major operational challenge in establishing a consistent and unbiased set of needs and resource standards is that circumstances vary widely across any country. The poverty line should reflect the same

degree of satisfaction of needs or level of welfare in any region of the country. This requires developing poverty lines that reflect local consumption patterns as well as the local price structure. As mentioned above, however, only few countries collect data on consumption outside urban areas, and even within them, geographic differences cannot always be assessed. There is also a lack of data on price variations across the different areas of a country. In fact, most countries (including many developed countries) do not have a comprehensive set of official subnational price indices that could be used to adjust poverty thresholds. This aspect poses an important limitation to poverty data when, for example, they are used to allocate resources among regions.

Even if improvements in the conceptual treatment of the abovementioned —and other— aspects result in better poverty measurements, a most important challenge has to do with improving data availability and quality. As indicated, expenditure surveys are not produced frequently enough in most LDCs, and the measurement of incomes faces several problems. The quality of the estimates of monetary components has proved to be low, particularly for some items. Moreover, important non-monetary components are not registered at all.

#### **Box 2.5**

##### **International comparisons of absolute poverty and the “one dollar a day” poverty line**

Comparisons of the degree of poverty in different countries are increasingly based on the “one dollar a day” poverty line. In fact, the first Millennium Development Goal, concerned with the eradication of extreme poverty, was formulated as “halve between 1990 and 2015 the proportion of people whose income is less than \$1 a day”.

This poverty line has been used extensively by the World Bank to measure poverty at the world level, as an explicit international benchmark that theoretically applies the same standard to all countries. It originates in a work by Ravallion, Datt and van de Walle (1991), who made an effort to quantify absolute poverty in the developing world using the median of the lowest ten national poverty lines available at that time to these researchers. The original poverty line was set at \$1 a day at 1985 purchasing power parity (PPP) prices. This work was later updated by Chen and Ravallion (2000), who applied the same principle and used the same set of countries. The new poverty line was fixed as \$1.08 a day in 1993 prices (\$32.74 per month).

The use of this poverty line is not free from criticisms. It has been claimed that that the line has no significance in terms of which necessities can or cannot be satisfied with that amount in any country. This absence of an underlying notion of human requirements makes it impossible to “identify the ‘equivalent’ of the international poverty line in local currency units without some conception of what these units are intended to achieve” (Reddy, 2004). The use of purchasing

power parity (PPP) factors to achieve comparability is also severely questioned, not only because of the important lack of solid data on which to base their calculation, but also because the available methods for calculating PPP factors between two countries make use of irrelevant information from other countries (Reddy, 2004).

Applying this poverty line to make estimations in a given country is rather straightforward, once information on the PPP conversion factor for the year of the survey has been obtained. Currently available consumption-PPP factors use 1993 as the base year, and no official methodology has been published on how to update these factors. A rough method is to update the 1993 factors by multiplying them by the accumulated U.S. inflation between 1993 and the survey year and then dividing the result by the inflation in the local country.

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### 2.2.5 Special topic: health status and poverty measurement<sup>29</sup>

As indicated, most of the currently available absolute poverty measures do not directly take into account non-food needs. It is commonly assumed that the Orshansky multiplier, which expresses the cost of non-food needs in relation to the cost of the food-consumption, appropriately takes those expenditures into account. However, large

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<sup>29</sup> Most of the issues presented here were addressed by the expert panel on poverty measurement of the U.S. National Academy of Sciences (NAS) (Citro and Michael, 1995). They were also discussed at the Workshop "Improving the Measurement of Poverty in the Americas: Health-Adjusted Poverty Lines (HAPL)" (Washington, D.C., 29-30 September 2003), organized by the Pan-American Health Organization in cooperation with ECLAC, the World Bank and the United States Census Bureau (2003) (available at <http://www.paho.org/english/dpm/shd/hp/hapl-workshop.htm>). Additional information comes from "Experimental Poverty Measures: Summary of a Workshop" (2005) (available at <http://www.nap.edu/books/0309095204/html/>). This Workshop, which assessed the current status of actions taken in response to "Measuring Poverty: A New Approach, 2005", was organized by the Committee on National Statistics (CNS-USA) with the support of the U.S. Census Bureau. See: [http://www7.nationalacademies.org/cnstat/Workshop\\_on\\_Experimental\\_Poverty\\_Measures.html](http://www7.nationalacademies.org/cnstat/Workshop_on_Experimental_Poverty_Measures.html)).

variations and a declining importance of food consumption in household budgets across countries and income groups, together with large variations and increased importance of health care expenses in household budgets, limit the relevance of using a single multiplier to account for non-food needs.

While there are several conceptual and methodological difficulties in defining health care needs and using observed health care expenses, it is generally accepted among experts to use data on medical out-of-pocket (MOOP) expenses to measure health care needs —instead of the value of private and public insurance premiums. The usefulness of this variable for measuring poverty varies across countries. It should be less relevant in, for example, certain European countries where the government assumes a large part of the health costs and out-of-pocket expenses are low, but very convenient in Latin American countries.<sup>30</sup> On the other hand, no consensus has been reached on how to incorporate MOOP into a unified measure of income poverty. In this respect, the 1995 National Academy of Sciences recommendations for the development of a new poverty line in the United States suggested that the measurement of income poverty should be separated from a measure of health care needs.

The difficulty of accounting for health care expenses in a unified measure of poverty basically lies in two of their main characteristics: (i) health care expenses vary greatly across the population and over time; and (ii) it is difficult to put a monetary value on medical benefits received by the population. Another point of methodological controversy is whether the poverty measure should include actual (imputed) or expected (average) medical expenses, provided the highly skewed distribution of health care expenses. A related issue is that an important part of the population lacks medical insurance and thus tends to forego unaffordable yet needed health care.

There are two basic approaches for including household medical out-of-pocket expenditures in the absolute poverty measurement, though no agreement has been reached on their relative superiority. One approach is to exclude household medical out-of-pocket expenses

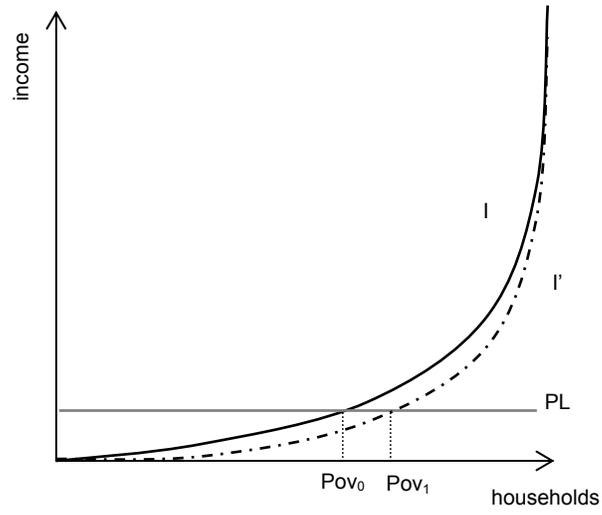
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<sup>30</sup> Among countries of the Americas, the share of medical out-of pocket expenses varies from around 2 per cent in Canada and some English-speaking Caribbean countries to around 6 per cent in the United States, Brazil, Chile, Costa Rica, Ecuador, Guatemala, Jamaica and Trinidad and Tobago, 10 per cent in Argentina and 14.3 per cent in Uruguay. Similarly, the share of MOOP among different socio-economic groups within countries varies widely. (Obtained from PAHO Database on Basic Health Indicators 2004. Methodological document [forthcoming])

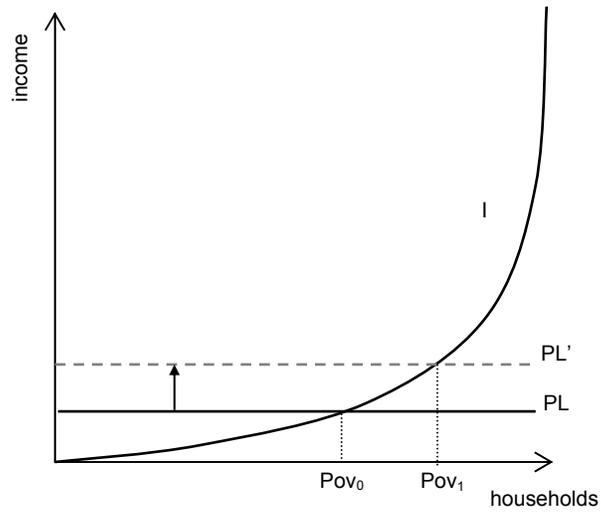
from household income to achieve a better measure of disposable income to satisfy other household needs (graph 2.1). The other approach is to include the costs of satisfying health care needs, as a component of basic needs (graph 2.2).

In graphs 2.1 and 2.2, the distribution of household resources (or income) is described by line  $I$ , and the threshold defining the minimum amount of resources to satisfy household needs is represented by the line  $PL$  (poverty line). The intersections of the resources line ( $I$ ) and the poverty line ( $PL$ ) define on the horizontal axis the share of the population that is below and above the poverty line ( $POV_0$ ). Graph 2.1 illustrates the case in which medical out-of-pocket expenses are subtracted from income. The impact of subtracting health expenses from income on the percentage of population below the poverty line (the difference between  $POV_1$  and  $POV_0$ ) will vary among countries. It depends on the relative importance of MOOP (the shift from  $I$  to  $I'$ ) and on the slope of the income distribution at the initial poverty threshold. Graph 2.2 illustrates the alternate methodology, in which health needs are added to the basic bundle of goods. The effect of increasing the poverty line,  $PL$ , in the percentage of private expenditure in health (MOOP), will be an upwards shift of  $PL$  to reach  $PL'$ . The magnitude of this shift, and thus the share of population living below the poverty line, will vary in each country depending on the percentage share of MOOP in household budgets.

**Graph 2.1**  
**Health expenses subtracted from income**



**Graph 2.2**  
**Health expenses added to poverty line**



### **Two examples of the inclusion of health in absolute poverty measurement: United States and Peru**

Studies to incorporate health expenses in the analysis of poverty have been conducted for the United States and Peru. In the case of the United States the estimates were included in a special section on alternative poverty measures in the 2002 U.S. annual report on poverty published by the U.S. Census Bureau.<sup>31</sup> Three approaches were used: MOOP subtracted from income (MSI); MOOP in the threshold (MIT); and the combined method (CMB), which uses both the MSI and MIT measures.

In the MSI method, the disposable income or resources variable is estimated by subtracting tax, work-related and medical out-of-pocket expenses from monetary and non-monetary income (such as food stamps, housing subsidies). MOOP includes household expenditures on health insurance premiums, co-payments for health care services and medicines, drugs, medical supplies and medical services not covered by insurance. Actual MOOP obtained from the Consumer Expenditure Survey are imputed to 44 types of families (subdivided by age, family size, race, poverty and insurance status) using a two stage model based on (i) the probability of incurring MOOP and (ii) the amount of MOOP. The main goal is to replicate the skewed distribution of actual MOOP. These redefined resources are obtained before comparing the income with the family's threshold, which in this case excludes medical care as a need.

In the MIT method, the poverty threshold is increased by expected (average) MOOP, instead of subtracting actual MOOP from resources. To reflect some minimum level of necessary resources according to family size, the measure takes into account the presence of elderly family members, self-reported health status and differences in health insurance coverage across families. For 1999, MOOP represented between 6 and 14 of a threshold that includes the cost of food, clothing, shelter and utilities (FCSU+M). Differences in estimates depend on the data source (the Medical Expenditure Panel Survey, or MEPS, versus the Consumer Expenditure Survey, or CES) and whether mean or median adjusted or unadjusted medical expenditure were used to estimate the health care needs.

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<sup>31</sup> U.S. Census Bureau (2003).

Finally, the CMB method combines the MSI and MIT approaches. It calculates the difference between the expected and actual MOOP for each family and subtracts the difference from family income.

Comparing the official poverty rate for 2002 with the rates obtained using the three alternative methods yields three main conclusions: (i) all the alternative measures yield a higher poverty rate than the official measure (12.1 per cent); (ii) the MSI result (12.4 per cent) was closest to the official rate; and (iii) the MIT and CMB methods yielded the same result (13.0 per cent) and the largest difference with the official method. Calculations made for 2000 confirm this tendency: 11.3 per cent for the official rate; 12.2 per cent for MSI; and 12.7 per cent for both MIT and CMB.

The estimates for Peru were part of a joint PAHO-World Bank project on improving poverty measurement in Latin America and the Caribbean. The study was basically aimed at sensitizing the monetary poverty measurement to health expenses (Herrera and Yamada, 2003). Unlike the method used in the United States, which is based on income data, the poverty line in Peru is calculated using total expenditure data, which include data on health expenditure and are obtained from the National Household Survey (the 2002 *Encuesta Nacional de Hogares*, or ENAHO).

The study used two methods to estimate the impact of health expenditure on poverty measurement: an indirect adjustment, in which health expenditures were subtracted from total expenditures data, and a direct adjustment, which included necessary health expenditures in the thresholds. The indirect adjustment was made by subtracting health expenditures from total expenditures and recalculating the inverse of the Engel coefficient to obtain a new adjusted poverty line, which was then used to recalculate absolute poverty levels. The adjusted poverty line was 8 per cent lower than the original line, while the incidence of poverty remained unchanged at around 55 per cent.

The direct adjustment method aimed to identify the minimum level of expenditure that satisfies health needs. It used self-reported data on the individual's satisfaction with his or her current health status, together with the corresponding information on actual health expenditure and the sociodemographic and chronic disease incidence among households and individuals, to find a pattern of minimum required health expenditure levels. Econometric estimation then yielded a new absolute poverty line that included minimum health needs and poverty indicators. Accounting for health expenses results in important changes: based on ENAHO data for 2002, the incidence of extreme poverty (headcount index) rises from 23.9 to 37.7 per cent; the poverty gap index (FGT<sub>1</sub>) increases from

7.5 to 13.7 per cent; and the FGT<sub>2</sub> index doubles from 3.3 to 6.7 per cent.<sup>32</sup>

### 2.3 Relative poverty lines

The practice of using relative poverty lines is based on the notion that poverty has to be assessed vis-à-vis the standard of living of a specific society. From this perspective, poverty represents the inability to participate in the ordinary life of that society owing to a lack of resources.<sup>33</sup>

While absolute poverty lines have dominated the practice of poverty measurement in developing countries, relative poverty lines are considered more relevant in several developed nations.<sup>34</sup> Some of the latter—such as the United States—do use an absolute poverty line approach.<sup>35</sup> In the European Union, however, an absolute notion of poverty is considered less pertinent for two basic reasons. First, the key challenge for Europe is to ensure that the whole population shares the benefits of high average prosperity, whereas less developed parts of the world are aiming to reach basic standards of living. Second, what is regarded as minimal acceptable living standards depends largely on the general level of social and economic development, which tends to vary considerably across the European Union's member states.

The attraction of the relative measure can be seen in the following monetary example. Assume an individual has a one-time choice between the two states of the world, A and B, in the table. The rational economic choice might be situation B (greater absolute income for the

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<sup>32</sup> For a definition of the indices, see the Annex at the end of the Chapter.

<sup>33</sup> Peter Townsend, who made pioneering contributions to the relativist view of poverty, wrote: "Individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the type of diets, participate in the activities, and have the living conditions and amenities which are customary, or at least widely encouraged and approved, in the societies to which they belong. Their resources are so seriously below those commanded by the average individual or family that they are, in effect, excluded from ordinary living patterns, customs and activities." See Townsend (1979: 15).

<sup>34</sup> See Ravallion (1994: 37-42) and Sen (1983: 153-169).

<sup>35</sup> The National Academy of Sciences' recommendations for poverty measurement in the United States are moving towards a "hybrid" poverty measure with a relative component, as explained below.

individual), but behavioural research suggests that many individuals may prefer situation A in practice (greater income relative to others).

	Self	Others
A	€ 100 000	€ 67 000
B	€ 110 000	€ 165 000

Purely relative measures may yield paradoxical results, however:

- With rapid economic growth and constant inequality, absolute poverty may decrease dramatically as everybody's living standard improves ("a rising tide lifts all boats"), but relative measures will show no change (or even worsen, if the growth is unequally distributed). Conversely, if general living standards decline, relative poverty may register no change or even an improvement. However, this dissonance is likely to be a temporary phenomenon while perceptions adjust to the new situation.
- A relative definition makes eliminating, or even reducing, the incidence of poverty very difficult—or nearly impossible—according to the standard chosen. This can sometimes be difficult to explain to policy makers. Using a relative line, however, does not amount to measuring inequality, and it does not imply that poverty is, by definition, "always with us" (Foster, 1998). For instance, if the relative approach is characterized by an assessment of the number of people below 60 percent of the median income, the answer *can* be zero (Sen, 1983: 156).<sup>36</sup>

Furthermore, from a purely relative perspective, it is difficult to judge how successful an anti-poverty program is at the microeconomic level and to rank the relative merits of different strategies, since gains shared by all tend to be discounted (Sen, 1983, p.156).

### 2.3.1 Standards

A relative approach to poverty measurement uses current data on the distribution of resources and defines the poverty line as a proportion of some notion of standard of living, such as the mean, median or some

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<sup>36</sup> The goal of reducing relative poverty, as taken up, for example, by the European Union, is more demanding than reducing absolute poverty, as economic growth is not useful if it is not accompanied by an improvement in income distribution.

other quantile. A relative poverty line thus varies one-for-one with the standard of living, in that a one percent increase in the standard of living is matched by a one percent increase in the poverty line.<sup>37</sup>

The median is the most stable of such measures, since it avoids the risk of contamination from potentially less robust, extreme values at either end of the income distribution. Such distributions are rarely symmetric, and the mean is generally significantly higher than the median.

