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Multidimensional Poverty Measurement and Analysis: Chapter 4 – Counting Approaches: Definitions, Origins, and Implementations

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Abstract

The measurement of poverty involves identification: the fundamental step of deciding who is to be considered poor. A ‘counting approach’ is one way to identify the poor in multidimensional poverty measurement, which entails the intuitive procedure of counting the number of dimensions in which people suffer deprivation. Atkinson (2003) advised an engagement between multidimensional measures from social welfare and the counting approaches due to the widespread policy use of the latter. This chapter reviews applications of the counting methods in the history of poverty measurement. We focus on empirical studies since the late ‘70s which developed relatively independently of each other in two regions. In Latin America, applications of the Unsatisfied Basic Needs Approach were

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widespread, often using census and survey data. European work drew on concepts of social exclusion and inclusion, and now include national and European initiatives.

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4 Counting Approaches: Definitions, Origins, and Implementations

An assessment of measurement methodologies based on their properties and normative characteristics is illuminating and draws our attention to many interesting distinctions among measure, as we saw in Chapter 3. Yet, as Tony Atkinson observed in the landmark 2003 paper that catalysed many responses, including this book, ‘Empirical studies of multiple deprivation to date have not typically adopted a social welfare function approach. Rather they have tended to concentrate on counting the number of dimensions in which people suffer deprivation’. To catalyse policy-relevant measurement methodologies, it may be useful to analyse some measures which have served to guide policy, to see why they were implemented and how they have been used, as well as the criticisms and difficulties they faced. Our task in this chapter is to begin such an exploration of counting-based measures.

4.1 Definition and Origins

The measurement of multidimensional poverty, as discussed in Chapter 1, involves three fundamental steps: selecting the space, deciding who is poor, and aggregating the information of the poor. The fundamental step of deciding who is poor is **identification** (Sen 1976). A ‘counting approach’ is one way to identify the poor in multidimensional poverty measurement. It entails, as Atkinson (2003: 51) notes, ‘counting the number of dimensions in which people suffer deprivation, (...) the number of dimensions in which they fall below the threshold’.¹

As mentioned in section 2.2.2 and section 3.6.1, a counting approach to identifying the poor can be broken down into the following steps:

1. Defining a set of relevant indicators;
2. Defining a threshold of satisfaction (deprivation cutoff) for each indicator such that if the person does not reach it, she is considered deprived;
3. Creating binary deprivation scores for each person in each indicator, where 1 is being deprived and 0 is being non-deprived;

¹ Note that a counting approach to identifying the poor can be implemented only with multidimensional poverty measures that use unit-level data to consider the joint distribution of achievements across dimensions.

4. Assigning a weight or deprivation value to each considered indicator;
5. Producing a deprivation score by taking the weighted sum of deprivations (or counting the number of deprivations, if they are equally weighted);
6. Setting a threshold score of poverty (or poverty cutoff) such that if the person has a deprivation score at or above the threshold, she is considered poor.

Most steps involve normative judgements, which are largely discussed in Chapter 6. Step (4) entails deciding whether all deprivations should be given the same weight. Step (6) specifies the extent of deprivations which must be experienced by a person in order to be considered poor which, as outlined in section 2.2.2, can range from experiencing at least one deprivation (union) to experiencing all deprivations (intersection). In practice, either the union or intermediate criteria have been most commonly used; the intersection criterion has rarely been used. The need to define a ‘poverty cutoff’ in step (6) is what led Alkire and Foster to name their identification methodology as ‘dual cutoff’, as it involves defining a set of indicator cutoffs in step (2) and the poverty cutoff in step (6). The dual-cutoff strategy is clearly applicable to any approach following a counting method to identify the poor.

Counting approaches have been widely used in empirical studies, with one developed and one developing region being particularly pioneering in this work: Europe and Latin America. Interestingly, applications of the counting approach have been inspired and motivated by different conceptual approaches, and have developed relatively independently of each other.

One such influential approach was the basic needs approach, which emerged in the mid-1970s as a reaction to the prevailing economic growth-centred approach to development of the time.² The Cocoyoc Declaration, adopted in 1974 by participants in the UNEP/UNCTAD symposium on ‘Patterns of Resource Use, Environment and Development Strategies’ articulated this approach as follows: ‘Human beings have basic needs: food, shelter, clothing, health, education ... We are still in a stage where the most important concern of development is the level of satisfaction of basic needs for the poorest sections in each society ... Development should not be limited to the satisfaction of basic needs ... Development includes freedom of expression and impression, the right to give and

² The study of how economic growth occurs and how it advances basic needs has evolved significantly. See Commission on Growth and Development (CGD) (2008); Stiglitz, Sen, and Fitoussi (2009); Drèze and Sen (2013).

to receive ideas and stimulus ..., the right to work' (UNEP/UNCTAD 1975 896–7). The Cocoyoc Declaration was echoed by several subsequent studies and reports released in 1976.^{3,4}

The basic needs approach had a policy focus, but in practice it influenced poverty measurement, especially in Latin America. Until the 1970s, the prevailing approach to measuring poverty used an income poverty line for identifying the poor, which Sen (1981) called the **income method**.⁵ The first European use of an (implicit) poverty line was by the London School Board during the 1880s in order to exempt destitute families from paying school fees (Gillie 1996).⁶ The poverty line was then used in the seminal surveys of Booth (1894, 1903), Rowntree (1901), and Bowley and Burnett-Hurst (1915), which were conducted in specific cities in the UK. As expressed by Rowntree, the poverty line represented the 'minimum necessities for the maintenance of merely physical efficiency' (i.e. nutritional requirements, clothing, fuel, and household sundries) in monetary terms (Townsend 1954: 131).⁷ The poor were those whose household income was below the poverty line corresponding to their family size. In the 1950s, the income method of poverty measurement appeared to be consistent with growth emphasis of development (Sen 1960). Clearly, a commodity-focused concept of basic needs underlay the income method of poverty measurement, as the poverty line indicated the minimum amount of resources to cover such needs. Subsequently the basic needs approach, alongside other approaches we will mention, such as social exclusion, drew attention to the importance of looking at the *actual* satisfaction of basic needs (or at least access to key commodities), thus fostering the so-called **direct method** of poverty measurement (Sen 1981). A list of needs considered to be basic alongside minimum levels of satisfaction (cutoffs) would be specified. It is in such a context that counting the number of deprivations naturally emerged as a method of identifying the poor and of monitoring progress towards meeting basic needs.

As the Cocoyoc Declaration quote shows, the basic needs approach was originally quite comprehensive in the goals it regarded as intrinsically important, including, for example, freedom of

³ Dag Hammarskjöld Foundation (1976); Herrera et al. (1976); ILO (1976).

⁴ Philosophically, the basic needs approach seeks to elaborate some minimal material requirements of human well-being and justice. See Rawls (1971), Stewart (1985), Braybrooke (1987), Hamilton (2003), and Reader (2006).

⁵ Alkire and Santos (2014) further elaborate the income method vs direct methods of poverty measurement.

⁶ Earlier the Poor Laws in England and Wales provided a nascent welfare system. They started in mid-1350s in response to the Black Death in England, and an increase in the number of beggars and people looking for better pay as feudalism started to decay. The goal was to induce every able-bodied person to work (Townsend 1786; Quigley 1998; Hollen Lees 1998). Targeting was accomplished using a mix of 'visual' verification and 'self-targeting' rather than income poverty or counting-based measures.

⁷ Cf. Tout (1938), Pagani (1960), Dubois (1899), and Townsend (1952).

expression and the right to have decent work. Later, as the approach was intended to have a direct policy impact, empirical studies were conducted in order to determine which goods and services, incomes, and resources were needed for everyone to enjoy a ‘full life’ (Streeten et al. 1981). Resources were understood to be of secondary importance and merely as means to ends by most basic needs advocates (Stewart 1985). Unfortunately, when the idea caught on, some operational programmes designed by the International Labour Organization (ILO) and the World Bank, under Robert MacNamara, were ‘focused on commodity inputs to health, education, clothing, shelter, sanitation and hygiene The problem was that the overemphasis on commodities misinterpreted the basic needs approach, and in so doing redefined and subverted it’ (Alkire 2005: 116, cf. 2006). The policy urgency was defended as being appropriate and necessary, but in fact it implemented only a subset of priorities of the basic human needs approach (Stewart 1985).

Some years before the emergence of the basic needs approach, Europe started to develop social indicators, which enabled empirical studies of non-monetary aspects of social welfare (Delors 1971). Erikson (1993) describes how criticisms of GNP per capita as a measure of welfare in the 1950s led to a 1954 UN expert group, which proposed to measure well-being using ‘level of living’. In the late 1960s, interest was renewed in constructing ‘a parsimonious set of specific indices covering a broad range of social concerns’ (Vogel 1997: 105). In 1968 Sweden implemented a Level of Living Survey that was repeated and spread in other Scandinavian countries, and this, together with parallel work on social indicators such as Delors (1971), catalysed discussions of poverty measurement: ‘Johansson [(1973)], in his first discussion of the level of living concept, suggested a concentration on “bad conditions”’ (Erikson 1993: 80).⁸

While basic needs was one concept informing measures of deprivation in Europe (Galtung 1980), this was supplemented by other conceptual motivations.⁹ Atkinson and Marlier (2010) observe that the multidimensional concept of ‘social exclusion’ (Lenoir 1974) has most widely motivated European approaches to measurement for public policy. In 1974, the Council adopted a ‘resolution concerning a social action programme’ which prompted responses to poverty and social exclusion (Atkinson et al. 2005: 29). The Council defined the poor (in 1975) as ‘individuals or families whose

⁸ Johansson (1973) had already raised the need for measures to employ indicators having dichotomous and ordinal scales; cf. section 2.3, section 3.6, and Chapter 5.

⁹ For example, in 1989 the European Commission proposed a ‘Community Charter of Fundamental Social Rights’, which was adopted by eleven of the twelve then-member states. See discussions in Room (1995), Silver (1995), and Nolan and Whelan (1996, 2011).

resources are so small as to exclude them from the minimum acceptable way of life of the Member State in which they live', with 'resources' being defined as 'goods, cash income plus services from public and private sources' (Atkinson et al. 2005: 18).¹⁰ Social exclusion became seen as going 'beyond the elimination of poverty' to focus on 'the mechanisms whereby individuals and groups are excluded from taking part in the social exchanges, from the component practices and rights of social integration' (European Commission 1992, cited in Atkinson and Marlier 2010: 18).

Although the social inclusion approach was (and often still is) widely described as 'relative', this depends upon the evaluative space. Amartya Sen wrote, '[t]he characteristic feature of "absoluteness" is neither constancy over time, nor invariance between different societies, nor concentration merely on food and nutrition. It is an approach of judging a person's deprivation in absolute terms (in the case of poverty study, in terms of certain specified minimum absolute levels), rather than in purely *relative* terms *vis-à-vis* the levels enjoyed by others in the society' (1985: 673).

A landmark moment in the mainstreaming of social inclusion into European Union (EU) policies occurred at the Lisbon Summit of March 2000, where 'EU Heads of State and Government decided that the Union should adopt the strategic goal for the next decade of becoming "the most competitive and dynamic knowledge-based economy ... with more and better jobs and greater social cohesion". Importantly, the phrase "social cohesion" appeared in the same sentence as "most competitive economy"' (Atkinson et al. 2002: 17). Another inflection point in Europe was the very explicit political processes for engaging member states in the 'open method of coordination' for social measures and policies. 'The open method of coordination, which is designed to help member states progressively to develop their own policies, involves fixing guidelines for the Union, establishing quantitative and qualitative indicators to be applied in each member state, and periodic monitoring' (Atkinson et al. 2002: 1–5).

A third influential conceptual framework for developing counting-based poverty measures has been Amartya Sen's capability approach, outlined in section 1.1. It gained increasing recognition as providing an appropriate space for evaluating poverty: the space of capabilities and functionings

¹⁰ In order to define the 'minimally acceptable way of life' for empirical measurement, different processes were explored including the socially perceived necessities approach commented on later.

rather than the space of resources upon which basic needs programmes had come to concentrate.¹¹ Applications of counting approaches intending to operationalize the capability approach sought to look at failures such as the ability to meet nutritional requirements, be clothed and sheltered, enjoy functional literacy and numeracy, or the power to participate in the social life of the community, which are some of the basic functionings mentioned by Sen from the very start (1979: 218). Yet even in work inspired by the capability framework, the indicators considered in counting approaches are data-constrained, hence often include resource-based indicators that are linked to key functionings, much as in the basic needs approach.