The median is the basic measure used as the reference for setting the standard risk-of-poverty threshold in the European Union countries (60 per cent of the median income).<sup>38</sup> In practice, Eurostat calculates and publishes various risk-of-poverty thresholds using various percentages (e.g., 40, 50, 60, 70 per cent) of the median and of the mean. The line is produced for analytical purposes, as it is less useful for policy monitoring that takes place at the level of member states, but data considerations currently preclude measures based on subnational thresholds.

#### **Box 2.6 The Laeken indicators**

Within the European Union, the issue of poverty and social exclusion is a subject of recurrent interest, but it has received increasing political attention in recent years. The European Social Model has increasingly viewed quality of life as a complement or replacement for the central focus on economic wealth. An official definition was adopted by the European Council in 1984, which regards as poor “those persons, families and groups of persons whose resources (material, cultural and social) are so limited as to exclude them from the minimum acceptable way of life in the Member State to which they belong”.

Efforts to operationalise this definition led to the adoption in 2001 of 18 indicators, known as the Laeken indicators. This list cannot be considered as definitive, as it is still a work in progress. The Laeken indicators focus on the ability to participate in one’s own society: i.e., a relative measure which recognizes that behavior patterns can and do change over time and space in response to circumstances.

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<sup>37</sup> The European Union’s set of relative poverty indicators (the Laeken portfolio) includes an alternative relative poverty threshold that is “fixed at a point in time”. In other words, current incomes are measured against an earlier cut-off threshold updated by consumer price inflation.

<sup>38</sup> This poverty indicator is used in the European Union as a part of a set of social indicators, and not on its own (see Box 2.6).

The Laeken indicators are grouped into primary indicators, which consist of a restricted number of lead indicators covering the broad fields that are considered the most important in leading to social exclusion, and secondary indicators, which support these lead indicators and describe other dimensions of social exclusion.

**Primary indicators**

1. Low income rate after transfers, with low-income threshold set at 60 per cent of median income
2. Distribution of income (income quintile ratio)
3. Persistence of low income
4. Median low income gap
5. Regional cohesion
6. Long-term unemployment rate
7. People living in jobless households
8. Early school leavers not in further education or training
9. Life expectancy at birth
10. Self-perceived health status

**Secondary indicators**

11. Dispersion around the 60 per cent median low income threshold
12. Low income rate anchored at a point in time
13. Low income rate before transfers
14. Distribution of income (Gini coefficient)
15. Persistence of low income (based on 50 per cent of median income)
16. Long-term unemployment share
17. Very-long-term unemployment rate
18. Persons with low educational attainment

**Source:** European Economic Council, "On specific community action to combat poverty" (85/8/EEC, Council Decision of 19 December 1984), *Official Journal of the EEC*, No. L2, January 1985, p. 24.

European Union, Social Protection Committee, *Report on Indicators in the Field of Poverty and Social Exclusion*, October 2001.

**Box 2.7**  
**International comparisons of relative poverty**

The choice of a nation-bound relativistic approach is based on the reference group theory, which is derived from the notion that deprivation always has to be defined contextually. Tastes and preferences are context bound, and poverty therefore equates to the lack of resources necessary to participate in the normal way of life of the surrounding society. Nation-centered relative poverty lines, however, can be problematic for international comparisons. Relative poverty figures based on each country's income distribution depend on the shape of that country's income distribution. If the shape of the income distribution for any two countries is the same, relative poverty will also be the same when determined by 50 or 60 percent of the median income. Yet one of the countries could be significantly more prosperous in terms of per capita national product, and poor people in one country may be classified as rich in the other. One of the ways this problem can be alleviated is by merging countries together and applying a common standard, or international relative poverty line.

Comparing poverty data using international relative poverty lines indeed leads to quite different conclusions from those reached on the basis of relative poverty lines derived from national income. This applies even to comparisons of countries at relatively similar stages of economic development, such as the members of the European Union (using data for the late 1980s). Applying a poverty standard of 50 percent of each country's average income yields an overall poverty rate of 13.9 percent. But if a poverty line equal to 50 percent of 11 European Union countries is used, converted at purchasing power parities, the overall poverty rate rises to 17.4 percent. Under the international poverty line, lower-income countries such as Greece and Portugal double their poverty rates with respect to the national poverty line (Atkinson, 1991).

Country	Share of the European poor (poverty line equal to 50 percent of average income)	
	National income	International income <sup>a</sup>
France	21	12
Spain	18	26
Italy	15	16
United Kingdom	15	11
Germany	11	3
Portugal	7	16
Greece	5	10
Ireland	2	3
Netherlands	2	1
Belgium	2	1
Denmark	2	1
Total	13.9	17.4

**Source:** A.B. Atkinson, "Comparing poverty rates internationally: lessons from recent studies in developing countries", *The World Bank Economic Review*, vol. 5, No. 1, 1991.

<sup>a</sup> International average income is calculated on the basis of national averages converted at purchasing power parities.

The U.S. National Academy of Sciences has proposed a methodology that incorporates many elements of relative poverty to update and replace the current U.S. poverty line (Citro and Michael, 1995). The total poverty line is calculated as a percentage (around 80 percent) of the median spending in the country on an expenditure basket that includes food and non-food expenditures. This option employs elements that resemble the absolute approach (the selection of categories for food and non-food needs and the calculation of an independent threshold for each), but how the thresholds are determined is mainly relative.

While a purely relative measure is defined as a fraction of some central summary statistic, it is also possible to choose a hybrid between a relative and an absolute poverty line. This could be a weighted geometric average of a relative and an absolute threshold,  $z = z_r^\rho z_a^{1-\rho}$ , where  $z_r$  is the relative poverty line,  $z_a$  is the absolute poverty line, and  $0 < \rho < 1$ . This line has the property that a one percent increase in the central measure of the standard of living leads to a  $\rho$  percent increase in the poverty line. Thus, with this line, the absolute/relative debate becomes a question of "how relative?", with  $\rho$  the relevant decision variable (see, Madden, 2000, pp. 182-184).

### 2.3.2 Resources and sources of information

Depending on available statistical sources, median-based thresholds could potentially be applied to data on expenditure or income. The advantages and shortcomings of each of these variables were discussed in Section 2.1.2.

The European Union has long accepted that incomes are a preferable basis. This could not be reflected in practice until 1994, when the pioneering European Community Household Panel (ECHP) survey was launched; prior to that survey, expenditure data from Household Budget Surveys was used. Alongside other variables, the ECHP collects information on net monetary income accruing to the household and its members from all sources, including work (employment and self-employment), private income from investment and property and social transfers received directly. The ECHP income definition takes no account of indirect social transfers, imputed rent from owner occupation,

in-kind income, loan interest payments and transfers to other households. This longitudinal survey was launched on a gentleman's agreement basis prior to the adoption of the Canberra Manual, and it therefore does not allow full compliance: its successor, data collection under the EU-SILC regulations, will permit greater consistency.<sup>39</sup>

Under EU-SILC, the total disposable income of each household is calculated as follows:

1. EITHER by adding together the net income received by all members of the household from all the specified component sources and deducting certain expenditures. This includes monetary and in-kind income from work (employment and self-employment), private income (from investments, property, and so forth, including imputed rent), transfers received from other households, pensions and other social benefits, less payments made to other households and payment of loan interest.
2. OR by adding together the gross income received by all members of the household from all the specified component sources, and deducting taxes and social security contributions and certain expenditures.
3. OR as the sum of all household members' personal income components plus income components at the household level, of which some are net (net of income tax, net of social contributions or net of both) and others gross, or of which all are net but some are net of tax at source and others net of social contributions or net of both, once taxes on income and social insurance contributions, regular taxes on wealth, regular inter-household cash transfer payments, payment of loan interest and employers' social insurance contributions are deducted. In this case, taxes on income could include repayment/receipt for tax adjustments, income tax at source and social insurance contributions for some income components multiplied by a within-household non-response inflation factor.

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<sup>39</sup> Regulation of the European Parliament and of the Council No. 1177/2003 dated 16 June 2003, concerning Community statistics on income and living conditions (EU-SILC): text with EEA relevance, Official Journal L165, 3.7.2003, pp. 1-9, and related implementation regulations of the European Commission.

The following income components will be mandatory only from 2007: imputed rent, value of goods consumed from own production, interest paid on mortgage loans and employer's social insurance contributions.

## 2.4 Subjective poverty lines

The main characteristic of the subjective approach to poverty measurement is that the threshold between poor and non-poor is determined on the basis of people's perception of their own well-being. As far as the Group is aware, this approach has not been used officially in any country or by any international institution as the core methodology for the measurement of poverty; it has instead been employed mostly as a complementary procedure. A brief examination of the subjective approach is included in this document to discuss its usefulness in the analysis of poverty.

In the measurement of poverty, the subjective approach can be used either in monetary (to determine the value of a poverty line) or non-monetary contexts (such as the "unmet basic needs" or "deprivation indicators" methods). Following the general structure of this document, this Section addresses only the former case. The purpose is not to provide a detailed revision of the many theoretical and empirical aspects involved in the application of the methods, which is more appropriate for the academic debate, but to give the reader a sense of the operative possibilities of this approach.

The issue of subjective poverty is part of a larger field of analysis on the subjective perception of well-being. The term "economics of happiness" is used on occasion to refer to these studies, which focus on aspects of life satisfaction and how the different domains of life affect general well-being. These subjects are not treated here, as we focus exclusively on the subjective poverty line.<sup>40</sup>

### 2.4.1 Standards

Subjective poverty lines try to capture the population's perceptions. Different approaches have been designed to survey these perceptions and/or to analyze the information gathered for deriving the standard. In

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<sup>40</sup> For a broader discussion of happiness issues, see, for example, Frey and Stutzer (2002a and 2002b), Pradhan and Ravallion (1999), Rojas (2005) and van Praag et al. (2003).

this section we review three of the most established methods, although other options have also been used.

### Minimum income question (MIQ)

The best-known method for measuring subjective poverty was initially proposed in Goedhart et al. (1977) and later applied in different contexts.<sup>41</sup> It is based on a minimum income question, such as “what do you, in your circumstances, consider to be an absolute minimum income for your family?”. The answer to this question, denoted by  $y_{\min}$ , represents the value of the poverty line for the respondent.

The value of  $y_{\min}$  depends on the respondent’s income, among other factors. In fact,  $y_{\min}$  is an increasing function of income, such as the one depicted in graph 2.3. On average, respondents in a good economic situation will tend to think that the minimum income is below their current income, while the opposite occurs with those facing financial hardship. Therefore, it may be assumed that the most accurate answer about the minimum income (i.e., the subjective poverty line,  $y_{\min}^*$ ) is that which is given by people living with such an income (the intersection of the curves in the graph).

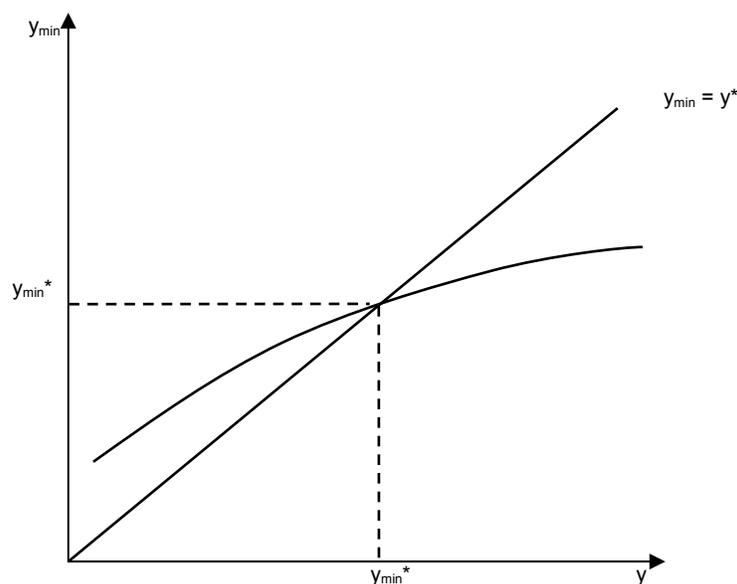
In its earliest applications, such as van Praag and others (1980), subjective poverty lines were estimated considering only family size as a differentiating variable across households. Later studies consider other household characteristics, such as “the presence of other persons in the household in addition to the main breadwinner and spouse, the maximum age of others in the household and region of residence. Reference person characteristics include working status, age, educational attainment, marital status, gender, and whether the person is not working due to being disabled” (Garner and Short, 2003).

In general terms, this approach requires estimating the parameters of an equation in which the subjective minimum income depends on the income of the respondent and other household characteristics, such as family size; for example,  $\ln y_{\min} = a_0 + a_1 \ln \text{family size} + a_2 \ln y + e$ . The equation is then solved for the case in which the subjective minimum income is equal to the current income,  $y = y_{\min}$ , thus obtaining the value of the poverty line:  $y_{\min}^* = \exp [(a_0 + a_1 \ln \text{family size}) / (1 - a_2)]$ .

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<sup>41</sup> See, for example, van Praag et al. (1980 and 1982), Danziger et al. (1984), Garner and Short (2003).

**Graph 2.3**  
**Subjective poverty Line**



**Source:** A. Kapteyn, P. Kooreman and R. Willemse (1988), "Some methodological issues in the implementation of subjective poverty definitions", *Journal of Human Resources*, vol. 23, No. 2, 1988.

To be consistent, this method requires that the level of welfare associated with the "absolute minimum income" in the question be the same for every respondent. This has been tested by some authors using the income evaluation question (IEQ), which is described next.

#### **Income evaluation question (IEQ)**

A different option, known as the Leyden poverty line after its place of origin, is based on an income evaluation question (IEQ), such as the following (from Hagenars and van Praag, 1985):

*"Please try to indicate what you consider to be an appropriate amount of money for each of the following cases. Under my (our) conditions I would call an after-tax income per week / month / year (please encircle the appropriate period) of:*

*about \_\_\_\_\_ very bad*

*about \_\_\_\_\_ bad*

*about \_\_\_\_\_ insufficient*

*about \_\_\_\_\_ sufficient*

*about \_\_\_\_\_ good*

*about \_\_\_\_\_ very good'*

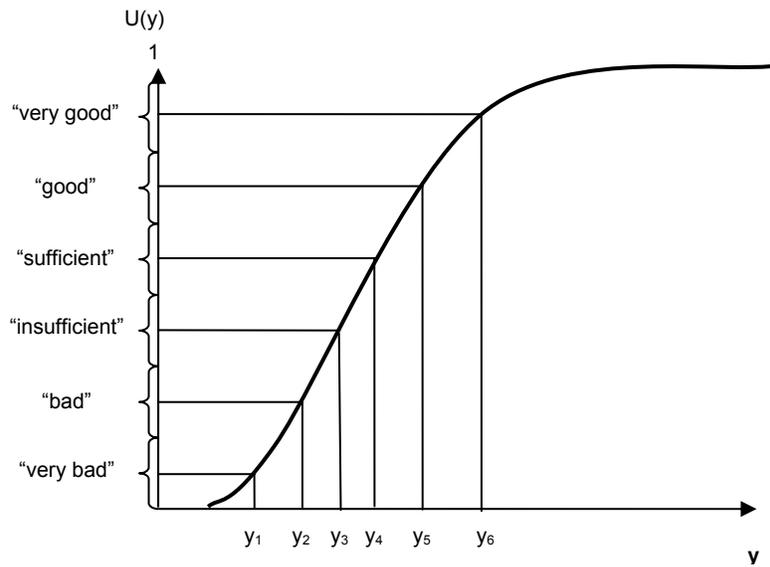
If the response categories are set equal to the means of six equal intervals from zero to one, the responses can be represented as in graph 2.4. Some authors have shown that the relation between the household's income and its evaluation function (denoted by  $U(y)$  in the graph) approximately corresponds to a lognormal distribution. This function is called the welfare function of income (WFI) of the respondent. By fitting a lognormal distribution to the responses, an equation for the individual evaluation of income can be estimated. In this approach, the poor are those individuals with an income such that their welfare function of income is below a predetermined welfare level, which is set by politicians (Kapteyn et al., 1988).

The welfare function of income has also been used in the context of the MIQ approach, to evaluate the soundness of the assumption that interpersonal comparisons of welfare are possible. In particular, it is used to test whether the personal function of income varies systematically with income and family size (van Praag and others, 1980).

### **Consumption adequacy question (CAQ)**

Pradhan and Ravallion (2000) point out some limitations of the MIQ approach and propose an alternative method based on a consumption adequacy question (CAQ). Among the drawbacks of MIQ, the authors state that households have different concepts of income, which may not agree with each other or with the concept of income expected by the question. Some households may consider only their monetary income, while others may include other sources of income. In addition, the notion of a minimum income may be interpreted differently across households; some may think mainly of food needs, while others may also consider a large proportion of non-food needs. In addition, the MIQ method requires the respondent to have a good notion of their current total income, an assumption that has been questioned (see Kapteyn and others, 1988).

**Graph 2.4**  
**Leyden poverty line**



**Source:** A.J.M. Hagenaars and B.M.S van Praag, "A synthesis of poverty line definitions", *Review of Income and Wealth*, vol. 31, No. 2, June 1985.