This chapter briefly reviews key empirical implementations of counting approaches to identifying the poor that are motivated by any of the aforementioned conceptual approaches.¹² Before proceeding to the salient applications of the counting approach, let us clarify that their emphasis is on *identifying* the poor. Most measurement applications of the counting approach have used the proportion of people identified as poor—the so-called headcount ratio defined in equation (3.23) in section 3.6.—for the third fundamental step of poverty measurement: aggregation. By using only the headcount ratio, the poverty measure is not able to discriminate according to the number or extent of deprivations among the poor, what we call **intensity**.¹³ The focus of this chapter is on the identification step; Chapters 3 and 5 address forms of aggregation that provide more informative poverty measures than the multidimensional headcount ratio.

4.2 Measures of Deprivation in Europe and their Influence

Townsend (1979) conducted an early seminal study using a counting approach to poverty in the United Kingdom, analysing a 1968–9 survey covering about 2000 households in Britain. To assess the magnitude of ‘relative deprivation’, Townsend defined sixty indicators covering twelve dimensions: diet, clothing, fuel and light, home amenities, housing conditions and facilities, the immediate environment of the home, conditions at work, family support, recreation, education,

¹¹ Sen’s capability approach built upon the basic needs approach: ‘The focus on basic capabilities can be seen as a natural extension of Rawls’s concern with primary goods, shifting attention from goods to what goods do to human beings’ (Sen 1979: 218–19).

¹² See Nolan and Whelan (1996, 2011) for a more thorough review of counting approaches to identify the poor as well as for a review of empirical evidence of the mismatches between income poverty and non-monetary deprivation.

¹³ As we shall see, some implementations of counting approaches use multiple poverty cutoffs (i.e. required alternative numbers of deprivations to identify the poor). While informative, this stops short of incorporating intensity into one summary measure, which, like the Adjusted Headcount Ratio (M_0), can be broken down by dimension.

health, and social relations. Each indicator was equally weighted, although the number of indicators within each dimension varied greatly. For ‘illustrative purposes’, he then focused on a shorter list of twelve items covering major aspects of dietary, household, familial, recreational, and social deprivation. Townsend used a minimum score of five (out of the twelve) ‘as suggestive of deprivation’ (p. 252). In other words, a poverty cut-off of five out of twelve was chosen to identify the poor.¹⁴ He did not use a union criterion because he recognized the potential problems: ‘No single item by itself, or pair of items by themselves, can be regarded as symptomatic of general deprivation. People are idiosyncratic and will indulge in certain luxuries and apply certain prohibitions for religious, moral, educational or other reasons, whether they are rich or poor’ (p. 252).¹⁵ However, he actually did not use this counting approach to analyse poverty. Rather, he explored the correlation between deprivation scores and household income (adjusted for household size) in order to derive an income threshold below which people are ‘disproportionately deprived’ (p. 255). In other words, he used a *direct* approach to ‘validate’ the poverty line to be used in the indirect income poverty measure.

Townsend’s study inspired much subsequent work on poverty and social exclusion in Europe and, in particular, another benchmark study on poverty: Mack and Lansley’s *Poor Britain* (1985). This study was also influenced by Sen’s writings on the direct approach to poverty measurement (Sen 1981). A novelty of this study was that the list of items considered as necessities was, for the first time, constructed using a survey of the public’s perceptions of minimum needs (PSE [1983] Breadline Britain). That is why their method has been called the ‘consensual or perceived deprivation approach to measuring poverty’. Of the original thirty-five items, they retained the twenty-six that were considered necessities by strictly more than 50% of the population. The survey usefully distinguished people who lacked an item because they could not afford it from those for whom it was a voluntary choice.¹⁶ The authors identified as poor those who could not afford three or more items from the equally weighted items (p. 178).¹⁷ This poverty cutoff was selected after

¹⁴ Townsend used the terms deprived and poor interchangeably, whereas we define these terms differently.

¹⁵ Note however that he did not use the term ‘union’ to refer to this criterion.

¹⁶ This pioneering study analysed patterns of what people considered necessary, correlations with income, and the free choice of voluntary deprivations. It includes vivid testimonies from interviews and a fascinating discussion of contemporary policies.

¹⁷ The authors acknowledged that they could have discerned the ‘seriousness’ of deprivations in different indicators by assigning more weight to items considered by more people as a necessity (i.e. by the rank order of the necessities). However, they dismissed this possibility by arguing that people in poverty with an equal number but different combinations of indicators should, by definition, face an equally ‘serious’ situation.

analysing the association between the number of deprivations, income levels, and spending patterns. Mack and Lansley proposed that a lack of three or more necessities was a matter of force rather than choice.¹⁸ ‘Very few of the better-off lack this level of necessities. And nearly all those who lack this level of necessities cut back on non-necessities, a majority cutting back substantially’ (p. 176). In addition to their benchmark cutoff, the authors reported degrees of deprivation using two additional poverty cutoffs: ‘Broadly speaking, those who cannot afford five or more necessities are sinking deeper into poverty; and those who cannot afford seven or more necessities are in intense poverty’ (p. 184). British authors continue working along these lines, with new surveys in 1990, 1999, and 2012. Breadline-Britain-type surveys were also replicated elsewhere in Europe.¹⁹ It also inspired the structure of two much-used datasets: the European Community Household Panel survey (ECHP) and the European Union Statistics on Income and Living Conditions (EU-SILC).²⁰

Gordon et al. (2000) compare the 1983, 1990, and 1999 Breadline Britain surveys in terms of the items considered as necessities and assess the evolution in poverty levels. Using an updated list of thirty-five items to evaluate poverty, they identified a household as poor if they could not afford two or more items and, additionally, had relatively low incomes.²¹ The report also constructed a measure of child poverty using a list of twenty-seven socially perceived necessities for children. They used a poverty cut-off of one or more and another more restrictive cut-off of two or more. In both cases the poverty cut-off was set using discriminant function analysis.²² Note that the poverty cut-off selected using discriminant analysis, which is a data-driven approach, may provide different conclusions when applied to different datasets, making comparison across time difficult (section 3.4.4). Because the poverty cut-off is not normatively considered or justified, in contrast to other measures reviewed, there is no link to ethical assessments of poverty.

¹⁸ ‘Two criteria have been applied: first, those who lack this level of necessities [three out of twenty-two] should have low incomes, falling in the bottom half of the income range; second, their overall spending patterns should reflect financial difficulty rather than high spending on other goods’ (Mack and Lansley 1985: 175–6).

¹⁹ Gordon et al. (2000: 72, Appendix 1) lists other studies using the Breadline Britain survey.

²⁰ These surveys do not collect information on socially perceived necessities, but do ascertain whether the lack of an item is voluntary.