To avoid these limitations, the authors propose using only qualitative questions: households are asked whether the standard of living of the family is "less than adequate", "just adequate" or "more than adequate" for the family's needs. The same question is asked for specific categories of consumption, such as food, housing, clothing, health care and schooling. The subjective poverty line is defined as "the level of total spending above which respondents say (on average) that their expenditures are adequate for their needs" (Pradhan and Ravallion, 2000). The standard does not come directly from the qualitative information, as it is estimated through econometric procedures that make use of it. Specifically, the lines are computed from the parameters of a model relating the probability of reaching an adequate standard of living to household expenditures and sociodemographic variables. The latter data are collected simultaneously with the qualitative information on consumption adequacy.

The answers to the questions allow the estimation of different poverty lines. One is based on the responses related to food consumption, so that it is consistent with the idea of a food poverty line (described under the section on absolute poverty lines). A different

poverty line is obtained by including every expenditure category. The minimum expenditure in the categories that lack direct information may be estimated by an Engel curve.<sup>42</sup>

The method is based on the assumption that individuals are able to qualitatively assess the degree of satisfaction provided by different levels of consumption (overall or of certain products) and that assessments made by different persons can be compared.

#### 2.4.2 Sources of information

Because the estimation of subjective poverty figures relies not only on perceptions, but also on the current incomes or expenditures of the household, the main source of information is basically the same as for objective poverty measurements: namely, household surveys with information on household monetary resources.

After the first experiences in the measurement of subjective poverty, which were based mostly on experimental surveys, many developed countries included subjective questions in their regular household surveys. The European Community Household Panel provides a good example, as it includes a qualitative question (“Thinking of your household’s total monthly income, is your household able to make ends meet? with great difficulty/with difficulty/with some difficulty/fairly easily/easily/very easily”) and a minimum income question (“In your opinion, what is the very lowest net monthly income that your household would have to have in order to make ends meet?”). Some developing countries, such as Madagascar and Peru, have also included modules on subjective welfare in their surveys on living conditions.

These examples show that including subjective questions in a established household survey is possible. It also seems more desirable and cost-effective than having an independent survey on subjective poverty, because it avoids the duplication of information and also produces figures that are comparable with objective poverty measurements. Another issue that should be mentioned is that when a method that requires expenditure figures is used (such as the CAQ), it needs to take into account that while consumption patterns generally change relatively slowly, perceptions may vary more rapidly as the income or expenditure distribution changes. If this is the case,

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<sup>42</sup> Pradhan and Ravallion (2000) provide an empirical application of this method to data from Jamaica and Nepal. Lokshin, Umapathi and Paternostro (2004) apply this method to data from Madagascar.

expenditure surveys will need to be implemented more often to keep track of subjective poverty, a situation that does not seem achievable in many less-developed countries.

### **Box 2.8**

#### **Some results on the comparison of subjective and objective poverty results**

There is increasing evidence on the comparison of subjective and “objective” (absolute or relative) poverty measurements. This evaluation may be carried out in at least two ways: the resulting value of the poverty line, drawn under any of the methods reviewed in this section, and the rate of coincidence between being “objectively” poor and having the self-perception of being poor.

A small selection of works is reviewed here, and their results are summarised. General conclusions are hard to establish, however, as they largely depend on the choice of methods for measuring subjective and objective poverty.

#### **Spain, 1991 (Ureña, 2000)**

- Subjective poverty lines following alternative methods produced very different poverty rates: 4.9 per cent (IEQ/ Leyden method) versus 22.2 per cent (Kapteyn method).
- Leyden figures are lower than relative poverty figures (8.7 per cent of households, using a poverty line of 40 per cent of mean per capita income).
- 3.9 per cent of the households considered themselves poor, that is, less than the results from any of the two subjective poverty lines.

#### **France, 1994 and Slovakia, 1995 (Fall and others, 2000)**

- The percentage of households that consider that their income allows them to live with difficulty or much difficulty is similar between the countries: 19 per cent in France and 25 per cent in Slovakia.
- In contrast, the percentage of households that consider themselves poor using a “minimum income question” is 35 per cent in France and 71 per cent in Slovakia.
- Subjective figures are noticeably higher than relative poverty rates: 4.3 per cent in France (50 per cent of median equivalised income) and around 10 per cent in Slovakia (60 per cent of the median equivalised income).

#### **United States, 1995 (Garner and Short, 2003)**

- The subjective poverty lines (for different household types) vary appreciably when asking the MIQ in terms of income or expenditure. The latter produces considerably lower figures than the former.
- Both subjective poverty thresholds are higher than the country’s official absolute poverty line and the NAS proposed poverty line.

**Peru, 2001** (Herrera, 2001)

- 35 per cent of the households consider themselves poor, significantly less than the 55 per cent who are poor according to an absolute poverty line.
- Nevertheless, the subjective poverty line (estimated through MIQ method) is very similar to the absolute poverty line in each subnational context. In four cases the subjective poverty line is below the objective poverty line, while the opposite occurs in three cases.

**Jamaica, 1993 and Nepal, 1995-1996** (Pradhan and Ravallion, 2000)

- The incidence of subjective poverty is estimated using two alternatives of the CAQ method, one based on perceived adequacy of food alone, and the other on food, housing and (for Jamaica) clothing. In Jamaica, the first method produces higher poverty lines than the second, and both are lower than absolute poverty lines (in all subregional contexts). In Nepal, the first method produces lower figures than the second in most subregional contexts, and the comparison with objective poverty lines yields mixed results.
- In spite of the differences in poverty lines, the resulting poverty rates are very similar. Jamaica: 34.4 per cent (method 1) and 31.5 per cent (method 2) versus 31.5 per cent (absolute poverty); Nepal: 43.6 per cent (method 1) and 43.0 per cent (method 2) versus 42.0 per cent (absolute poverty).

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### 2.4.3 Challenges, options and shortcomings

A frequently cited advantage of the subjective approach to poverty measurement is that it is free from arbitrariness, since the definition of the poverty line is derived from the population itself and not by the researcher. As discussed below, however, this approach does require the researcher to make certain assumptions and take some decisions that could be somewhat arbitrary. Before addressing this issue, it is necessary to stress that the subjective approach is not just another way—an alternative to the objective approach—of assessing poverty, as it leads to the identification of situations that could be different to those recognized through objective methods. Individuals who are identified as non-poor under an objective approach may feel poor. Such circumstances are analytically interesting because they may help explain certain behaviours. Hence, subjective poverty is not necessarily an alternative to objective poverty, but rather is complementary.

As just mentioned, the subjective poverty approach does not eliminate the need for the researcher to make certain arbitrary decisions, which may have a considerable impact on the results. One of these decisions is the wording of the subjective question that will be used. The way the questions are asked may change the responses significantly.<sup>43</sup> Experience also shows that the same wording can be interpreted in different ways according to the cultural context, even within the same geographical region. For example, INSEE-France reported in the Second Meeting of the Rio Group that the interpretation of the same minimum income question was far less restrictive in Slovakia than in France, resulting in excessively high figures of subjective poverty in the former country.

Another crucial aspect is the difficulty of obtaining accurate answers from respondents. Kapteyn et al. (1988) show that “people in general only know approximately the level of their actual income”, and that they make systematic errors in estimating their own income. Therefore, to obtain a poverty definition that is based on an accurate measurement of income, they propose including a set of detailed questions about income in the questionnaire. Lokshin and Ravallion (1999) develop a similar idea, arguing that the systematic determinants of subjective economic welfare can only be analyzed if subjective questions are “asked in a context of a comprehensive objective socio-economic survey”.

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<sup>43</sup> See, for example, Garner and Short (2003).

At the same time, the subjective approach to poverty measurement provides very useful elements for the analysis of poverty, which effectively complement other “objective” measurement approaches. It generates valuable information concerning what the population thinks about their own well-being, providing a “reality check” for the results obtained from other approaches. The subjective approach also plays a significant role when multiple dimensions are to be considered in the study of welfare. They have been applied to identify which of these dimensions are relevant for economic analysis and which indicators are more appropriate for measuring the extent of deprivations. In fact, many of the deprivation measurement practices described in the next two chapters use a “consensual approach”, in which people’s perceptions on the necessities of life are used as the basic information for identifying deprivation indices. Another use of subjective poverty measurements is the construction of equivalence scales.

Nevertheless, subjective methods do not represent a first option for the measurement of poverty. It seems reasonable to invest in improving an objective method first, particularly in the case of developing countries, which usually have limited resources for the production of statistics.

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## 2.6 Annex: Aggregation

The process of measuring poverty generally encompasses at least two stages (Sen, 1984): (i) the identification of the poor, and (ii) the aggregation of poverty into a synthetic measure. The first stage is performed through any of the poverty measurement methods discussed in this document, and it consists in establishing who will be considered “poor” or “non-poor”. The aggregation stage consists in synthesizing information into a single figure.

A number of indices are available for aggregating the information from the poverty line approach, but only three are used regularly in most practices: the headcount index, the poverty gap index and the severity of poverty index. All three belong to the “FGT family” of poverty measures, corresponding to Foster, Greer and Thorbecke (Foster, Greer and Thorbecke, 1984).

This annex briefly describes the theoretical requirements for a “good” poverty measure and some of the most common poverty indices.

### 2.6.1 Axioms for the poverty indices

The “axiomatic” analysis of poverty indices, introduced by Sen (1976) and later refined by other authors, establishes that a “good” poverty measure should possess several desirable characteristics. The most relevant are as follows:

**Focal axiom:** The poverty measure should disregard information relating to the income of the non-poor.

**Monotonicity axiom:** A poverty measure should increase when the income of a poor person diminishes. This means that there should be a correlation between the index and the distance of the poor to the poverty line.

**Transfer axiom:** A transfer of income from any given person to a less-poor person should increase the poverty index. This axiom means that the poverty measure should reflect how incomes are distributed among the poor.

**Subgroup monotonicity:** If a given population subgroup's poverty measure increases, and everything else remains constant, then the poverty measure for the whole population should increase.

## 2.6.2 Poverty indices

### 2.6.2.1 Headcount index

The “headcount index” (H) measures the proportion of the poor population. It is written as:

$$H = q / n,$$

where  $n$  is the population size and  $q$  the number of people with incomes below the poverty line.

This measure is clearly the best-known poverty index, and it is very easy to interpret and communicate. The headcount index satisfies the focus axiom and is additively decomposable. It provides a very limited view of poverty, however since it offers no information on “how poor the poor are” (monotonicity axiom) and it does not consider distributional aspects of the poor population (transfer axiom).

### 2.6.2.2 Poverty gap

The “poverty gap” (PG) measures the relative income shortfall of poor people with respect to the value of the poverty line, weighted by the incidence of poverty. It can be written as:

$$PG = H \cdot I,$$

where  $I$  is the “income gap ratio”, defined as

$$I = \frac{z - \bar{y}}{z},$$

where  $z$  represents the poverty line and  $\bar{y}$  is the mean income of the poor population.

The income gap ratio indicates the average distance between the income of those in poverty and the poverty line. It is not a “good” indicator of poverty on its own: if, for example, the richest person among the poor raises his or her income above the poverty line, the indicator will show an increase in poverty because the new mean income of the poor will be lower, even though the number of poor has diminished. This defect is solved when the income gap ratio is multiplied by the headcount index (H).

The PG index can also be written as:

$$PG = \frac{1}{n} \sum_{i=1}^q \left[ \frac{z - y_i}{z} \right].$$

The poverty gap index satisfies the focal and monotonicity axioms and is additively decomposable, but it does not comply with the transfer axiom.

### 2.6.2.3 Severity or the FGT2 index

Foster, Greer and Thorbecke (1984) proposed the following parametric family of poverty measures:

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^q \left( \frac{z - y_i}{z} \right)^{\alpha},$$

where  $\alpha \geq 0$  can be interpreted as an “inequality aversion” parameter, which assigns varying weights to the difference between the income of each poor individual and the poverty line.

When  $\alpha = 0$ , this measure is equal to the headcount index; when  $\alpha = 1$ , it equals the poverty gap index. As  $\alpha$  increases beyond the value of 2, more weight is progressively given to incomes that are far from the poverty line. In fact, as  $\alpha \rightarrow \infty$ , the poverty measure will depend entirely on the distance of the poorest person’s income to the poverty line.

A measure that has been used extensively in the measurement of poverty is  $P_{\alpha}$  with  $\alpha = 2$  (or  $FGT_2$ ), as it satisfies the transfer axiom (as well as the focal and monotonicity axioms). Every index of the FGT family is also additively decomposable. For an  $n$ -sized population divided into  $m$  subgroups of size  $n_j$  and with income distributions  $y_j$ ,  $FGT_2$  is given by the equation:

$$FGT_2 = \frac{1}{n} \sum_{i=1}^q \left( \frac{z - y_i}{z} \right)^2.$$

The properties of the  $FGT_2$  index make it very useful for poverty analysis, although it is not as easy to interpret as the headcount and poverty gap measures. The economic literature offers a long list of other indicators that satisfy many of the desired properties (some of which are cited under the next heading, “Sen index”). Nevertheless, as Foster (1984) points out, of the currently available indices only the FGT-family

indices or some renormalization methods (such as Clark, Hemming and Ulph, 1981, or Chakravarty, 1981) satisfy subgroup monotonicity.

#### 2.6.2.4 Sen index

Before the Foster, Greer and Thorbecke index family became known, Sen (1976) proposed another poverty measure that satisfies the transfer axiom:

$$S = H \left[ I + (1 - I)G_p \right],$$

where  $G_p$  is the Gini coefficient for the income distribution of the poor. It should be noted that when the income of the poor are all equal,  $G_p = 0$ , and the Sen measure becomes  $S = H \cdot I$ .

This measure presents two disadvantages in comparison with the FGT indices. The first is that the sum of the contributions of each population subgroup to total poverty may not add up to 100 per cent. The second is that total poverty may diminish even when the poverty in each subgroup increases.

A number of variants of the Sen index improve on its limitations. See for example, Kakwani (1980), Anand (1977) and Thon (1979). There are also other poverty measures based on income inequality indices, such as Watts (1968), Blackorby and Donaldson (1980), Takayama (1979), and Clark, Hemming and Ulph (1981).<sup>44</sup>

#### 2.6.2.5 References

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<sup>44</sup> Foster (1984) explains the cited indices in detail, with the exception of the Watts index. An additional measure was proposed by Drewnowski (1977), but its usefulness in practical situations is rather limited (Kakwani, 1984).

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# Chapter 3

## Measuring poverty by aggregating deprivation indicators

An approach frequently used in many countries is based on the use of deprivation indicators. This method identifies poor units—mainly households—as those facing severe deprivation of basic human needs. Specifically, it considers as poor those units that do not meet the minima standards established for a set of deprivation indicators related to the satisfaction of basic needs. The indicators describe either results (such as caloric status) or the consumption of, or access to, certain goods and services that satisfy those necessities.

In contrast to monetary poverty lines, in which income or expenditure acts as the welfare indicator, this approach is considered to be multidimensional in that it employs different indicators to represent particular dimensions of welfare. The multidimensionality of poverty has received increasing attention recently, providing useful insights but also raising important methodological challenges (for example, with regard to aggregation, mentioned below).

The deprivation indicators method has been used extensively by national and international official institutions in both developing and developed countries. To anchor the discussion in a concrete example, this chapter mainly concentrates on the practice developed in Latin America, known as the “unmet basic needs” approach. Nevertheless, its main features are representative of the practices from other countries, as well.

This deprivation indicators (DI) method consists in directly measuring states effectively reached by the unit (health status or morbidity, educational achievements, nutritional level –i.e., ideas similar to the *functionings* in the Sen approach) or in measuring the consumption of goods that allows these states to be obtained (i.e., the amount of food, the characteristic of housing, school attendance). To some extent, the evaluation of well-being implicit in this approach is related to utility, which has a long tradition in economics. Utility, however, is subjectively appreciated as a mental condition (i.e., the pleasure obtained by the individual), so it is difficult to consider in empirical approaches. This raises the need for more objective criteria. The consideration of both utility and the objective criteria of results aims at measuring actual *results* or achievements. An opposite view holds that it would be better to focus on the *means* that a unit has to achieve adequate results. As Sen indicated, worrying about means makes it possible to take into account the freedom people enjoy in achieving certain desirable goals.

Indeed, this approach aims to evaluate well-being by assessing results, as it identifies poverty as the effective non-satisfaction of basic necessities. It differs from methods—such as the poverty line method—designed to evaluate whether the unit has the necessary means to meet them.

This approach is related to a tradition in social indicators that aims at estimating synthetic indicators by aggregating individual ones. They mainly consider countries or regions within a country as the unit of analysis, and the objective is to rank them according to their social situation. Nonetheless, the unit under analysis is normally the household, as discussed below.

To identify poor units under the DI approach, it is necessary to follow a series of steps that, to some extent, are similar to those required by the poverty line method. First, the basic needs must be defined. Second, the relevant deprivation indicators must be determined for each basic need. Third, standards have to be established for each indicator; these are the thresholds denoting the minimum—or maximum—value associated with the satisfaction of the need

Thus far, the similarities with the poverty line procedure are clear, since that method also requires the identification of one or more indicators related to each necessity and the establishment of thresholds. The two approaches differ, however, in that the DI method verifies whether the unit is deprived with regard to *each* indicator, i.e., whether the value of each indicator in the unit is better than the threshold. Consequently, the analyst needs to adopt a criterion that adds up, or

averages, the different statuses that a unit can have regarding the different indicators. The poverty line approach solves this problem by resorting to income or expenditure: the aggregated standard is the value of all goods and services needed to meet all the basic needs, and it is contrasted with the household's actual level of income or expenditures. In policy terms, resolving a situation in which a basic need is not met demands specific resources relevant to that necessity. Therefore, poverty indicators based exclusively on deprivation indices for specific needs are sometimes required.

### **3.1 Standards**

As indicated above, this method requires the establishment of standards for each of the needs considered to be basic. Four steps can be identified in the process of reaching that aim: (i) selecting the basic needs; (ii) identifying different dimensions to be evaluated in each basic need; (iii) defining indicators for each of those dimensions; and (iv) setting up the thresholds, or the values indicating deprivation, for each indicator. The standards, then, are the thresholds set for each of the selected indicators. The first three points are discussed in the next subsection, while the fourth is addressed in the subsequent subsection.

#### **3.1.1 Selecting the basic needs and indicators**

The selection of the basic needs is, theoretically, the first necessary step in the process of defining the standards, as is also the case in the poverty line approach. It is then necessary to take into account the different dimensions of many of them. Housing is a typical example: it is possible to evaluate aspects such as a building's capacity to isolate people from the environment (against cold, for example), to ensure the privacy of their members, or to provide certain services (such as water or sewage disposal facilities). Finally, one or more indicators have to be chosen for each of these dimensions.

The lack of a conceptual framework with a wide consensus to guide the selection of basic needs is clearly not helpful for the standards setting process. This should not be a serious restriction, however, because it is possible to identify a core of very relevant necessities over which there should be little disagreement. Nutrition, health, education, housing, clothing and leisure will probably be included on any list, regardless of the analyst's theoretical stance. More discussion is likely to arise over areas such as political participation, not because some would consider them less important, but because poverty is usually defined as the failure to meet basic needs as a result of a lack of economic resources. The limitations citizens face when trying to involve themselves in political activities are not always due to lack of resources.

Identifying the relevant dimensions of each of the basic needs raises further difficulties, since it is possible to regard only some aspects of the above-mentioned areas (or other similar ones) as basic. For example, in the case of education, the indicators may contemplate the attainment of knowledge or capacities provided by primary schools only, or by both primary and secondary schools. A wider range of alternatives will probably be discussed when defining the dimensions of leisure, for example.

As mentioned, the indicators that are ultimately selected in each of the dimensions should measure results. That entails considering variables such as the nutritional state (the absence of malnutrition as evaluated, for example, through indicators on weight and height); health status assessed by means of different clinical tests; or educational achievements measured through standardized exams. However, more indirect indicators must sometimes be employed for practical reasons, as in the case, for example, of access to goods or services that satisfy the basic needs.

Many studies carried out in Europe, by both academics and government agencies, adopt a consensual approach. This is specifically discussed in the next Chapter, as the deprivation index built using this procedure is used in the European context as part of combined methods. Here it suffices to indicate that this approach implies selecting needs and deprivation indices based on the population's opinion. This consensual approach, which was originally employed in an influential study in the United Kingdom (Mack and Lansley, 1985), emphasizes that the idea of poverty requires public acceptance, that the necessities have to be socially perceived.

All members of a household should be assessed along the same dimensions, even though different indicators may be used for different members. For example, in education, the indicators will not be the same for school-aged persons and for older members. If a dimension is not considered for some member, it is difficult to compare poverty status among persons or households.

In the process of selecting the deprivation indices, care should be taken to evaluate their relevance. It is not sufficient that intuitively an indicator seems to adequately reflect the satisfaction of a given necessity, or that the population regards it as relevant. They must be statistically assessed to determine whether that they are associated with deprivation as evaluated by variables such as income or any other factor clearly associated with poverty. This can be done using the same data source to be employed or a different one. It is also necessary to

ensure that they are not redundant, i.e., that those finally selected actually add to overall deprivation.

The process of establishing the set of indicators, which identifies first the needs, then the dimensions and finally the indicators, implies that statistical data can be specially gathered for the purpose of measuring poverty. This would be the case, for example, with the implementation of an ad hoc household survey covering a wide range of subjects, as in some official and academic studies carried out in Europe. Applying the consensual approach would obviously require a special survey, since it should not only evaluate the actual status of households and persons with regard to the deprivation indices, but also gather their opinion on the relevance of the different deprivation indicators. A more common approach, however, is to try to identify poor households and persons using existing social surveys and censuses. In such cases, the range of dimensions and indicators that could be selected is much more restricted.

This was the case when the official estimates of poverty incidence were produced using the DI method in many Latin American countries, in a procedure usually known as the unmet basic needs (UBN) method. The method aimed at producing synthetic measures of poverty based on deprivation indices that could be defined using population census data. The main objective of the first experiences (Chile and Argentina) was to make use of an existing set of data to provide geographically disaggregated figures that could be used to rank the social situation of small areas. Therefore, needs, dimensions and indicators were almost exclusively determined by the subject coverage of the population censuses and the specific variables they included. Consequently, housing and education are the main basic needs for which standards were defined: for example, three or four of the five or six indicators were related to the former.

It was argued that notwithstanding the limited selection, the enjoyment of adequate housing and the other dimensions considered are highly correlated to income, and that this variable reveals a more favourable and stable social condition than income. It is further believed that they are associated with the satisfaction of other basic needs (i.e., they operate as tracing indicators). Unfortunately, this correlation is far from strong (see the next subsection), but it is reasonable to assume that households should be considered poor if they are living in inadequate housing—especially when low thresholds are applied—and their children are not receiving basic education. However, more restrictive limits are more adequate for evaluating the satisfaction of housing needs. Moreover, other significant needs and dimensions (some of which were already mentioned, such as nutrition or health)

may not be satisfied by the household's members even though housing and school attendance is adequate.

Table 3.1 presents the indicators employed in some of the studies for Latin American countries. Regarding housing, the dimensions usually considered are building materials (which attempt to address the issue of the quality of construction), overcrowding and availability of water and sewage disposal systems. In the case of education, the only indicator refers to school attendance.

The indicators selected in Latin American lead to one of the difficulties mentioned above. Two of them —education and the economic capacity variable— cannot be defined for some households: the former, for those without children of primary-school age; the latter, when none of their members are employed.

### **3.1.2 Thresholds for each need**

To identify poor units using the DI approach, a threshold of deprivation must be defined for each of the selected indicators for the different social necessities considered. They constitute the standards to be compared with the actual situation of the household or of each of its members. For each of these standards, therefore, the unit is classified as complying or not complying.

Establishing the standards for the different indicators can be based on an absolute or a relative view. It is not necessary to reiterate the discussion on this issue here, but it is worth stressing that some of those using a DI-like method explicitly consider that they were looking at relative poverty. This is the case of the consensual approach followed in Europe, as both the indicators and the thresholds were selected after surveying the population. In fact, the indicator and the deprivation threshold were sometimes defined simultaneously.

In the Latin American countries, in contrast, the UBN method was employed for assessing situations of absolute poverty.

There are good reasons for considering an absolute approach in the case of indicators of results, which are the most appropriate indicators for the DI method. A threshold is absolute when it is fixed independently of the indicator's actual distribution among the population. Relevant evidence suggests that absolute thresholds (in the above sense) should be established for needs such as nutrition, education and health. For example, there is international consensus on deprivation thresholds for certain indicators. However, the nature of some other needs and/or

**Table 3.1**  
**Indicators and thresholds in some Latin American studies**

	Argentina	Colombia	Peru	Venezuela
Housing	Precarious; rooms in cheap hotel; rooms in slum buildings	<i>Main cities:</i> dwellings with no flooring <i>Other cities:</i> dwelling with no flooring and inadequate wall materials	Dwellings with no flooring and inadequate wall materials	Rustic dwellings in shanty towns
Overcrowding	More than three persons per room	More than three persons per room	More than three persons per room	More than three persons per room
Services	No toilets	<i>Main cities:</i> no public water supply and no sewage disposal facilities; <i>Other cities:</i> water from nearby streams or wells, with no toilets	Simultaneously: no running water supply, no water from wells, no sewage disposal facilities and no electricity	<i>Urban:</i> no water pipes inside or outside the dwelling <i>Rural:</i> no water pipes or toilets
Education	Households with primary-school-age children not attending school	Household with primary-school-age children not attending school	Households with primary-school-age children not attending school	Households with primary-school-age children not attending school
Subsistence capacity	Head of household with 3 or less years of education in households with 4 or more people per employed person		Head of household with 3 or less years of education in households with 3 or more people per employed person	Head of household with 3 or less years of education in households with 3 or more people per employed person

dimensions could make it difficult to proceed in this way, as there are no reasonable agreed criteria; recreation and clothing are good examples. Furthermore, adequate variables that are useful for evaluating results are often absent in some fields. In such cases, indicators on access to goods and/or services are usually employed. It may not always be possible, however, to define a relationship between a threshold that takes into account the inherent relativity of this kind of indicator, on the one hand, and some absolute criteria, on the other.

When no absolute criteria can be defined because of a lack of agreed standards or of indicators of results, thresholds should reflect a clear break point in the usual practices of the society. These minima would only change through time discretely and infrequently, and they should not reflect mere changes in the distribution.

Some standards could be, and have been, defined based on legally established limits. Laws, or even the constitution, usually set up certain rights and obligations for the population (e.g., years of schooling or number of vacation days). More relevant, perhaps, some policies may establish certain goals that would be particularly useful as they reflect expert opinion.

Thresholds for the same indicator may differ for persons of different characteristics. For example, the earlier discussion of the poverty line approach mentions that energy requirements depend on sex, age and physical activity. They can also differ among regions: the altitude of the area of residence is a relevant dimension for defining nutritional thresholds.

Some approaches related to the DI method recognize that establishing just one threshold is difficult for many indicators. They view as questionable the implication of that procedure —i.e., that not meeting the standard is a characteristic of poverty. Instead, they consider that while certain conditions can be clearly associated with deprivation or non-deprivation, others cannot. The idea is that many indicators present a continuum from non-deprivation to extreme deprivation. Some analysts use the mathematical concept of fuzzy sets to deal with this situation. This approach is employed when it is difficult to decide whether a given unit or element is part of a set. When used for poverty deprivation measurement, this method proposes to use distance deprivation indicators that rank the values and categories of individual variables according to states that are increasingly closed to a situation of deprivation or non-deprivation. Procedures —to some extent arbitrary— are then suggested to normalize the distance indicators, allowing their values to vary within the [1,0] interval, where zero denotes, for example, non-deprivation and one reflects a situation

undoubtedly associated with poverty. As a result, each unit of a given indicator is not classed as meeting or not meeting the standard, but rather an assessment is made of how far or how near it is to a deprived situation. Nonetheless, the construction of these indices faces difficulties; for example, some indicators are only binary (a house either has or does not have a flush toilet), while others may consider very few categories.

The selection of the thresholds for the indicators employed in the studies carried out in Latin American countries can be assessed, in general terms, as scarcely demanding. This was explicitly recognized in the studies, but it was argued that an adequate assessment could not be made without taking into account the aggregation procedure that was used in these experiences. This is further discussed below.

### 3.1.3 Aggregation of individual standards

A crucial aspect of the DI method is how to decide whether a unit is poor when it registers different statuses (comply/not comply) for the different standards. Contrary to what is assumed in some studies, the correlation among the unit's statuses is far from perfect, so a procedure for aggregating the situations on all indicators is required. The sensitivity of the results to alternative weighting schemes appears to be particularly important when relatively few deprivation indices are considered. This is a moot point even given a large set of indices, however, although one would expect that if an index or scale is valid and reliable, it should also be self-weighting. the Poverty line approach “solves” this issue with money: the value of all goods and services needed to satisfy basic needs is added up and compared to the aggregate amount of household resources.<sup>45</sup>

In principle, three levels of aggregation may be considered: the indicators of a single dimension, the dimensions of a given need, and the different needs. Alternatively, one of these levels could be eliminated or—as occurred in many of the studies identified as using this approach—the process could focus only on the aggregation of the different indicators.

An aggregation criterion followed in some of the exercises based on a DI-like method considers as poor those units (households) that do not meet a given number of individual standards. For example, if each of the

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<sup>45</sup> Some authors include non-monetary aspects in poverty measurement by redefining household income to take account of the value of the goods and services consumed by the unit that are not obtained through the market.

selected indicators reflected a basic human need, the household would have to comply with all of them to be characterized as not poor. This so-called co-realization criterion was employed in the official Latin American estimates. It implies that registering inadequate access to just one of the goods and services is sufficient to class a unit as poor; the necessities are complementary.<sup>46</sup> In fact, between 20 and 30 per cent of all households (and between 30 and 50 per cent of all households identified as poor following this method) in seven Latin American countries fell into this situation around 1990 (UNDP, 1990, table 3.9). The Chilean study basically followed the co-realization criterion, but it required, in certain cases, that more than one standard should not be met before a household could be classified as poor.

As indicated above (and shown in table 3.1), the standards established in the Latin American experiences were scarcely demanding. This was, to some extent, justified by the argument that the aggregation criterion —i.e., co-realization— was, in contrast, rather strict, since households have to meet all standards to be considered non-poor.

The co-realization criterion is substantially similar to the criterion implicit in the poverty-line approach. The basic level of assessment differs between the two approaches, however: the poverty line considers the capacity to satisfy basic needs, while the DI method evaluates their actual satisfaction. The co-realization criterion regards as poor those households that cannot meet all indicators simultaneously, while the poverty line approach considers as poor those units with insufficient resources (incomes or expenditures) to buy all the goods and services included in the normative basket. Put differently, in the latter method, as in the DI, any units that are not capable of buying even a single product—that is, that meet all but one standard—are classed as poor.

Other approaches —such as those described in the next chapter— count as poor all households or persons showing deprivation in more than a given number of indicators. This is the case in the above-mentioned work of Mack and Lansley, who identify households as poor if they do not meet two or more standards. This number was selected ad hoc, as the authors looked at the distribution of scores and considered how it was related to the distribution of household incomes. The selected value of the score was a clear break point. It is possible, however, to define a cut-off point of this type more systematically. Some

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<sup>46</sup> If the indicators were considered as perfect substitutes, units that comply with at least with one standard would be poor.

studies have used statistical methods that define the value of the score associated with the best division of the population in two different groups of units, taking into account an external variable (such as income).

Any criterion that considers the number of standards that could not be met by the unit, especially the co-realization procedure, faces some methodological difficulties. One is that the identification of a poor unit depends on the number of indicators used. Specifically, the probability of being poor rises with the number of indicators. Another shortcoming is the difficulty of measuring the intensity of poverty, as little can be said about the differences in deprivation among units. The number of standards that were not met is sometimes used as a proxy for intensity.

Another alternative that has been suggested for aggregating the different statuses of a given unit's indicators is to average deprivation indices. It follows, to some extent, the methods used to generate synthetic indicators of well-being.

The idea would be to estimate an overall or aggregate deprivation index for each unit  $i$  ( $DI_i$ ) of the type

$$DI_i = \sum w_j d_{ij},$$

where  $w_j$  is the weight or importance given to index  $j$ , and  $d_{ij}$  is the deprivation index  $j$  for unit  $i$ . The latter would assume values of zero or one, or it could be defined as standardized distance deprivation indicators that reflect the distance of the unit from the standard (see Section B.2). When the value corresponding to the standards is set to zero (as in the following example), it is defined as follows:

$$d_{ij} = (z_j^* - z_{ij}) / z_j^*,$$

where  $z_{ij}$  is the value of the indicator corresponding to indicator  $j$  in unit  $i$ , and  $z_j^*$  is the standard. This method is mainly used in relation to the idea of poverty as a fuzzy set. A similar procedure was used in exercises that attempted to measure poverty intensity in the framework of a DI method.

To adopt this procedure, it is necessary to face two main tasks: to define the set of weights ( $w_j$ ) and to establish the aggregate poverty line or aggregate deprivation threshold.

With regard to weighting, different criteria have been proposed and employed. The simplest approach is to give each indicator the same

importance.<sup>47</sup> In another proposal used in many studies,<sup>48</sup> the weight attached to a given variable is inversely related to the average deprivation level of that index; i.e., the importance assigned to a given need (indicator) rises with the proportion of units that satisfies it. This reflects the view that a person attaches more importance to the non-satisfaction of a need when that non-satisfaction is relatively uncommon (i.e., when a large share of units complies with—or is closer to meeting—the standard). This criterion introduces a relative stance to the method, even though the standards for the indices (or at least the condition representing non-poverty in each of them) may be chosen using an absolute approach.

When a consensual approach for defining needs and standards is employed, the information on the population's opinion, which was gathered to formulate the definitions, is also used to establish the weights. The importance of each index is proportional to the number of persons that consider that item necessary.

Another widely used method is to weight each deprivation item by the loadings on a latent variable produced by factor or latent class analysis (for example, see Filmer and Pritchett, 1999, 2001). In Filmer and Pritchett's (1998) method, which has been used extensively by the World Bank, an asset or standard-of-living index is weighted by a scoring factor, which is the weight assigned to each variable in the linear combination of the variables that constitute the first principal component. Each variable is normalized by its mean and standard deviation, and the weights are thus the standardized first principal component of the observed household assets (Falkingham and Namazie, 2002).