²¹ The thirty-five items selected in 1999 were such that 50% of people or more considered them as socially perceived necessities.

²² A discriminant function analysis (DFA) divides the population into poor and non-poor by predicting whether each person belongs to one group or the other based on a set of characteristics of the unit of analysis, taken as ‘explanatory variables’. In these studies, alternative numbers of deprivations (poverty cut-offs) were tested, and the explanatory variables included family income, the employment status of the household, the number of children, ethnicity, and region of residence, among many others.

Building upon the work of Mack and Lansley (1985) and Ringen (1987, 1988), Callan, Nolan, and Whelan (1993) also proposed to identify the poor by combining both resource *and* deprivation measures.²³ They used data from a household survey conducted in Ireland by the Economic and Social Research Institute (ESRI) in 1987, which used Mack and Lansley's (1985) format. Starting from a list of twenty-four items, the authors used factor analysis to observe possible indicator clusterings and accordingly used three dimensions: (1) basic lifestyle (eight items such as food and clothes), (2) housing and durables (seven items related to housing quality and facilities), and (3) 'other' aspects of lifestyle (nine items such as social participation, leisure activities, and having a car or telephone). People's perceptions regarding the necessity of indicators restricted their material deprivation index to the eight-item basic lifestyle dimension.²⁴ They identified as poor anyone who both lacked one or more of the eight items *and* fell below the relative income poverty line, set at 60% of the average equivalent disposable income in the sample.²⁵ This work sparked a series of surveys and studies to monitor poverty in Ireland using variations on this combined method of resources and material deprivation. These were used to build a 'consistent measure of poverty'²⁶ which identifies a person as poor if she is both income poor and deprived in some minimum set of deprivations.

Muffels et al. (1992) built upon Muffels and Vriens (1991) and designed an index of relative and subjective deprivation using a Dutch socioeconomic panel survey inspired by Mack and Lansley (1985). Their innovation was to use household weights and poverty cutoffs. They first constructed an (objective) deprivation score for every head of household as the weighted sum of deprivation in each of a large set of items related to living conditions. The weight for each item varied across households and represented the respondent's perceived importance of the item, compared to the perceived importance of the item by the household head (p. 195). They selected a subjective poverty cutoff, termed the 'subjective deprivation poverty line', using an econometric model. In the model, the dependent variable was the respondent's subjective assessment of whether he/she was poor or

²³ Ringen (1987) stated, 'we need to establish not only that people live as if they were poor but that they do so because they do not have the means to avoid it' (p. 162, cited in Callan, Nolan, and Whelan 1993).

²⁴ The eight items are: going into arrears/debt to meet ordinary living expenses such as food and rent, not having a substantial meal all day, having to go without heating because of lack of money, involuntary lack of new clothes, lack of two pairs of shoes, not being able to afford a roast or equivalent once a week, not being able to afford a meal with meat or fish every second day, and not being able to afford a warm coat.

²⁵ Those fulfilling both conditions were identified as experiencing 'generalised deprivation' due to a lack of resources (Callan, Nolan, and Whelan 1993; Nolan and Whelan 1996). They also identified subgroups who were income poor but not materially deprived and vice versa.

²⁶ Callan et al. (1999), Whelan et al. (2001a), Layte et al. (2000), and Whelan, Nolan, and Maître (2006), among others.

not on a scale of one to ten. The independent variables were their deprivation score plus control variables such as income, age of the household head, family status, and financial stress factors. Using the estimated coefficients, the ‘subjective deprivation poverty line’ was calculated for each household separately, as the weighted deprivation score that would produce a subjective assessment score of 5.5.²⁷ Then they explored the degree of overlap between those identified as poor using the subjective deprivation poverty line and those identified as ‘insecure’ using three alternative income poverty lines (a subjective line, equal to the minimum income reported by households as ‘the minimum income they need to acquire a certain minimum standard of welfare’; a ‘national social minimum income standard’; and a ‘European statistical minimum income standard’). They examined the relationship between both measures in terms of bivariate distributions using contingency tables and regression analysis and found significant mismatches. They concluded that a multi-method approach combining income and (direct) deprivation measures was needed to assess poverty.

Halleröd (1994, 1995) used data from the Swedish standard of living survey in 1992, which also followed Mack and Lansley (1985). A key difference was that they retained all thirty-six originally included items but *weighted* them by the proportion of the population that regarded each as necessary. Weights were adjusted by certain groups to reflect significant differences in preferences.²⁸ The index was labelled the Proportional Deprivation Index (PDI). The author selected a poverty cutoff that produced the same headcount ratio as the Consensual Poverty Line (CPL). The CPL was an interpersonally comparable income level at which, on average, respondents in different circumstances would subjectively indicate that their current income was just sufficient for them to make ends meet. While both methods identified nearly 21.3% of the population as poor, only 8.8% of the population were identified poor by both. Acknowledging that both the income and direct methods may be subject to substantial measurement problems, the author advocated the use of a combination of both methods and defined those 8.8% of the population who were poor by both CPL and PDI as the ‘truly poor’. Subsequently, Halleröd et al. (2006) used a variant of the PDI to compare poverty levels in Britain, Finland, and Sweden.

Using ECHP data, Layte et al. (2001) constructed a material deprivation index from thirteen items to assess the relationship between (relative) income poverty and material deprivation. For each country,

²⁷ The reason for using the subjective assessment score of 5.5 is that in the Netherlands schooling system, a score of 5.5 in a 1–10 scale is considered to be a dividing line between a ‘satisfactory’ and an ‘unsatisfactory’ score.

²⁸ The groups were: men, women, age groups, household types, and geographic regions.

they weighted each item by the proportion of households possessing that item, and they defined the poverty cutoff of the deprivation index endogenously as the threshold which generated a headcount ratio equal to that of the (relative) income poverty line of the country. They performed this exercise for different relative poverty lines: at 40%, 50%, and 60% of the median income in each country. Their results showed that the overlap between the two poverty measures was very limited and thus supported a method that combines both measures. Whelan, Layte, and Maître (2004), using the ECHP to identify persistently poor persons, found a similar mismatch as mentioned in section 1.2.1. Eurostat (2002) constructed an index of non-monetary poverty (*pauvreté d'existence*) for European countries. Following the analysis of Whelan et al. (2001b) of the first ECHP survey, a list of twenty-four dichotomous items ('having'/'not having') available in that survey were grouped into five dimensions using factor analysis.²⁹ For each individual, a deprivation score per dimension was obtained as the weighted sum of deprivations in the indicators of that dimension, where the weight attached to an indicator was inversely related to the deprivation rate in that indicator in the corresponding country. Then, the dimensional deprivation scores were also aggregated by taking a weighted sum, where the dimensional weight attached to a dimension was proportional to the weighted average of the coefficients of variation among that dimension's indicators (pp. 155–6). People with a deprivation score of 60% or more were considered poor.³⁰