After weighting individual deprivation indicators, which results in an aggregate deprivation index for each unit, a threshold for this aggregate indicator must be defined to identify poor units. The main difficulties arise at this point, because it is hard to identify clear criteria for dealing with this issue. Some studies have defined poor units as those making up a given proportion of all units with the lower values of the aggregate index,<sup>49</sup> while others use values below (a given proportion of) the average, or the mean, of the aggregate deprivation index.

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<sup>47</sup> This approach is employed by Klasen (2000).

<sup>48</sup> For example, Townsend used it in his well-known study of the United Kingdom. Also, analysts using a fuzzy set approach to measuring poverty generally consider this aggregation criterion.

<sup>49</sup> 40 per cent in the Klasen study for South Africa.

Analysts using a fuzzy set approach do not face this difficulty, since they are looking for an indicator that shows how far each household (or the considered unit) is from being non-poor. Consequently, instead of providing a headcount ratio, the average of the units' distance deprivation indices reveals how far the society is from being non-poor.

Certain statistical methods, such as latent class models, applied to a set of binary deprivation indicators also allow for the division of the population into two (or more) groups of units. In this case, it would not be necessary to establish either weights or a threshold for an aggregate index.

### **3.2 Unit of reference**

The DI method has usually been employed to identify poor households, although this unit is not necessarily the only one that could be characterized. The frequent consideration of the household probably reflects the view that the resources that define the members' probability of meeting basic needs are pooled at the level of that unit. However, insofar as indicators relate to individuals, it is possible to assess the extent to which different members of the household meet the thresholds and thus to analyze intra-household differences generally and, ultimately, intra-household differences in poverty.

Certain limitations apply. One derives from the fact that some indicators must reasonably refer to the whole household; those concerning housing are the typical ones. Another factor that weakens the intra-household comparison arises when it is not possible to identify indicators that are appropriate for all members simultaneously: for example, indicators related to schooling may refer only to children and young persons. This feature also introduces a problem for comparing the overall deprivation situation among households with different compositions.

### **3.3 Geographic disaggregation**

The set of indicators and the thresholds may vary among regions of residence of the household. For example, in some zones it may be necessary to include the availability of heating appliances. Composite indicators can be developed to avoid the problem of lack of uniformity in the set of indicators, while at the same time taking into account the necessary heterogeneity. In the heating example, a composite variable could be defined to capture the availability of household equipment.

Thresholds may, and should, also vary regionally. This will probably occur more frequently with indicators on the access to goods and services, since the most common products available in one region may

differ from those in other. This could also be the case in cross-country comparisons as, for example, in the European Union.

The regional dimension was not comprehensively taken into account in the definition of thresholds in the Latin American experience. Some studies only considered differences between rural and urban areas, while others established nationwide standards. This implies that certain thresholds regarded as adequate for rural zones were used for evaluating urban households, even though rural thresholds are generally less demanding than urban thresholds. Some European experiences with the combined approach consider the regional dimension in the selection of certain indicators and in their assigned weights.<sup>50</sup>

### 3.4 Updating the standards

The subject of updating standards is closely related to the discussion on the use of relative versus absolute criteria to establish them. If the latter were used, changes should be rare in the case of thresholds corresponding to indicators of results, such as caloric requirements, educational achievements or health status. However, those reflecting access to goods and services —years of schooling, for example, or housing characteristics— must be analyzed more closely and subject to more frequent updates.<sup>51</sup>

Problems deriving from this aspect are well illustrated in the Latin American experience. For the estimates carried out with the near-1990 censuses, the standards established for the first round of estimates – produced ten years before– were not revised. This may explain, in part, why more households complied with the standards in 1990 than in 1980 even though the general economic situation clearly deteriorated. However, the difficulties in making time comparisons based on the method used in Latin America were not exclusively due to the lack of updated standards. A serious drawback was the short list of indicators considered and the dimensions covered. Specifically, they mainly refer to the access to goods and services that can be largely improved by public investments.

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<sup>50</sup> Hallerod (1994).

<sup>51</sup> Indicators based on the possession of consumer durables are particularly problematic in terms of updating and have a somewhat shorter useful life. These items can quickly become common-place if price drops significantly, thus giving a false picture of improvements in living standards.

### 3.5 Sources of information

The main reason for the diffusion of the UBN method in Latin America for producing poverty figures was the possibility of using data from the population census. This feature makes it not only a low-cost method of measuring poverty, but also an attractive synthetic indicator for characterizing small areas. The latter was, perhaps, as important an objective as the estimation of overall poverty incidence itself. In some countries, this led to the production of poverty maps, since government agencies needed to be able to rank certain administrative units (e.g., municipalities, counties or districts) in order to define appropriate criteria for the allocation of specific social programs. It was quickly realized that poverty incidence estimates could be calculated at an even more detailed level—for example, at the neighbourhood level or even the block level in urban areas. Reaching such a degree of geographic disaggregation is only possible with microdata from the population censuses. Given these possibilities, the use of population censuses as a source of deprivation indices for measuring poverty is not restricted to Latin America.<sup>52</sup>

A large number of studies are also based on household survey data, mainly in the academic field but also by official agencies, particularly in Europe. Using household surveys makes it possible to consider more variables than are usually included in population censuses. A limitation of this source is that the surveys do not generally support detailed geographic disaggregation.

There is thus a trade-off between geographic disaggregation and the scope of needs and indices that can be considered. Estimates from household survey data are usually produced for relatively large geographic areas, but the surveys gather information on more subjects and in more detail than censuses. Moreover, household surveys can be especially designed to gather the necessary information for analyzing poverty. In this case, the variables to be investigated will reflect given theoretical stances and will consequently produce estimates that are more consistent with conceptual frameworks. This is the only alternative if the consensual approach is to be used as the methodology for measuring deprivation.

In fact, experience shows that regular surveys sometimes include questions on subjects that are not routinely analyzed, or increase the number of questions on a given topic, in response to the need to improve poverty assessment. Multipurpose household surveys are

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<sup>52</sup> See, for example, Gordon (1995).

particularly able to deal with this issue, as they can include specific modules aimed at that objective.

### **3.6 Special topic: child poverty<sup>53</sup>**

Under the auspices of the United Nations Children's Fund (UNICEF), staff at the Townsend Centre for International Poverty Research (University of Bristol) and the London School of Economics were commissioned to make the first scientific estimates of child poverty in the developing world. The project used the definition of absolute poverty adopted at the 1995 World Summit for Social Development (WSSD) and employed a multiple deprivation approach. Indicators of severe deprivation of basic human needs for food, water, sanitation, shelter, health care, education and information were developed and, to the extent possible, reflected international standards like those set out in the United Nation's Convention on the Rights of the Child (CRC).

The study linked the concepts of child poverty, deprivation and children's rights. It used a number of articles in the CRC to delineate how a fundamental right to freedom from deprivation and poverty might be infringed.

One important aspect of the study was the unit of analysis. Following the model of the CRC conceptualization, the study adopted a child-centred approach, arguing that the needs of children differ in degree and kind from those of adults. The study accepted that the needs of children and adults would overlap in certain areas, so it would be difficult (if not impossible) to separate children's conditions and experiences from those of adults in the same family or household. However, the need to take a children's perspective to study child poverty remained, since certain policy suggestions or interventions would have a different impact on children than on adults.

The CRC rights most relevant to poverty were clustered alongside the basic human needs set out in the WSSD definition, with indicators developed for each deprivation based on extremely severe thresholds (see table 3.2).

Some of the rights considered have a prescriptive quality, and indicators that quantify whether or not a right is infringed can be developed quite easily. An example is a child's right to education. Article 28 of the CRC establishes "the right of the child to education" and

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<sup>53</sup> Based on Gordon and others (2003).

progresses to specify “primary education compulsory and available free to all” and “the development of different forms of secondary education, make them available and accessible to every child”. In this instance, the indicator used by Gordon et al. (2003) to reflect severe education deprivation —i.e., “unable to attend primary or secondary education”— could be used to reflect an infringement of the right to education.

A different situation arises for other rights, such as health. While Article 24 of the CRC sets out the right of children “to the enjoyment of the highest attainable standard of health and to facilities for the treatment of illness and rehabilitation of health”, and encourages States Parties to take “appropriate measures” to “combat disease and malnutrition, including within the framework of primary health care, through, inter alia, the application of readily available technology and through the provision of adequate nutritious foods and clean drinking-water, taking into consideration the dangers and risks of environmental pollution”, it makes no direct reference to the provision of sanitation facilities. Given the indisputable link between poor sanitation and the spread of disease, it should be stated explicitly that improved sanitation be included in strategies to ensure the right to health.

Gordon and others (2003) recognize that more direct indicators of deprivation or rights infringement can be used in some cases, such as education or the lack of sanitation facilities. In other cases, the infringement of certain rights and the experience of deprivation can only be assessed through indirect indicators, such as the use of nutritional status and anthropometric indicators to reflect severe food deprivation (Nandy and others, 2005) and distance to and type of water source to reflect water deprivation.

Another criterion in the choice indicators was that they should be indicative of much more severe deprivation than the indicators frequently used by international organizations. Examples include “no schooling” instead of “non-completion of primary school”; “no sanitation facilities” instead of “unimproved sanitation facilities”; “no immunizations of any kind” instead of “incomplete immunization against common diseases”; and “malnutrition measured as anthropometric failure below -3 standard deviations from the reference population median” instead of “below -2 standard deviations from the reference median”. Gordon et al. (2003) tried to err on the side of caution by setting such severe thresholds for each of the seven indicators that few would question that these reflected acceptable living conditions. As the study was on child poverty, with children as the unit of analysis, the thresholds reflect circumstances that are highly likely to have serious adverse consequence on the health and well-being of children.

**Table 3.2**  
**Forms of deprivation and deprivation indicators**

Form of Deprivation	Severe Deprivation (criteria selected)	Indicators	CRC Article/ Right Infringed
Food	Malnutrition	Children whose heights and weights for their age were more than -3 standard deviations below the median of the international reference population (e.g., severe anthropometric failure)	24 (2) (c) HEALTH
Safe drinking water	Long walk to water (more than 200 meters), which is occasionally polluted	Children who only had access to surface water (e.g., rivers) for drinking or who lived in households where the nearest source of water was more than 15 minutes away (e.g., indicators of severe deprivation of water quality or quantity)	24 (2) (e) HEALTH
Sanitation facilities	No sanitation facilities in or near dwelling	Children who had no access to a toilet of any kind in the vicinity of their dwelling (e.g., no private or communal toilets or latrines)	24 (2) (c) HEALTH
Health	Health facilities more than 1 hour away; no immunization against diseases	Children who had not been immunized against any diseases or young children who had a recent illness involving diarrhoea and had not received any medical advice or treatment	24 (1)/(2)(c) HEALTH
Shelter	No facilities, non-permanent building, no privacy, no flooring, one or two rooms, 5+ per room	Children in dwellings with more than five people per room (severe overcrowding) or with no flooring material (e.g., a mud floor)	27 (3) STANDARD OF LIVING
Education	Unable to attend primary or secondary education	Children aged 7 to 18 who had never been to school and were not currently attending school (e.g., no professional education of any kind)	28 (1) (a)/(b) EDUCATION
Information	No access to radio, television, books or newspapers	Combination of (i) information access (if mother listened to radio, read newspaper or watched TV in last week); and (ii) information possession (of a TV or radio)	13/17 INFORMATION
Access to basic services		Children living 20 kilometres or more from any type of school or 50 kilometres or more from any medical facility with doctors.	

The only aspect of absolute poverty that Gordon et al. (2003) did not include in their study was severe deprivation of “access to services”. This was due to a lack of sufficient data. The study used data from recent demographic and household surveys (DHS) from 46 countries, covering over 70 per cent of the world’s children, and it provided developing world, regional and national estimates of absolute poverty among children.

Each of the seven indicators identifies situations of severe deprivation, and it might be assumed that children experiencing one or more severe deprivations do so for reasons related to poverty. However, in erring on the side of caution, Gordon et al. (2003) recognized that in some instances certain deprivations might occur for reasons other than poverty, such as discrimination (especially for girls experiencing education deprivation) or ill health (severe malnutrition as a result of disease). It was therefore proposed that a child can be said to be living in absolute poverty if he or she suffers from multiple deprivations; specifically, if he or she experiences two or more deprivations. Similarly, a household with children is defined as living in absolute poverty if the children in that household suffer from two or more severe deprivations of basic human needs.

The study showed that over half of all children in developing countries —just over one billion children— experience one or more severe deprivations, and over a third —around 650 million— live in absolute poverty. Two regions, South Asia and sub-Saharan Africa, have rates of severe deprivation above 80 per cent. Rural children experience much higher levels of severe deprivation than urban children. For example, more than 90 per cent of rural children in South Asia and sub-Saharan Africa live in conditions of severe deprivation. The study also reveals that severe shelter and sanitation deprivation are the largest problems affecting children in the developing world, with 34 per cent of children suffering from severe shelter deprivation and 31 per cent suffering from severe sanitation deprivation. These estimates have recently been updated to include data from more recent DHS, as well as UNICEF’s second round of multiple indicator cluster surveys.

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# Chapter 4

## Combining poverty line and deprivation indices

Methods combining poverty lines and deprivation indices to identify the poor have been used in a few countries and have also been employed in many academic studies. In some cases, they were proposed as a way to integrate different normative views. In Europe, Peter Townsend and his colleagues (Townsend, 1979) defined poverty as command of insufficient resources over time, and the outcome of poverty was material and social deprivation. Ringen (1988) argued the opposite position, however, stating that poverty is deprivation (direct measurement of poverty) that results from a lack of resources (indirect measurement of poverty). The definition of the poor as those who both have a low income and suffer from unacceptable levels of deprivation provides an operational resolution to this normative debate.

In Latin America the tradition has been to identify the poor as those who either have a low income or suffer from deprivation. The objective of this method is to improve the assessment of the satisfaction of needs with respect to the two methods widely used in the region, the deprivation index (specifically, the unmet basic needs, or UBN) and the poverty line. Certain needs are better evaluated through deprivation indices, while others are adequately assessed by current income.

Versions of the combined resources and deprivation method for measuring poverty were first used by academics in Australia (Travers and Richardson, 1993) and then incorporated into the Australian

Household Expenditure Survey in 1998-1999 (see Bray, 2001).<sup>54</sup> Similarly, the New Zealand Government has used an updated version of the consensual poverty method to measure standard of living in a number of official surveys (Jensen et al., 2002; Krishnan et al., 2002). Combined resources and deprivation poverty measures have been used in academic studies in many countries in both the industrialised and developing world.<sup>55</sup>

#### 4.1 Standards

Two standards should be considered when using a combined method, one related to resources and the other reflecting the actual deprivation experienced by the population. With regard to the former, the combined method uses current disposable income as a proxy for the command of resources over time, as does the poverty line approach (Chapter 2). As indicated by Townsend (1979), however, resources should include cash income (e.g., wages, self-employment profits, etc.), capital assets (e.g., imputed rent, stocks and shares, etc.), value of employment benefits (e.g., subsidised meals, travel, computers, etc.), value of public services (free health, education, housing subsidies, etc.) and private in-kind income (e.g., home production of food, etc.).<sup>56</sup>

In the case of deprivation indices, some of the alternatives reviewed in Chapter 3 are employed in the combined methods.

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<sup>54</sup> The Australian Social Security Ministry (Commonwealth Department of Family and Community Services) recently gave evidence to a parliamentary inquiry into poverty, arguing that "approaches such as deprivation as well as longitudinal analyses of household incomes, offer much greater potential" than the current low income threshold methods (CDFCS, 2003, p. 107).

<sup>55</sup> Belgium (Van den Bosch, 1998), Denmark (Mack and Lansley, 1985), Finland (Kangas and Ritakillio, 1998), Germany (Andreß and Lipsmeir, 1995), Greece (Tsakoglou and Panopoulou 1998), the Netherlands (Muffels et al., 1992, 1993) and Sweden (Halleröd 1994, 1995). In the less-developed world, the adapted versions of combined resources and deprivation poverty measures have been used in Russia (Tchernina, 1996), Tanzania (Kaijage and Tibaijuka, 1996), Vietnam (Davies and Smith, 1998) and Yemen (Hashem, 1996).

<sup>56</sup> However, conventional measures of monetary income in social surveys are invariably partial and incomplete. No national statistical office in Europe, for example, currently produces household income statistics that fully comply with the Canberra Group recommendations or the concept of income in SNA93. In particular, the official household income statistics do not include estimates on the value of free public goods and services, and they rarely include estimates of the imputed value of assets (such as owner occupation). The adequate measurement of command over resources in households with self-employed members is also often highly problematic.

In Latin America, the original proposal, pioneered by Kaztman (ECLAC/DGEC, 1988), was to consider poor all households with incomes below the absolute poverty line or with unmet basic needs (see Chapter 3). This approach was employed in some countries (though not by official institutions) that already had established both the income standard —the poverty line— and the deprivation index —the unmet basic need criteria that considers a short number of individual deprivation indicators. However, Boltvinik (1992) showed that such a procedure can result in double counting, as some necessities are assessed through both standards. It was therefore suggested that the normative expenditure on certain components should be subtracted from the value of the poverty line. For example, if housing or schooling are better evaluated through deprivation indices, normative expenditures for those items should not be included in the resources standard. Actual household expenditures on such components should also be deducted from the actual income that is compared with the poverty line.

Two European countries officially employ combined approaches: the Republic of Ireland, which uses consistent poverty method, and the United Kingdom, where the method, called “material deprivation and low income combined”, is one of the components employed for measuring child poverty.<sup>57</sup> In these cases, relative poverty lines are used as resource thresholds: 60 per cent of the mean and 70 per cent of the median of the equivalised current weekly disposable income, respectively.

The consensual approach is used to select the needs and the individual deprivation items that make up the index (see Chapter 3). More specifically, the United Kingdom and the Republic of Ireland both follow three basic steps in their approach. First, they identify what social activities and consumption items constitute socially perceived necessities; second, they identify those who are forced to do without these necessities because of a lack of economic resources; and third, they produce a reliable and valid deprivation scale. The Irish and U.K. methods differ in certain aspects of the operational application of these steps —such as the choice of items and the method of combining them—, and both were influenced by research work by academics (see Pantazis, Gordon and Levitas, 2005).

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<sup>57</sup> See [http://www.dwp.gov.uk/ofa/related/final\\_conclusions.pdf](http://www.dwp.gov.uk/ofa/related/final_conclusions.pdf).

**Box 4.1**  
**Income definition in the Republic of Ireland and the United Kingdom**

All 25 countries of the European Union (EU), including the United Kingdom and the Republic of Ireland, use the following poverty definition: “the poor shall be taken to mean persons, families and groups of persons whose resources (material, cultural and social) are so limited as to exclude them from the minimum acceptable way of life in the Member State in which they live” (EEC, 1985). For European Union purposes the concept of “resources” is defined as: “goods, cash income, plus services from public and private resources” (EEC, 1981).

In this context, the concept of income used to measure consistent poverty in the Republic of Ireland is the equivalised current weekly disposable household income, that is, income from the market plus social welfare payments less income tax and employees’ social security contributions. The time-period used for most sources of income (earnings, social security transfers, pensions) is the current pay period (usually the last week, fortnight or month). For income from self-employment, farming, rent and investment income, details are recorded on the basis of the most recently available annual figures.

To construct household income, all these are converted to a weekly average. Equivalising is based on the following scale, which is derived from the scales implicit in Irish social security rates: First adult, 1; spouse, 0.66; other second adult, 0.66; subsequent adults, 0.66; children under 14, 0.33; and children over 14, 0.33.

In the United Kingdom, the concept of income used is the usual weekly equivalised disposable household income. An individual’s total income refers to income at the time of the interview; it is obtained by summing the components of earnings, benefits, pensions, dividends, interest and other regular payments. If the last pay packet or cheque was unusual, for example including holiday pay in advance or a tax refund, the respondent is asked for his or her usual pay. No account is taken of whether a job is temporary or permanent. Payments made less than weekly are adjusted to obtain a weekly figure. Usual gross weekly household income is the sum of usual gross weekly income for all adults and children (who earn income) in the household. Usual net weekly income is calculated by deducting direct taxes from the usual gross weekly income.

The main components are the following:

- usual net earnings from employment;
- profit or loss from self-employment (losses are treated as negative income);
- all social security benefits (including housing benefit, Social Fund, maternity, funeral and community care grants, but excluding Social Fund loans) and tax credits;
- income from occupational and private pensions;
- investment income;
- maintenance payments, if a person receives them directly;

- income from educational grants and scholarships (including, for students, top-up loans and parental contributions);
- the cash value of certain forms of in-kind income (free school meals, free welfare milk, free school milk and free TV licence for those 75 and over).

Income is net of the following items:

- income tax payments;
  - national insurance contributions;
  - domestic rates / council tax;
  - contributions to occupational pension schemes (including all additional voluntary contributions to occupational pension schemes, and any contributions to personal pensions);
  - all maintenance and child support payments, which are deducted from the income of the person making the payment; and
  - parental contributions to students living away from home.
- For equivalization, the Eurostat Modified OECD scale is employed for families with children: First adult, 1; spouse, 0.5; other second adult, 0.5; subsequent adults, 0.5; children under 14, 0.3; and children over 14, 0.5. Data are also produced using McClements equalizationscales for other groups.

**Source:** C. Pantazis, D. Gordon and R. Levitas (eds.), *Poverty and Social Exclusion in Britain: The Millennium Survey*, Bristol, The Policy Press, 2005.

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The first step was taken by building up a list of ordinary household goods and common activities. In Ireland, respondents are asked the following question: "Here is a list of things which a person might have or be able to do. (a) First, could you tell me which ones you believe are necessities, that is, things that every household (or person) should be able to have and that nobody should have to do without?"<sup>58</sup>

Similarly, in the United Kingdom, respondents of the PSE survey were asked the following series of questions:<sup>59</sup>

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<sup>58</sup> For questionnaire details, see <http://www.ucd.ie/issda/dataset-info/lii-details.htm>.

<sup>59</sup> For necessities questionnaire details, see

*“Q.1 On these cards are a number of different items which relate to our standard of living. Please would you indicate by placing the cards in the appropriate box, the living standards YOU feel ALL ADULTS should have in Britain today. BOX A is for items which you think are necessary, which all adults should be able to afford and which they should not have to do without. BOX B is for items which may be desirable but are not necessary.*

*Q.2 Now can you do the same for the following activities?*

*Q.3 Now can you do the same thinking of children?”*

*Q.4 Now can you do the same for the following children’s activities?”*

The second step was to ask people what items they already had or wanted but could not afford. For example, as illustrated in the case of the United Kingdom, respondents to the Family Resource Survey are asked (DWP, 2003): “Do you and your family have...” or “Are you and your family able to afford...”. Possible responses are:

*[1] “We have this”*

*[2] “We would like to have this, but cannot afford it at the moment”*

*[3] “We do not want/need this at the moment”*

The first step in constructing an initial deprivation index was to include only those items that at least 50 per cent of the population considered to be “necessities of life that everybody should be able to afford” (thus giving the index a political validity). An additional criterion was to include only those items that people lack because of a shortage of money, and not because of personal choice (resulting in a preference-free index). This answers Piachaud’s (1981) criticism of Townsend’s *Poverty in the UK* index, namely, that the poor may chose to live in squalor rather than be forced to do so by a lack of resources.

The deprivation index was then refined to ensure that all the components were valid, reliable and additive, using different scientific methods in Ireland and the United Kingdom. In Ireland, factor analyses on 24 deprivation items from the 1987 *Survey of Poverty, Income*

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<http://www.bris.ac.uk/poverty/pse/question.htm>.

*Distribution and Usage of State Services* indicated that three dimensions of deprivation were present: (1) a basic lifestyle dimension, (2) a housing and durables dimension, and (3) an “other” dimension, which included deprivation items associated with social participation and leisure activity. Only deprivation items with high correlations or loadings on the basic deprivation factor are used in the Irish Consistent poverty measure.<sup>60</sup> The basic deprivation cluster consists of eight indicators: not being able to afford heating; a substantial meal once a day; new rather than second-hand clothes; a meal with meat, chicken or fish every second day; a warm overcoat; two pairs of strong shoes; a roast or equivalent once a week; and falling into arrears or debt on paying everyday household expenses (Callan, Nolan and Whelan, 1993; Layte and others, 2000).

A household is considered deprived if it suffers from one or more of these basic deprivations.

The 22 deprivation indicators used in the United Kingdom’s low income and material deprivation poverty measure for children are the most reliable and valid sub-set of 30 child and 54 adult deprivation measures. They come from the 1999 Poverty and Social Exclusion (PSE) Survey of Britain, the Families and Children Study (FACS) and the Household Panel Study (HPS) (see Gordon et al., 2000; McKay and Collard, 2003; Pantazis, Gordon and Levitas, 2005). After the items were selected according to the criteria of political validity and freedom of preference mentioned earlier, four additional steps were implemented to obtain the deprivation indicator.

#### **(a) Creating a scientifically valid deprivation index**

To construct a valid deprivation index, it is necessary to demonstrate that each of its components is a valid measure of deprivation. While this can be a complex process, the fact that the majority of the population consider all of these items to be necessities of life provides a priori evidence for “face validity”. The “criterion validity” of the deprivation index can be demonstrated by ensuring that every individual component of the index exhibits statistically significant relative risk ratios, with independent indicators known to correlate highly with poverty, such as

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<sup>60</sup> Factor analyses on U.K. data has failed to identify any basic deprivation dimension similar to that present in the Irish poverty surveys (Calandrino, 2003; McKay and Collard, 2003).

- Ill Health<sup>61</sup> (health in last 12 months was “not good”; limiting long-term illness); and
- Subjective poverty measures (income “a lot below” the poverty line; income “a lot below” the absolute and overall poverty line).

### **(b) Creating a reliable index of deprivation**

After establishing that the individual deprivation index components are all preference-free and politically and scientifically valid, it is necessary to verify that they also form a reliable scale. This can be accomplished through a classical test theory model by calculating Cronbach’s alpha (SPSS reliability) for each deprivation item and removing all items in the index that would increase alpha if the item was deleted.

### **(c) Checking that the revised index is additive**

The components of any deprivation index should be additive. That is, a person or household with a deprivation score of three should be poorer than a person or household with a deprivation score of two. Some components of the index may not be additive; for example, it is necessary to check whether a respondent who “cannot afford” a hobby and a phone is poorer than a person who “cannot afford” a phone but has a hobby. There is no easy way to do this, since the number of possible combinations with an 84 component index is huge (84 factorial). It is possible, however, to check that any two components are additive by looking at the second-order interaction effects in an analysis of variance (ANOVA) model with equivalised income as the dependent variable and all the components of the index as the independent variables.

### **(d) Reducing the size of the index**

The stages outlined above resulted in an adult deprivation index that included 26 items and an age-specific child deprivation index that included 27 items. The total number of deprivation questions had to be reduced to no more than 20 for practical reasons, and both classical test theory models to identify the 20 most reliable questions and latent class analyses (LCA) produced a very similar set of deprivation indicators

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<sup>61</sup> The measure controls for age and gender when calculating the relative risk of ill health for each possible deprivation indicator.

(McKay and Collard, 2003). The indices that were finally selected are listed in table 4.1:<sup>62</sup>

**Table 4.1**  
**Selected deprivation indices**

Adult deprivation	Child deprivation
<ul style="list-style-type: none"> <li>▪ Keep your home adequately warm</li> <li>▪ Two pairs of all-weather shoes for each adult</li> <li>▪ Enough money to keep your home in a decent state of repair</li> <li>▪ A holiday away from home for one week a year, not staying with relatives</li> <li>▪ Replace any worn out furniture</li> <li>▪ A small amount of money to spend each week on yourself, not on your family</li> <li>▪ Regular savings (of £10 a month) for rainy days or retirement</li> <li>▪ Insurance of contents of dwelling</li> <li>▪ Have friends or family for a drink or meal at least once a month</li> <li>▪ A hobby or leisure activity</li> <li>▪ Replace or repair broken electrical goods such as refrigerator or washing machine</li> </ul>	<ul style="list-style-type: none"> <li>▪ A holiday away from home at least one week a year with his or her family</li> <li>▪ Swimming at least once a month</li> <li>▪ A hobby or leisure activity</li> <li>▪ Friends round for tea or a snack once a fortnight</li> <li>▪ Enough bedrooms for every child over 10 of different sex to have his or her own bedroom</li> <li>▪ Leisure equipment (for example, sports equipment or a bicycle)</li> <li>▪ Celebrations on special occasions such as birthdays, Christmas or other religious festivals</li> <li>▪ Play group/nursery/toddler group at least once a week for children of pre-school age</li> <li>▪ Going on a school trip at least once a term for school-aged children</li> </ul>

A score is then calculated. One proposal (see Box 4.2) is to regard as deprived those households with a more than a given number of indicators that are not met due to lack of resources.

<sup>62</sup> The list currently contains 22 indicators. The additional indicators correspond to a measure of debt and to the type of environment in which children live, respectively. These are based on the following two questions (from the Family Resources Survey): "Sometimes people are not able to pay every bill when it falls due. May I ask, are you up-to-date with the bills on this card, or are you behind with any of them?" and "Does your child have / do your children have an outdoor space or facilities nearby where they can play safely?"

**Box 4.2****A proposal for identifying the combined poverty line**

According to the proposal by Gordon et al. (2000), the objective combined poverty line can be defined as the division between the poor group and the non-poor group that maximises the between-group sum of squares and minimises the within-group sum of squares. This can be identified using the general linear model (in one of its forms, such as ANOVA, discriminant analysis or logistic regression), controlling for income, deprivation and household size and composition.

Income outliers must be identified and removed prior to the GLM analysis using standard robust exploratory data analysis techniques (e.g., boxplots). This resulted in all households with net incomes above £895 per week (which is equivalent to an annual after-tax income of over £46,500 and a gross annual income of approximately £77,500) not being included in the final poverty threshold model.

General linear models (both ANOVA and logistic regression) were used to determine the scientific poverty threshold, i.e., the deprivation score that maximises the between-group differences and minimises the within-group differences (sum of squares). These techniques were applied to a succession of groups created by increasing the number of items that respondents did not have because they could not afford them. Thus, the first analysis was undertaken on groups defined by households lacking no items compared with households lacking one or more items (a deprivation score of one or more). Similarly, the second analysis was undertaken on a group comprising households lacking one or no items against households lacking two or more items, and so forth.

The dependent variable in the ANOVA model was net household income. The independent variables were deprivation group (constructed as described above), number of adults in each household and the number of children in each household. With the logistic regression models, the dependent variable was the deprivation group, and the independent variables were net household income, number of adults and number of children. The ANOVA and logistic regression models yielded the same final result—that a score of two or more on the deprivation index was the optimum position for the poverty line. Summary results are shown in the table below.

Summary table for ANOVA and Logistic regression models Of optimum position for the poverty threshold		
Model	Corrected ANOVA Model (F statistic)	Logistic regression model (chi-squared)
Null Model	26	
Deprivation score of 1 or	45	145
Deprivation score of 2 or	51	223
Deprivation score of 3 or	45	205
Deprivation score of 4 or	42	192
Deprivation score of 5 or	36	170
Deprivation score of 6 or	31	126

The summary table shows that the optimum position for the poverty threshold is a deprivation score of two or more.

**Source:** D. Gordon and others, *Poverty and Social Exclusion in Britain*, York, Joseph Rowntree Foundation, 2000.

## 4.2 Unit of analysis

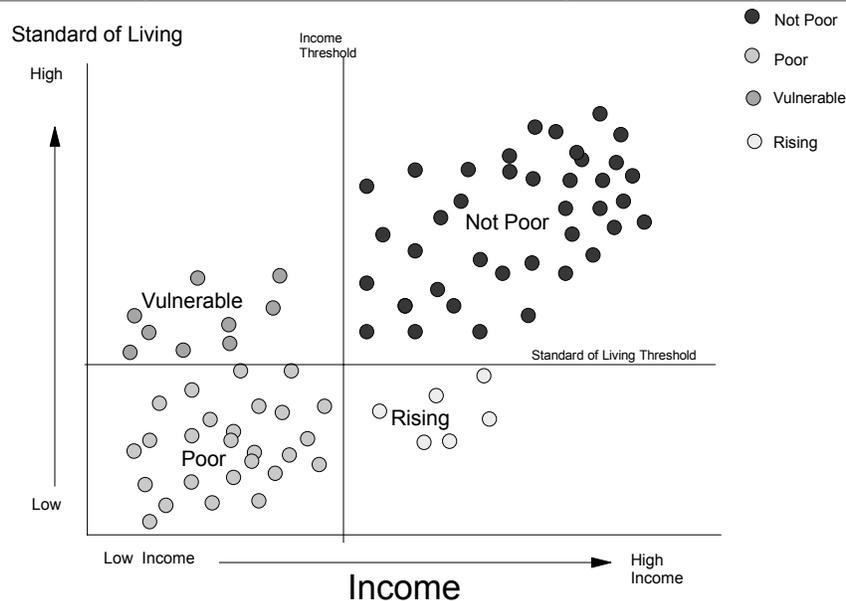
The household is the unit of analysis in the combined methods, following the arguments discussed in Chapters 2 and 3 (i.e., it is assumed that there is equal sharing of resources amongst all household members). Academic research on the Poverty and Social Exclusion Survey of Britain has shown that this assumption is simplistic and that many poor parents are more deprived than their children, as they often make sacrifices to try to protect their children from poverty (Gordon and others, 2000; Adelman, Middleton and Ashworth, 2003)

In both Ireland and the United Kingdom, a private household is defined in terms of shared residence and common living arrangements—namely, either one person living alone or a group of persons not necessarily related who are living at the same address and sharing housekeeping (e.g., sharing a meal on most days or sharing a living room).

## 4.3 Typology of combined poverty results

When resource and deprivation criteria are simultaneously employed, both thresholds define four groups of households, as indicated in graph 4.1.

**Graph 4.1**  
**Groups in combined resources and deprivation surveys**



1. The Poor: households with a low income and with deprivation. This group of households are poor as they do not have command of adequate resources, which has resulted in them becoming deprived.
2. The Non-Poor: households with a high income and no deprivation. This group of households is clearly not poor: they have adequate resources and an acceptable standard of living.
3. Households with a low income but no deprivation. This group is not currently poor, but if their income remains low they will become poor: they are currently sinking into poverty. This situation often arises when income falls rapidly (e.g., due to job loss), but people manage to maintain their lifestyle, at least for a few months, by drawing on their savings and using the assets accumulated when income was higher. This group is sometimes referred to as vulnerable (Kaztman, 1999) or recently poor (ECLAC/DGEC, 1988; Kaztman, 1996).