Additional implementations of the counting approach to identifying the poor in Europe included studies of poverty in Sweden (Erikson 1993), the reports on poverty in Belgium by Vranken and other authors (Vranken 2002), and recent work on the search for a relative deprivation index for Europe (Guio 2005, 2009; Guio and Maquet 2006; Decancq et al. 2013). In 2011, the European Commission implemented an 'EU-2020' multidimensional poverty measure using union identification across three indicators: relative income poverty, severe material deprivation, and quasi-joblessness. This landmark measure identified those 'at risk of poverty and social exclusion' in order to set and monitor a poverty reduction target for 2020. It represents the most high-profile policy application to date—hence, perhaps, the most closely scrutinized.

Nolan and Whelan's book *Poverty and Deprivation in Europe* offers a systematic conceptual and empirical study of 'why and how non-monetary indicators of deprivation can play a significant role

²⁹ Boarini and d'Ercole (2006: 33) and Eurostat (2002: 25) present these.

³⁰ This threshold was selected so that the average rate of non-monetary poverty across the fifteen countries equalled the average income poverty rate.

in complementing (not replacing) income in order to capture the reality of poverty in Europe' (2011: 1). It is thus relevant to this book at many points, as they too survey research on mismatches in identification between different indicators of poverty—by social group and in one period and across time—scrutinize indicator design, apply robustness tests, consider the poverty cut-off, and propose ways of strengthening the EU-2020 Poverty Target. Maître, Nolan, and Whelan (2013) offer a critical evaluation of the EU-2020 Target and Whelan, Nolan, and Maître (2014) explored the use of the AF method for the case of the European Union using EU-SILC data; they advocate the replacement of the current approach by the AF approach as it is more structured, less ad hoc, and more transparent, as well as being flexible in terms of the poverty cutoff and the axiomatic properties of its measures (see section 2.5 and Chapter 5). Alkire, Apablaza and Jung (2014) also apply an AF measure to EU-SILC data 2006–12, and explore the inclusion of social indicators.

Townsend (1979) and Mack and Lansley (1985) also influenced work outside Europe. For example, Mayer and Jencks (1989) severely criticized the income approach to poverty measurement in the United States based on a survey in Chicago on material hardship. They collected information on ten indicators covering dimensions of food, housing, and medical care. The number of hardships (equally weighted) were analysed alongside income and subjective satisfaction with living standard. They found that the family's income-to-needs ratio explained less than a quarter of the variation in the total number of hardships that families report.³¹

The consensual approach or socially perceived necessities to poverty measurement initiated by Mack and Lansley (1985) and its survey structure were replicated elsewhere. In particular, it served as a model for a Basic Necessities Survey (BNS) (Davies 1997; Davies and Smith 1998). The BNS method weights each item by the proportion of people who said it is a basic necessity. It suggests defining a poverty cutoff across the BSN score such that it identifies as poor the same proportion of people as those who have subjectively identified themselves as poor. Davies' BNS method was implemented in Vietnam and Mali (Nteziyaremye and Mknelly 2001), Bangladesh (Ahmed 2007), Ireland (Nolan and Whelan 1996), Japan (Abe 2006), Europe (Eurobarometer 2007), and South Africa (Wright 2008), among other countries.

³¹ Bauman (1998, 1999) critically evaluated their work and instead advocated the use of measures of hardship to complement, not substitute for, income poverty measures.

4.3 Measures of Unsatisfied Basic Needs in Latin America and Beyond

Latin America is the other region where the direct method to measure poverty alongside a counting approach to identifying the poor has been widely implemented. Rather than a focus on social exclusion or ‘relative deprivation’ as in Europe, in Latin America it was operationalized under the unsatisfied basic needs (UBN) approach. The first implementation was in Chile in 1975 when the first ‘Map of Extreme Poverty’ was produced (Kast and Molina 1975). However, the method became known and generalized in the region with a seminal study conducted by the Institute of Statistics and Census of Argentina (INDEC) and the United Nations Economic Commission for Latin America and the Caribbean (ECLAC or Comisión Económica para América Latina y el Caribe/CEPAL in Spanish) (INDEC 1984). INDEC recognized the multidimensionality of poverty and sought to assess disadvantage across a wide set of basic needs or—alternatively—with information on income (p. 10). Thus, initially the UBN method was presented as an imperfect proxy for income poverty measurement.

The selection of census indicators was first performed by ECLAC with an empirical study using data from the 1980 census of Argentina. The study acknowledges that the census did not provide data on income or consumption nor on key health variables such as nutrition. However, the census provided data from all areas in the country and, importantly, with a useful level of disaggregation at smaller geographical entities. Within these constraints, three criteria guided the selection of indicators (INDEC 1984: 11):

1. The indicators represented the degree of failure to satisfy some specific group of basic needs;
2. These indicators were significantly associated with [income] poverty;
3. They were comparable across regions of the country so that poverty maps could be constructed.

In order to fulfil the second criterion, as part of the project, CEPAL undertook an empirical study using data from a 1980 survey in two urban areas of Argentina: the Greater Buenos Aires area and Goya (taken as representative of other urban areas).³² The aim was ‘to select the characteristics that not only represented some intrinsically important deprivation but were also sufficiently associated with situations of [income] poverty so as to represent the other [unmeasured] deprivations that constitute such situation’ (INDEC 1984: 500). Both absolute and relative poverty lines were used;

³² The Encuesta Permanente de Hogares was already being conducted regularly by INDEC but it was restricted to the Greater Buenos Aires area.

the former followed Altimir (1979) and the latter was set at half of the mean private per capita consumption according to national accounts. Census indicators were selected if they were empirically assessed to be strong predictors of income poverty in regression analysis—thus not using normative criteria. Step two, thus, in practice, dominated the three criteria mentioned above as well as the three-step selection of (a) the basic need, (b) the specific indicator, and (c) the deprivation cutoff (Feres and Mancero 2001). The census indicators chosen by INDEC and CEPAL were:

1. Households with more than three people per room (overcrowding);
2. Households with precarious housing;
3. Households with no kind of toilet;
4. Households with children of school age (6–12 years old) not attending school;
5. Households with four or more dependents per occupied member (high dependency ratio) and whose household head's education was at most second grade of primary education.