4. Households with a high income but with deprivation. This group is currently not poor, and if their income remains high their standard of living will rise: they have risen out of poverty. This group is in the opposite situation to the previous group. This can occur when the income of someone who is poor suddenly increases (e.g., due to getting a job), but it takes time before they are able to buy the things that they need to increase their standard of living. Income can both rise and fall faster than standard of living. Kaztman has referred to this group as being in inertial poverty (ECLAC/DGEC, 1988).

A cross-sectional resources and deprivation poverty survey can provide some limited but useful information on the dynamics of poverty, since it allows the identification of the poor and the non-poor, as well as those sinking into poverty (i.e., people or households with a low income but a high standard of living) and those escaping from poverty (i.e., people or households with a high income but a low standard of living).<sup>63</sup>

#### 4.4 Sources of information

The use of the two criteria requires sources of information surveying both resources (basically, income) and data for assessing deprivation. In the Latin American tradition, the combination of absolute poverty lines and the unmet basic needs method was only possible using household surveys. As discussed in Chapter 2, these surveys usually measure current income and, also, variables on housing and education that make it possible to define the same indicators of the UBN method that were originally designed to be used with data from population censuses.

A consensual approach to assessing deprivation requires special surveys. The income and deprivation question modules needed to produce a combined poverty line have been included in many different surveys in Europe. In the case of the United Kingdom, the Family Resources Survey (FRS), is the primary survey used by the U.K. Government to produce poverty statistics. Information is collected at both the household level (e.g., accommodation type, tenure, housing costs) and the individual level (e.g., occupation, income from different sources, pension provision). Other surveys carried out for academic purposes are also available (Townsend, 1979; Mack and Lansley, 1985;

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<sup>63</sup> It should be noted that these categories are fairly general and cannot accurately describe the situation of every household in each group. For example, it is not always the case that those with low incomes and a high standard of living are "sinking into poverty", as they may have been classified in this category due to misreporting of incomes or due to temporary fluctuations in income.

Gordon and Pantazis, 1997; Gordon and others, 2000; Hillyard and others, 2003)

The *Living in Ireland* survey, which started in 1994, is the primary survey used by the Irish Government to monitor progress towards eliminating consistent poverty. The annual *Living in Ireland* surveys form the Irish component of the European Community Household Panel (ECHP), which is an E.U.-wide project, co-ordinated by Eurostat, to conduct harmonised longitudinal surveys addressing the social situation, financial circumstances and living standards of European individuals and households. Information is collected at both the household level (e.g., accommodation type, tenure, housing costs, deprivation information) and the individual level (e.g., occupation, income from different sources during the past calendar year, health). Household-level questions are directed toward one respondent (the reference person or the person responsible for the accommodation). Individual questions are directed to all adults over 16 years of age.<sup>64</sup>

Examples of surveys carried out in other countries include the deprivation questions produced by Halleröd (1994, 1995), which were incorporated in the Swedish Level of Living surveys (ULF) and subsequently in the EUROMODULE surveys in 19 European countries (Delhey et al., 2002). They include a shortened list of deprivation questions adapted from the 1983 Poor Britain survey. A subset of this shortened question list was also included in the European Community Household Panel survey used in every European Union member state, although only the Republic of Ireland uses these data to produce its official national poverty statistics.

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<sup>64</sup> Detailed information on consistent poverty is currently available from the 1994, 1997 and 2000 waves of the *Living in Ireland* surveys, as well as from the 1987 *Survey of Poverty, Income Distribution and Usage of State Services* (Callan and others, 1989, 1996, 1999; Nolan and others, 2002).

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# Chapter 5

## Operational challenges

In the previous chapters, the presentation of the countries' practices in poverty measurement was structured around five groups, three of which correspond to poverty lines practices, one to deprivation indicators and one to the combined approach. The topics discussed in those chapters related to the different approaches, the many technical decisions to be adopted and the information requirements.

Other topics —such as the factors explaining the adoption of the different methods, their implications for international comparisons or the convenience and costs of developing common statistical instruments— have been intentionally left aside in order to separate the technical analysis of the approaches from their appropriateness in particular circumstances. This Chapter addresses some of these issues.

A public agency's decision to choose a particular approach to poverty measurement reflects not only a demand posed by the government, but also certain characteristics of the country, such as the level of development, its human and physical geography and the political situation. Features such as the stage of development of the statistical system and the influence of regional and international organizations also play an important role. Consequently, the choice of a particular approach combines political needs and awareness of the country's technical and operational resources.

The first part of the chapter, therefore, explores the relation between measurement methods and public policies, discussing how different types of policies require various kinds of information. In particular, it

asserts that the demand for poverty data depends on the political attitude towards poverty.

The second section explores the topic of international comparisons. Available practices have often been designed and promoted by international or regional organizations. In accordance with their mandates, these organizations have selected useful indicators for studying and evaluating goals and objectives, and then initiated efforts to produce comparable figures. Their achievements, limitations and challenges, as well as some problems and costs of improving international comparisons, are briefly introduced.

Finally, strategies for improving poverty statistics are discussed, in terms of the different demands they usually have to meet: assessing incidence and aiding policy design and evaluation. The increasing awareness of poverty as a policy objective in national and international scenarios has substantively expanded the requirements of information and, consequently, of statistical instruments. This poses a dilemma between the number and quality of statistical instruments to be used, their costs and the possibilities countries—especially developing countries—have. The scope and quality of available sources in each country greatly influences the possibilities for international comparisons.

## **5.1 Measurement and policy**

### **5.1.1 Poverty data for different needs**

Data on poverty should provide evidence for designing and evaluating policies. A first requirement relates to assessing the overall size of the problem. It is not neutral to know if the problem relates to 10, 50, or 70 per cent of the population.

Once this primary data set is available, more detailed indicators are usually required for designing and evaluating anti-poverty measures. Poverty profiles become important, given the need to assess differences in incidence between, say, regions, social strata or age groups. At this stage it is also necessary to inquire about the causes or factors associated with poverty. The relationship between poverty and human and physical capital (as well as social capital) usually needs to be evaluated. The participation of economically active persons in different productive strata (own account workers, owner of small land-holdings, employee of a big firm) is another piece of important information required when evaluating the sources of poverty. Much of these types of data are also relevant for policy implementation and evaluation, but this objective also demands the measurement of other variables such as the

distribution of beneficiaries of certain policies (e.g., employment or social programmes).

It is not uncommon to find that the development of poverty strategies in many countries has tended to tackle these requirements chronologically. In cases where poverty is an emerging policy topic, the measurement of its incidence usually matters most in the first place. The selection of a method for this purpose tends to be influenced by some basic characteristics of the country and its level of development, as well as by other external elements such as the influence of international organizations. Only when poverty has been acknowledged as a relevant area for public intervention do the requirements for more detailed information appear. This may lead to an initial conflict between the measurement method and the type of policies for poverty alleviation, which is gradually resolved by adapting the first to be compatible with the latter.

From a general perspective on the selection of a poverty measurement approach, monetary poverty lines may be relatively less important in countries with a low per capita income, where the population is largely rural and where the market economy is less developed. In these cases, the deprivation approach is more suitable for describing the magnitude of poverty. In countries with a large proportion of urban population and a large market economy, absolute poverty lines may be more appropriate for studying the incidence and evolution of poverty.

Combining the two approaches is desirable, although this may impose a high financial burden and may face institutional and technical restrictions. A good example of this alternative is Europe, where relative income is combined with indicators associated with deprivations (see Chapter 4). It should also be mentioned that in developed countries, the conceptualization of poverty is closer to the notion of relative deprivation.

The need for complementary measurements of deprivations and poverty lines may also arise in developing countries with a high social heterogeneity owing to socioeconomic, geographical or demographic factors. In this case, using a single method may adequately capture the situation for some strata, but not for others.

Unfortunately, an important number of countries have not been able to establish any solid measurement because of a lack of information or technical experience, in addition to the financial limitations faced by national statistical systems. In any case, the general criteria described above should guide the selection of a method.

Some criteria were considered during the Rio Group's meetings for classifying and describing the demands of information derived from anti-poverty policies adopted in different countries (see Sainz, 2002). A simpler classification is introduced in this chapter to match the approaches discussed in the previous chapters with their use in policies design, implementation and evaluation.

## **5.1.2 Policies related to the poverty line approach**

### **5.1.2.1 Monetary resources**

The poverty line approach is, in general terms, closely related to the labour market since the largest component of the household monetary resources of low-income groups corresponds to earnings. Therefore, this method will be most appropriate in countries where monetary incomes received from employment are dominant in relation to other monetary and non-monetary sources.

It is usually the case that the link between resources and the labour market is particularly close in poor countries where the market economy is important. Key components of monetary income include earnings, transfers and property incomes. However, the latter are irrelevant for poor households in most developing countries, and transfers from government are also scarcely relevant, especially in nations with a low per capita income. This is not necessarily the case for medium-income countries, where social security pensions could be important. It is to be expected, therefore, that the monetary income or expenditures of the poor households in most poor countries will largely be determined by the number of members employed and their earnings.

Theoretically, economic growth is the main source for rising employment and incomes. To the extent that increases in these two variables benefit poor households, poverty should be alleviated by economic growth. That is why most analysts concentrate on economic growth when discussing poverty evolution. It is common to estimate the elasticity of poverty to GDP, although there are difficulties—which are not always properly addressed—in estimating this relationship, such as the correspondence of the measurement period or geographic coverage between GDP and poverty incidence.

Considering a simple relationship between aggregate output and poverty fails to recognize the very different effects that the former has on the employment and earnings of the various social strata. The analysis of recent growth experiences shows, for example, that economic growth affects poverty with different time lags. Moreover, the characteristics of the growth process are of paramount importance.

Evidence from some countries indicates that the relationship between economic growth and employment growth may be declining. Productivity may also be expanding at different rates for different types of employment, growing less in jobs typical of poor workers. The relation between productivity and earnings could also be changing. These modifications in the relationship between growth and income affect income distribution and thus changes the relationship between economic growth and poverty. Concepts such as “pro-poor growth” have been introduced as a result of the need for a more thorough analysis of that connection.

Various features of the economic process, such as the degree of openness of the economies, or the role of transnational corporations, have been mentioned as conditioning the intensity and characteristics of economic growth and, therefore, of the evolution of poverty. In order to analyze their effects it may be necessary to have disaggregated data by, for example, social strata and geographical area. The statistical system should also provide detailed information on the labour market, the productive structure and even external transactions, in order to characterize the actions of different agents, such as government and firms (public, private enterprises and transnational).

When monetary income is dominant, the relation between poverty and the labour market will continue to be at the centre of the analysis and of policies. It will be necessary, however, to carry out more complex analysis that takes into account not only overall growth, but also the distribution of income.

Changes in relative prices are another important variable affecting poverty. It is well known that the consumption baskets of different social strata may diverge significantly in content. Moreover, the economic transformations undergone by some countries, such as greater commercial openness, not only affect the labour market, but also introduce significant changes in relative prices. Policies that can influence relative prices will most probably change the value of the poverty line and therefore the incidence of poverty.

Special mention should be given to the effects of policies aimed at providing employment opportunities, especially to disadvantaged groups such as the young or indigenous people. Supporting old people with low or no pensions is another policy associated with the monetary income of groups with high poverty risk, especially in developing countries.

#### **5.1.2.2 Non-monetary resources**

The definition of the income or expenditures relevant for assessing a household's welfare status does not exclusively include monetary

components, especially in certain countries. As mentioned, two types of transactions must be added to obtain a more comprehensive estimate of the household's resources. The first covers non-market private sector transactions, of which services provided to the owner by the dwelling, self-produced goods and services consumed in the household and the value of non-paid family work are the most important components. The second corresponds to the goods and services provided free by the public sector.

To measure the value of resources received by households through free (or subsidized) services provided by the state, it is necessary to distribute the aggregate social public expenditure among households. The inclusion of the value of free (and subsidized) goods and services provided by the state as part of households disposable income is recommended by SNA93 and the Canberra Group. The difficulties involved in making these estimations are recognized, however, and countries can opt for not calculating these items. The magnitude, distribution and quality of those goods and services obviously play an important role in household welfare. It is, furthermore, one of the most controversial topics in policy debate.

The distribution of social public expenditure among households constitutes an important challenge for statistical institutions. Some countries have carried out special surveys to deal with this matter. The information is also used to provide evidence on the closely related issue of the redistributive effects —among social strata and regions, for example— of total public expenditure.

Free public expenditure may be an important component of overall resources available to households, particularly in developed countries. It may have thus a significant influence on the estimates of poverty and income distribution.

### **5.1.3 Policies related to the deprivation approach**

Policies aimed at reducing or eliminating one or more deprivations are based on the assessment of given levels of welfare in areas such as shelter, education or other socially accepted necessities. Therefore, in contrast with policies that try to raise aggregated households' resources (whose results are assessed through the poverty line approach), the specificity of each item of public expenditure and the use of standards to evaluate the condition dominate the debate in this case.

These policies are at the core of the activities of different specialized agencies and institutions of the government. This is the case, for example, of housing policies, including access to safe water and

sanitation, and policies related to health, education and nutrition. All these policies require defining specific minima standards and identifying the existing gaps. As discussed in Chapter 3, these are precisely the elements needed to measure poverty by deprivations. The distribution of public social expenditure and the planning of the specialized agencies' actions are significant components of public policies, and they specifically pursue reducing deprivation in each of the relevant areas.

## 5.2 International comparisons

International comparability represents an important objective of the international community, but it is a very complex issue with many requisites that are normally difficult to fulfil. In fact, even figures that are considered largely comparable across countries, such as the National Accounts aggregates, do not always satisfy those requisites. It is not a surprise, therefore, that current practices in poverty estimates followed by different countries are only comparable in a rather unsatisfactory way.

The need for comparable poverty statistics has attracted increasing attention in the last decade. The topic received a large boost with the Copenhagen Summit's (1995) approval of a definition of absolute and overall poverty. The Millennium Declaration of 2000 then placed the issue of comparability at the centre of the debate among academics and international organizations, as it established quantitative goals for poverty alleviation and adopted specific indicators to monitor the Millennium Development Goals.

From a conceptual perspective, one of the most complex issues for comparability is clarifying what is to be compared. There is a fairly general agreement that poverty standards should reflect the same standard of living. Nevertheless, it is not clear how the standard of living is translated into operational terms.

In the economic literature, it is usually assumed that the standard of living can be represented through a utility function, which is monotonically increasing with the goods and services consumed by individuals. Since utility is not observable, different approaches have been adopted to make poverty measurements utility-consistent.

On the other hand, Sen (1984) has argued that the standard of living is not adequately assessed in terms of utility, but rather in terms of capabilities: "Capability refers to a person's or group's freedom to promote or achieve valuable functionings (beings and doings)" (Alkire, 2002). Sen argues that the notion of utility is not representative of the standard of living, as it is a mental reaction to the fulfilment of capabilities: "A grumbling rich man may well be less happy than a

contented peasant, but he does have a higher standard of living than that peasant; the comparing of standard of living is not a comparison of utilities” (Sen, *ibid.*).

The best-known example of an indicator for comparing welfare among countries based on the capability approach is the human development index, published by UNDP in its *Human Development Report*. Other international organizations produce indices for their areas of specialization that, in principle, are comparable among countries. Examples of this type of indicator include the index produced by the International Fund for Agricultural Development (IFAD): the food security index (FSI), the integrated poverty index (IPI), the basic needs index (BNI) and the relative welfare index (RWI). Nonetheless, these are usually averages at the country level, and they do not result in a measure of poverty, as no threshold of deprivation is established. They are therefore not suitable for identifying poor persons or households within a country, in contrast with the methods described in this document.

The variety of approaches for defining poverty around the world is another important issue. The framework provided by the Copenhagen Social Summit provides a firm departure point:

*Absolute poverty “is a condition characterized by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. It depends not only on income but also on access to social services.”*

*Overall poverty “has various manifestations, including lack of income and productive resources sufficient to ensure sustainable livelihoods; hunger and malnutrition; ill health; limited or lack of access to education and other basic services; increased morbidity and mortality from illness; homelessness and inadequate housing; unsafe environments; and social discrimination and exclusion. It is also characterized by a lack of participation in decision-making and in civil, social and cultural life. It occurs in all countries: as mass poverty in many developing countries, pockets of poverty amid wealth in developed countries, loss of livelihoods as a result of economic recession, sudden poverty as a result of disaster or conflict, the poverty of low-wage workers, and the utter destitution of people who fall outside family support systems, social institutions and safety nets.*

*“Women bear a disproportionate burden of poverty, and children growing up in poverty are often permanently disadvantaged. Older people, people with disabilities, indigenous people, refugees and internally displaced persons are also particularly vulnerable to poverty.*

*Furthermore, poverty in its various forms represents a barrier to communication and access to services, as well as a major health risk, and people living in poverty are particularly vulnerable to the consequences of disasters and conflicts.”* (United Nations, Programme of Action of the World Summit for Social Development, Copenhagen, 1995, A/CONF.166/9)

Many methodological issues must be considered to achieve comparable estimations of poverty. The first and most obvious is that comparisons are only possible within the same definition of poverty. The incidence of absolute poverty measured by income in one country cannot be contrasted with the incidence of unmet basic needs in another country, as the two methodologies conceive poverty from different perspectives.