The union criterion was used: all members of any household with at least one unsatisfied basic need were considered poor. The intuition was that because very low deprivation cutoffs were used for each indicator, one sole deprivation seemed sufficient to signal poverty (Rio Group 2006: 110). However, the information was reported in different ways and using different cutoffs: alternative (1) the proportion of households and people experiencing each UBN, (2) the proportion of households and people with one or more UBN, and also (3) the proportion of people with two or more and three or more UBNs.

The set of census indicators outlined by INDEC and CEPAL for Argentina was replicated by official statistical institutes in many Latin American countries: Bolivia, Chile, Colombia, Ecuador, Guatemala, Honduras, Nicaragua, Paraguay, Peru, Uruguay, and Venezuela. While there was some variation in indicators, the dimensions considered remained essentially the same, as they were limited by the information contained in the countries' censuses. Feres and Mancero (2001: 67) noted that they belonged to four broad categories:

1. Access to housing that met minimum housing standards;
2. Access to basic services that guarantee minimum sanitary conditions;
3. Access to basic education;
4. Economic capacity to achieve minimum consumption levels.

In all these countries, the UBN methodology was used to construct detailed and disaggregated poverty maps using census data. Poverty maps became a valuable tool for policy design (Kaztman

1996: 24). Coady, Grosh, and Hoddinott (2004) observe that poverty mapping has been widely used for geographical targeting purposes—and not only in Latin America. ‘Much of the history of poverty mapping has used a “basic needs” approach with poverty defined in terms of access to basic services. The simplest form of geographic targeting involves the use of a single variable such as nutritional status. ... the choice of variables is largely guided by a combination of philosophy and data availability’ (Coady, Grosh, and Hoddinott 2004: 63). In other cases, such as in Argentina or Chile, maps were constructed using the proportion of people with different numbers of UBNs. Poverty maps have guided investments in infrastructure, implementation of public works programmes and social funds, subsidized services, and the allocation of conditional cash transfer (CCT) programmes (usually alongside a complementary targeting method).³³ While some countries have built consumption-based poverty maps (Elbers, Lanjouw, and Lanjouw 2002), these have been less common than the basic needs maps, and their policy interpretation is more challenging.³⁴

Beyond the policy impact that basic needs poverty maps have, it is worth noting that, while in Europe the direct method of measuring poverty was implemented alongside an effort to collect new data that would (a) reveal socially perceived necessities and (b) distinguish whether the lack of items was enforced or by choice, in Latin America the direct method was restricted to the data available at the time (census data). Thus, the range of indicators that could be included was severely constrained. The direct method in Latin America did not seek to reflect people’s views of their own necessities, and it did not deliberately permit ‘choice’. Relatedly, it must also be noted that in Latin America the definition of the UBN indicators was done from an absolute poverty perspective, whereas in Europe it was justified with respect to a relative or perceptual concept of poverty. Despite these differences, a strong common feature emerged: the interest in crossing the direct method with the indirect one. This gave rise in Latin America to the ‘integrated method’ to measure poverty proposed by Beccaria and Minujin (1985) and Kaztman (1989). The indirect or income method was being applied using data from household surveys, which started to be progressively implemented in the late 1980s and 1990s in the region. An absolute income poverty line approach was applied using the cost of basic needs method (Altimir 1979). The idea of the integrated method was to identify four sets of people:

³³ Progresá (later renamed Oportunidades) in Mexico and Bolsa de Familia in Brazil started in 1997 and were pioneer programmes in Latin America and in the world (Fiszbein and Schady 2009).

³⁴ The construction of income poverty maps typically matches a census with household survey information to predict income poverty, which is not directly measured in the census. Tarozzi and Deaton (2009) criticize such methods as they require a degree of spatial homogeneity, which is not guaranteed by the matching methods. See also Elbers et al. (2007) and Bedi et al. (2007).

(1) the income and UBN poor, (2) the UBN poor but income non-poor, (3) the income poor but UBN non-poor, and (4) the non-poor by any method, as expressed in Table 4.1. This could be done using data from household surveys, which collected information on the UBN indicators as well as on income.

Kaztman (1989) terms the first group ‘chronically poor’, not because of information on poverty over time but because he assumes that insufficient income coupled with at least one UBN (most had more than one) would reproduce poverty over time. This group would be equivalent to the ‘consistently poor’ in the European literature. Other names belie other assumptions, but in any case empirical mismatches proved widespread.³⁵

Table 4.1 The UBN poor and the income poor

	UBN Poor	UBN Non-Poor
Income Poor	Chronically Poor	Recently Poor
Income Non-Poor	With Structural Deprivations	Socially Integrated

As Boltvinik (1991) argued, these studies showed that the two methods, income poverty and UBN poverty, were (unintentionally) complementary, identifying to a great extent different slices of the population. Evidence from Montevideo (Uruguay) in 1984 and from Greater Buenos Aires (Argentina) in 1976 suggested that 10–15% of the households were in the ‘recently poor’ category, 4–9% of the households were in the ‘with inertial deprivations’ category, and only 7% were poor by both methods, i.e. in the chronically poor category. In Peru nearly 40% of the population were identified as both income and UBN poor (chronically poor). Yet 30% of the population was identified as either income poor or UBN poor but not both, which shows the ‘mismatches’ between the two methods, covering nearly the entire population.

Boltvinik (1992) proposed an ‘Improved Integrated Method to Measure Poverty’, which involved changes in each method separately, as well as in their combination. His method was applied in Mexico (Boltvinik 1995, 1996). He proposed first that UBN indicators be those associated with public investment, which could not be purchased individually, and dimensions that could be purchased using private resources should be considered in the income component.³⁶ This generated,

³⁵ See Kaztman (1989: 130) and Stewart et al. (2007).

³⁶ Boltvinik (1992, 2012) proposed that the UBN indicators should be as follows: sanitation, electricity, and services (such as phone and garbage collection); housing and overcrowding; education; furniture and appliances; access to health

second, a higher poverty line based on a more comprehensive basket of goods and services. Third, he incorporated gaps in the measurement of income poverty and also of UBN. Thus, rather than dichotomizing achievements in each of the UBN indicators, he proposed (controversially) computing normalized deprivation gaps for each indicator as if they had cardinal data. Fourth, he allowed deprivation gaps to take negative values (reflecting achievements above the deprivation cut-off) thus permitting substitutability across deprived and non-deprived items. Finally he normalized the gaps to vary between minus one and one. Boltvinik's proposal entails *cardinalizing* ordinal variables, which imposes multiple value judgements for which there is no clear agreement (see section 2.3 for a detailed explanation of the problems involved). The problem is that measures thus constructed are very unlikely to be robust to different value judgements used in their construction.³⁷

To identify the poor, Boltvinik suggested using three alternative poverty cutoffs. Boltvinik also discussed alternative methods for weighting the UBN indicators: (a) equal weights, (b) the complement of indicators' deprivation rates (Desai and Shah 1988), and (c) a combination of monetary and time valuations³⁸ of each need. As in the case of the UBN index, negative gaps were allowed for income. These were normalized to range between minus one and one by dividing them by (the absolute value of) a normative maximum negative gap, and replacing them by minus one whenever the absolute value of the negative gap was higher than the maximum normative gap. On the other hand, each person would have an individual UBN score which would be the weighted sum of the normalized deprivation gaps (ranging from minus one to one). In the combined method, each UBN indicator would be weighted by the proportion of the total cost required to fulfil each set of needs, and an individual's UBN score would be *added* to her income poverty score.

Boltvinik's revised integrated method to measure poverty was altogether different from the integrated method outlined in Table 4.1 and is no longer a counting measure. It ceased to consider mismatches between the UBN poor and the income poor. His identification method is not a counting approach but relied on a score obtained as the weighted sum of the aggregated gaps of cardinalized ordinal data (permitting substitutability). The reasons for the 'Improved Integrated Method to Measure Poverty' not acquiring popularity seem to be (a) that it required a number of

care and social security. He considered the following items to be covered by income poverty: food, petrol, personal and household hygiene, clothing, footwear and personal care, transport, basic communications, recreation and culture, basic services expenditure in health care and education, and other expenditures.

³⁷ Boltvinik (1992) also proposes independent and revised UBN and income poverty measures.

³⁸ Boltvinik (1992: 360–1) has a detailed description of how this alternative was implemented.

controversial estimations, such as those related to time use and monetary valuations of UBN indicators, (b) that it attached a cardinal meaning to categories of response in ordinal variables and thus the intensity in the UBN index was dependent on the particular cardinalization used (which again could be contested), (c) some steps such as the cardinalization of ordinal data and the consideration of negative gaps prevented the resulting measure from satisfying many desirable axiomatic properties outlined in section 2.5.³⁹ Overall, in trying to accomplish too much, the method lost the public intuition and policy relevance that characterizes the counting approach and direct method of poverty measurement. That being said, many important distinctions were considered in this development, including the importance of time poverty.

The UBN approach has also been used in other parts of the world. In the Arab Region, Lebanon pioneered the UBN approach in 1997, using eleven indicators in four dimensions from the 1994–5 population and HH survey (a mini census covering 10% of the population). The document *Mapping Living Conditions in Lebanon* was published in 1998 by the Lebanese Ministry of Social Affairs (MoSA) and UNDP, and was used to define poverty after the civil war in the absence of other data. This report, which mapped Lebanon's six governorates and twenty-six districts, was updated in 2007 using 2004 survey data (UNDP and MoSA 2007), and an expanded index was published together with monetary poverty measures from the same survey in 2009. Iraq's Ministry of Planning together with UNDP also completed a significant three-volume study *Mapping of Deprivation and Living Conditions in Iraq* using 2003 data (UNDP and MPDC 2006). The study was used for budget allocation and policy priorities. In 2011 the same partners published a second study using 2007 data. A seven-country study was also produced using PAPFAM data which covered seventeen indicators grouped into five dimensions: education, health, housing, home necessities, and economic conditions (League of Arab States et al. 2009). Jordan published a two-volume study using the same methodology using the 2010 data (first volume) and a comparative study 2002–10 (second volume) (MOPIC, DOS, UNDP, ESCWA). Other studies (ESCWA-AUDI) have covered particular topics such as urban deprivation index in Tripoli, Lebanon (Nehmeh 2013).

The counting approach to identifying the poor has also been used in a new generation of poverty measures with renewed interest being shown in the direct method that uses solid aggregation methodologies based on axiomatic frameworks analogous to those which gave rise to the advances

³⁹ Boltvinik's aggregation method resembles the aggregate achievement approach described in sections 2.2.2 and 3.6.2.

in income poverty measurement in the 1970s and 1980s (Alkire and Santos 2014). The following sections review some of these.

4.3.1 Counting Approaches in Measures of Child Poverty

A counting approach to identifying the poor is a natural approach for various policy-oriented measures of child poverty. Understanding child poverty is widely agreed to require a multidimensional approach in both European and developing contexts (Trani et al. 2013, Boyden and Bourdillon 2012; Minujin and Nandy 2012; Gardiner and Evans, 2011). A pioneering and internationally comparable measure of child poverty in developing countries was computed in 2003 (Gordon et al. 2003; Gordon et al. 2001; UNICEF 2004), whose indicators and cutoffs reflect the Convention of the Rights of the Child. A number of studies have more recently measured and analysed child poverty using the AF method, including Alkire and Roche (2012), Apablaza and Yalonetzky (2011), Roche (2013), Trani et al. (2013), de Neubourg et al. (2012), and Dickerson and Popli (2013). In particular, it is worth highlighting that de Neubourg et al. (2012) is a step-by-step guide to implementing the Multiple Overlapping Deprivation Analysis (MODA) tool, developed at UNICEF's Research Office for global child comparisons using the M_0 measure of the AF method.⁴⁰

4.4 Counting Approaches in Targeting

The implementations of the counting approach observed in Europe, the US, Latin America, and elsewhere were originally developed mostly within universities, and later became a tool for policy design and even targeting, although usually complemented by some other methodology. However, other implementations of the counting approach have stemmed immediately from a much more pragmatic motivation: targeting beneficiaries in programmes run by the national or regional governments and non-governmental organizations.

One good illustration is the case of India, where a series of different methodologies have been used to identify rural households as 'below the poverty line' (BPL). BPL households are eligible for certain benefits, such as subsidized food or electricity, and programmes to construct housing and encourage self-employment. Poverty measurement in India has largely been based on consumption and expenditure poverty. Since 1992, the Indian government's census-based targeting methods have

⁴⁰ <<http://www.unicef-irc.org/MODA/>>, accessed 24 November 2014.

gradually evolved towards a counting approach (GOI 2009; Alkire and Seth 2013c). For example, in 2002, the BPL census collected information on thirteen dimensions covering topics such as food, housing, work, land ownership, assets, and education, and an aggregate achievement approach was implemented. This methodology was criticized on a number of grounds, including the cardinalization of ordinal variables and the substitutability of achievements among others.⁴¹ Alkire and Seth (2008) compare the 2002 BPL method with a method based on a counting approach and show the possible mismatches that may occur between the two methods.