Even within the same approach, the selection of different welfare indicators (for example, income or expenditure) results in figures that are not analogous.<sup>65</sup> Definitions of income also differ, including current, disposable, in-cash, in-kind, etc. In the case of expenditures, decisions about which items to include and how to impute values for missing spending categories affect the comparability of results.

For example, estimating the absolute poverty line requires taking decisions on various aspects that can lead to different operational procedures that will affect the comparability of results. When deciding on energy requirements, which are exogenously determined, it is possible to choose an average per capita threshold or individualized thresholds. The conversion of food items into calories requires nationally produced tables that vary significantly across countries in their level of detail. A given quantity of any food type—say, 200 grams of gruyère cheese—may result in different levels of caloric consumption depending on whether the available table has a specific factor for gruyère cheese, yellow cheese or cheese. Selecting the reference group also involves a range of criteria that affect its size and position in the income distribution, and therefore the implicit cost per calorie. Furthermore, practices concerning the selection of food items and quantities differ greatly in terms of how to weight the criteria to resemble

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<sup>65</sup> This Report has explicitly avoided making recommendations in favour of income or expenditure as the best welfare indicator, because neither can be considered preferable in every circumstance (as discussed in Chapter 1). In operational terms, some institutions have preferred consumption, while others have opted for income. More research is needed to evaluate their reliability and to assess the financial feasibility of their measurement in poor countries. For instance, information on expenditures may be particularly sensitive to certain features of survey design (such as recall period, survey instrument, etc.), and it is generally more costly to collect than income.

observed consumption habits and how to introduce normative criteria. Even for a given basket of food items, the largely heterogeneous quality and detail of data sources on prices will translate into diverging costs per calorie. All of these factors relate only to the food poverty line. The comparability of poverty lines may be affected even further by the different options available for costing the non-food basket (see Chapter 2).

International comparability is also limited by differences in data sources. Household surveys across the world are very heterogeneous in terms of their content and quality, making it difficult to compare their results. This feature represents a major shortcoming for international agencies trying to produce comparable poverty measurements, as these agencies generally do not produce ad hoc basic information, but rather employ the national surveys. Achieving greater comparability of data sources thus requires a great effort in coordinating the statistical activities of different countries.

The degree of country specificity of a poverty measurement that aims at being internationally comparable may become a complex issue, as illustrated by the example of the selection of an equivalence scale. It has become increasingly accepted that the size and composition of the household should be taken into account in the measurement of poverty, through the use of either equivalence scales or household-specific budget standards. When employing an equivalence scale, even if it is based on a given conceptual framework and uses a particular estimation procedure, it is necessary to include specific parameters of household economies of scale for each country. In contrast, current Eurostat practice is to employ the same economies-of-scale parameter for every country; this implies that the parameter is not equally representative of the household economies of scale in each country.

The preceding paragraphs touch on only a few of the issues that limit the comparability of national poverty estimates. Nevertheless, at least four well-established attempts have been made to produce comparable measurements of poverty across countries.

The first is the World Bank's dollar-a-day poverty line, which has received increasing attention recently since it has been proposed as the indicator for the follow-up of the first Millennium Development Goal. This approach uses a fixed poverty line in real terms, expressed in purchasing power parity (PPP) dollars, which approximately equates to one dollar per day.<sup>66</sup> The use of PPP is necessary to take into account

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<sup>66</sup> The actual value is \$1.08 a day in 1993 PPP prices.

the differences in prices in each country; otherwise, the standard of living provided by a dollar per day would not be similar across countries, as it would be higher in those with lower prices and lower in those with higher prices. The method assumes that the population's standard of living may be compared consistently by equalizing the purchasing power of the currencies. The World Bank periodically publishes poverty figures for a large group of countries around the world, based on the information on expenditures or incomes estimated through national household surveys.

Although the dollar-a-day poverty line has become the most commonly chosen indicator for quantifying poverty at the world level, it is far from ideal. As detailed in Chapter 2, some of the criticisms refer to the lack of an underlying notion of deprivation and the unsuitability of PPP indices to reflect the relative prices of the poor.<sup>67</sup>

Some proposals thus seek to achieve internationally comparable poverty lines that do not depend on PPP or other price indices. In particular, Reddy (2004) suggests establishing an agreed set of basic income-dependent capabilities that a person or household needs to achieve in order to be considered non-poor. The poverty line would then represent the cost of attaining the same capabilities in any country, and it would therefore be directly comparable. Nevertheless, the difficulties involved in reaching a consensus on the set of basic capabilities, and how they should be measured, may hinder the proper implementation of this solution.

A second approach has been adopted by ECLAC in the context of Latin American countries. In this case, poverty lines are constructed specifically for each country, following a standard procedure described in the chapter on absolute poverty. The poverty line represents the cost of a basket that satisfies the average nutritional requirements of the population, plus an additional amount for non-food needs. ECLAC has been producing poverty measurements for most Latin American countries since the 1980s.

Third, Eurostat has a long-established practice of estimating indicators of relative poverty for European and other OECD countries. In this case, the poverty line corresponds to a percentage of the median income, expressed in adult-equivalent terms. Specifically, the number of

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<sup>67</sup> Even the monetary unit in which the poverty line is expressed limits its communicability to the general public, in contrast with poverty lines expressed in current prices and national currencies.

adult equivalents in a household is equal to the square root of the household size.

An important element of the European practice is the use of a common survey to collect information on the income and living conditions of different types of households, which raises the comparability of the results. The European Community Household Panel (ECHP) survey was launched in 1994, and it was regularly implemented in a large number of European Union countries until 2001. After a transition period, the ECHP is being replaced by the Survey on Income and Living Conditions (EU-SILC), which increases compliance with the Canberra Group recommendations.

The fourth approach to developing internationally comparable poverty figures is based on deprivation indicators. A very good example may be found in the estimates of child poverty produced by Gordon et al. (2003), as explained in Chapter 3 (Deprivation Indicators). An interesting feature of this approach lies on conceptualizing deprivation as a continuum—which ranges from no deprivation, through mild, moderate and severe deprivation, to extreme deprivation at the end of the scale—and providing operational definitions for each level (see table 5.1). By providing a definition of severe deprivation, this proposal is in line with the World Summit definition.

The issues discussed in this Section show that there are many areas for advancing towards increased comparability of poverty figures.

Given the enormous difference in statistical development across countries, seeking comparability first within regions seems to be more feasible than aiming at globally comparable figures from the start. The European case provides a good example, in which countries have established common poverty definitions and measurement methods, as well as information sources.

In the area of information sources, specifically household surveys, increasing homogeneity within regions should not be excessively difficult. In addition to the example of Europe, Latin America provides a good illustration of intra-regional similarities that could be heightened. International and regional organizations should contribute to the development of appropriate standards for household surveys in order to advance the process of harmonization.

**Table 5.1**  
**Proposal for operational definitions of deprivation (for children)**

Deprivation	Mild	Moderate	Severe	Extreme
Food	Bland diet of poor nutritional value	Going hungry on occasion	Severe malnutrition	Starvation
Safe drinking water	Not having enough water on occasion due to lack of sufficient money	No access to water in dwelling, but communal piped water available within 200 meters of dwelling or less than 15 minutes' walk away	Long walk to water source (more than 200 meters or longer than 15 minutes); unsafe drinking water (e.g., open water)	No access to water
Sanitation facilities	Having to share facilities with another household	Sanitation facilities outside dwelling	No sanitation facilities in or near dwelling	No access to sanitation facilities
Health	Occasional lack of access to medical care due to insufficient money	Inadequate medical care	No immunization against diseases; only limited non-professional medical care available when sick	No medical care
Shelter	Dwelling in poor repair; more than 1 person per room	Few facilities in dwelling, lack of heating, structural problems; more than 3 people per room	No facilities in house, non-permanent structure, no privacy, no flooring, just one or two rooms; more than 5 persons per room	Roofless – no shelter
Education	Inadequate teaching due to lack of resources	Unable to attend secondary school, but can attend primary school	Child is 7 or older and has received no primary or secondary education	Prevented from learning due to persecution and prejudice
Information	Cannot afford newspapers or books	No television, but can afford a radio	No access to radio, television, books or newspapers	Prevented from gaining access to information by government, etc.
Basic social services	Health and education facilities available but occasionally of low standard	Inadequate health and education facilities nearby (e.g., less than 1 hour's travel)	Limited health and education facilities a day's travel away	No access to health or education facilities

**Source:** D. Gordon and others, *Child Poverty in the Developing World*, Bristol, The Policy Press, 2003.

The recommendations of international expert groups have an important impact on this issue. In particular, the Canberra Group provides a useful reference for improving the international comparability of income data sources. The Report analyses what items should or could be considered, becoming a helpful input for achieving a minimum agreement on the limits and content of the concept of income.

### **5.3 Information strategies**

The previous chapters described the necessary sources of information for each poverty measurement approach. These sources are usually well-suited to giving a general panorama of how many poor there are, how poor they are and what their main attributes are. Nevertheless, as we move towards the area of poverty reduction policies, the requirement for information grows larger and more complex. The design, implementation and evaluation of poverty policies may need data on small geographical areas or special population groups, as well as complementary information on the poor's sociodemographic characteristics or their access to particular goods and services.

The Rio Group reviewed some national and international experiences with strategies aimed at generating information that is useful not only for the measurement and characterization of poverty, but also for the implementation and monitoring of policies. Most of these strategies were developed by specialized agencies that need to identify the potential beneficiaries of public programmes and keep track of their situation.

This section describes three of these national experiences (Australia, Chile and the United Kingdom) to illustrate different alternatives for developing and enhancing information sources in close relation to the needs of policy making. The examples all relate to the identification of potential beneficiaries of public assistance and the assessment of their situation and evolution. The reported experiences might present important differences among them, but none is considered superior over another.

The first experience to be presented is the Australian Institute of Health and Welfare's (AIHW) use of administrative information derived from governmental social and health programmes. This source provides a wealth of information on beneficiaries of government programmes, such as their place of origin, what they need, what they are provided with, the extent of service use and their unmet needs. These collections can also complement official household surveys, or direct surveys of recipients of social programmes and other data sets coming from administrative records. Therefore, if there were social programs in place

to alleviate poverty and/or social exclusion it is possible to implement data collections that inform researchers and program evaluators on the beneficiaries of these programs, including the extent to which they reach people in poverty/social exclusion as well as describe who they are, what they receive and how they have benefited.

One feature of particular interest is the integration of data from different public programmes through the use of common administrative items and through de-identified statistical linkage keys based on names and demographic characteristics. Data integration allows for comparisons between the data produced on various social programs and facilitates data linkage by ensuring that data items are common between the linked data sets. Data linkage allows researchers and program evaluators to examine the aggregate patterns of usage of recipients of social or health programs, including the extent to which people return to the programs or move to other programs after leaving (voluntarily or otherwise) a particular program. In the Australian context, for example, linked data has been used by the AIHW to demonstrate that “clients” of the homelessness service system with formal support plans are less likely to require support or accommodation in the future than clients without formal support plans. The data therefore signifies a successful approach to assessing service delivery that alleviates poverty and/or social exclusion. This example represents data linkage within a social programme data collection. An example of a foreshadowed project that proposes to use data linkage across social programmes will examine the extent to which children in government care find themselves in the homelessness service or juvenile justice systems (Note: this project is only at the proposal stage). The analysis has the potential to determine interventions to promote social inclusion of young people leaving government care.

These data are collected from individuals through administrative systems but the results of interest are the aggregates derived. Among the benefits of this kind of information are its low cost and its direct applicability to the evaluation of social programmes. In addition, it supports comparisons between different service-delivery strategies within or across social programmes and the measurement of service use within and across social programmes by beneficiaries over time. Nevertheless, this strategy requires a significant amount of organization and goodwill among a number of parties before it can be implemented. A considerable effort to develop standards, support service providers, develop collection systems and observe important ethical considerations are also necessary. In particular, it requires strong safeguards to ensure the ethical efficacy of each project and to protect the privacy and confidentiality of clients of the social service and health systems. Implementing this kind of strategy also requires the existence well-structured social programmes, a condition that is hard to fulfil in many

developing countries. Nonetheless, if programs are being developed to alleviate poverty and/or social exclusion it is essential to consider the implementation of a data collection system to inform governments, program administrators and evaluators on the program's progress in assisting recipients.

The second national experience in the area of institutional strategies corresponds to the United Kingdom's Department for Work and Pensions, which developed a mechanism for the design and monitoring of functional and geographically disaggregated policies using an extensive set of indicators. The policies used to tackle poverty and the indicators are published annually in the "Opportunity for All" report.

The United Kingdom's approach focuses on intervention at key stages in the life-cycle (children and young people, working-age people and older people) and on policies specifically designed to help disadvantaged communities. Monitoring these policies requires a series of indicators that draw on different well-established administrative and survey data at a national level, with special emphasis on small geographic areas. Among these sources are an annual income survey (Family Resources Survey), administrative data on education, a labour force survey and health indicators drawn from different sources (such as birth and death registrations, hospital statistics and household surveys).

The development of the indicators has been strongly linked to the process of policy making. In addition, many of the indicators are linked to Public Service Agreement targets, which set a level of progress to be achieved within a specified time period. Another important aspect is the generation of small area data, which reach the neighbourhood level.

Chile offers an interesting example of using of a source of local-level data, the *Ficha CAS*, to assess the level of deprivation and eligibility of applicants to governmental subsidies. Local municipalities collect the information independently, and the Ministry of Planning processes it. This provides a unified source of information for many governmental anti-poverty programmes and subsidies, thus allowing for better monitoring of the benefits received by the population. This instrument is not used to measure poverty, which is done through a household survey. Nevertheless, the two instruments have been devised complementarily, so that the general evaluation of poverty given by the household survey allows identifying the impact of public programmes.

In conclusion, making progress in the production of adequate information for monitoring poverty and general living conditions requires an active participation of different national agencies and a good coordination between data producers and users. Regional and

international institutions also play a crucial role in the development of strategies for improving data. Their perspective is particularly useful for advancing towards more comparable statistics, as mentioned in Section 5.2.

Although there are interesting information strategies that make use of administrative data, household surveys represent the preferred source of information for poverty measurement. The increasing demand for poverty statistics, especially for policy purposes, has brought pressure on the existing surveys in each country. The first kind of modification they usually suffer in response to these demands is an increase of the number of questions on existing surveys —normally employment surveys or multipurpose surveys, which in many cases were established in response to multiple previous demands. Another common approach is to make use of surveys that were designed for other purposes. For example, income and expenditure surveys, which were originally devised to determine the weights of the consumer price index, are regularly employed for measuring household income and consumption, as well as for elaborating poverty lines. In some cases the survey's periodicity has been increased to allow its use in poverty studies.

Many countries have, or are at present, implementing an integrated system of household surveys to rationalize the use of resources while attending as far as possible to multiple demands, within which poverty studies are important. An alternative is to construct a large multipurpose survey for measuring the many features of a household, but this approach faces a number of well-known difficulties and shortcomings. The challenges of the integrated system are many, however, including ensuring consistency in concepts, incorporating multiple requisites in the sample design establishing links that allow the simultaneous use of the different surveys and addressing numerous cost efficiency considerations.

An integrated survey system should also be comprehensive enough to capture the multiple dimensions of poverty and at the same time provide enough inputs for assessing the joint and individual effects of a wide variety of policies. The processes of developing such a system will probably also benefit the way in which the integration of poverty measurement and policies is conceived.

Regarding public policies, it is important to distinguish between specific anti-poverty programmes —which are usually targeted— and broader social public expenditures. While the former is increasingly addressed by many current household surveys, adequately measuring the impact of non-monetary public expenditure in services such as education and health poses a greater challenge. Available practices

range from implementing specific surveys on households' access to public services to adding questions on the use of public services to existing surveys. A central feature of these efforts is the recognition that the magnitude and distribution of public expenditure is extremely important for poverty alleviation, and that it is essential to explicitly take them into account.

Enhancing the countries' ability to describe and analyze the level and characteristics of poverty would benefit not only from the existence of a coordinated system of surveys, but also from the continued improvement of each survey. As stated in Chapter 2 on monetary poverty methods, income and consumption can be measured through different surveys, among which income and expenditure surveys are usually the most accurate and complete. This source of information is preferable in countries where these surveys are frequently available and include information on the household sociodemographic characteristics (which allows exploring the relation of poverty with deprivations in other dimensions). Nevertheless, their high costs may severely restrict their frequency and geographic coverage, making it necessary to resort to other multi-purpose household surveys.

Both types of surveys can be improved considerably in their ability to give account of household resources through income or consumption. As mentioned in Chapter 2, the Canberra Group has produced guidelines for improving the measurement of income.

The use of subjective questions appears to be an area worth exploring further. Most current household surveys could be complemented with subjective income questions that would provide some information on people's perceptions and allow a "consistency check" of the poverty lines. As seen in Chapters 3 and 4, the use of subjective questions not only applies to income, but also to the construction of deprivation indicators, as in the U.K. experience. This alternative offers the possibility of identifying specific welfare indicators for a given society in a given moment of time. While this is a very interesting line to pursue, it cannot be addressed by adding a few questions to an existing survey. Rather, it requires developing a special survey or at least extended modules.

#### **5.4 Bibliography**

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