In 2008, the Indian government appointed an Expert Group Committee, under the chairmanship of N. C. Saxena, to provide a critical review of the 2002 BPL methodology and data contents, and to propose a new method for identification.⁴² Their three-stage proposal implicitly used a counting method with a union approach in the first two stages leading to a counting-based identification in the third. It sparked informative empirical studies and ongoing methodological debates (Drèze and Khera 2010; Roy 2011; Sharan 2011; Alkire and Seth 2013).

Other subnational initiatives in South Asia use counting approaches for targeting. Two cases might illustrate this. The first concerns the Indian state of Kerala, an emblematic case of development and poverty reduction, whose government has been using a counting approach for targeting poor households since the late 1990s. The method was originally developed by non-governmental organizations (NGOs) and subsequently used for a women-based participatory poverty eradication programme named 'Kudumbashree' (Thomas et al. 2009). Kudumbashree uses nine equally weighted indicators related to housing, water, sanitation, literacy, income sources, food, presence of infants, presence of mentally or physically challenged or chronically ill persons, and caste/tribe. If the household presents deprivations in four or more indicators, it is considered poor; if it presents eight or nine, it is destitute. The identification of poor households is verified by neighbourhood groups comprising households that live in proximity. The identified households are eligible for a number of programmes, including microcredit.⁴³

In our second case, a counting approach to celebrating 'graduation from poverty' is used by two acclaimed Bangladeshi NGOs, the Grameen Bank and BRAC. The Grameen Bank, the 'bank for the

⁴¹ For a list of criticisms, see Sundaram (2003), Hirway (2003), Jain (2004), Mukherjee (2005), Jalan and Murgai (2007), Alkire and Seth (2008), GOI (2009), Thomas et al. (2009), Drèze and Khera (2010), and Roy (2011).

⁴² Alkire and Seth (2013c) provide further details.

⁴³ The Kolkata-based NGO Bandhan also uses a counting approach to identify participants and 'graduates' from poverty.

poor', was founded by Muhammad Yunus in 1976 in Bangladesh, originally as a local microcredit project. The project evolved into a nationwide bank with over eight million borrowers of whom 96% were women, and has spread elsewhere. Grameen uses a set of ten indicators to identify participants. When a household has zero deprivations (intersection approach), it is considered to have 'graduated' from poverty. A counting approach to identifying the poor is also implicitly used by BRAC (Bangladesh Rural Advancement Committee), another prominent microfinance NGO, initiated by Fazle Hasan Abed in 1972 in Bangladesh, which has spread widely. The BRAC programme, 'Target the Ultra-Poor Programme' (TUP), uses a counting-based method to target asset grants, skills training, community support, and healthcare services.

Moving further east, in Indonesia the measurement of poverty has primarily used the indirect income approach. However, multidimensional perspectives using counting approaches are emerging (CBS 2008). A 'family welfare approach' was initially proposed by the Family Planning Coordination Board in 1999 (CBS 2008: 10). This approach identified a family as poor if it was deprived in one of five indicators (a union approach): religious freedom, meals per day, clothing, size of house, and access to modern medicine, but the approach was not implemented because the five indicators were not relevant to all families. The Central Bureau of Statistics (CBS) then proposed a 'poverty criteria approach', which identified people as poor if they were deprived in five out of eight indicators. The eight indicators were floor area; type of floor; water access; type of water; asset ownership; income per month; expenditure spent on food; and consumption of meat, fish, eggs, and chicken. A census instrument conducted in three provinces—South Kalimantan, DKI Jakarta, and East Java—in the years 1999, 2000, and 2011, respectively (CBS 2008: 18), used this method to determine whether households had the right to receive basic necessity subsidies (CBS 2008: 19).⁴⁴

A distinct yet related methodology for identifying the poor is the **poverty scorecard** developed by Mark Schreiner (Schreiner 2002, 2006, 2010). Schreiner proposed the method both for measuring poverty as well as for targeting beneficiaries. The poverty scorecard uses an individual or household card, and grades five to ten achievements to produce a score. Indicators are sought that are strongly correlated with income poverty and have the following characteristics: ease of acceptance, inexpensive to observe and verify, already commonly collected, objective, liable to change over time as poverty status changes, variety vis-à-vis other selected indicators, and applicable across countries

⁴⁴ For a few other attempts and proposals for multidimensional non-counting approaches to poverty measurement, see Pradhan et al. (2000) and Gönner et al. (2007).

and across regions within a country. The indicators proposed for poverty scorecards for seven countries include housing quality; drinking water and toilet facilities; cooking arrangements; school attendance; ownership of land; and ownership of televisions, radios, or telephones (Schreiner 2010).

The indicators are fielded in nationally representative household surveys that also collect information on income or expenditure. Indicator weights are set through a logit regression as follows. The individuals are categorized into two groups: income poor and income non-poor, and this categorization is used as the dependent variable in the regression, with the selected indicators as explanatory variables. The logit weights are transformed such that all weights are non-negative integers and the minimum score is 0 and the maximum is 100.⁴⁵ For example, in his proposed scorecard for Pakistan (Schreiner 2010), if the household does not have a flush toilet (most deprived), it receives a score of 0; if it has a flush toilet to pit (less deprived), it receives fourteen points; and if it has a flush toilet to public sewer (not deprived at all), it receives nineteen points. The total poverty score for each household is obtained as the sum of the household's scores obtained in all indicators. A person is identified as poor if that person's poverty score lies below a poverty threshold which, as Schreiner indicates, can be determined according to the aim and scope of the particular programme.

As in the case of Boltvinik's method, Schreiner's poverty scorecard method departs from a counting approach. Furthermore, it cardinalizes ordinal data, based on logit regressions, which does not seem legitimate, as section 2.3 argued. Scores are then standardized and aggregated to obtain an overall score, which is compared to an overall threshold. This step, like the aggregate achievement approach (section 2.2.2), allows substitutability between non-deprived and deprived achievements. If all the variables had been cardinal, the score would be the (weighted) sum of achievements. But given that usually most variables are ordinal, such a score actually has no direct interpretation. This procedure has been followed in the Unsatisfied Basic Needs Index in Lebanon, Iraq, and other Arab states.⁴⁶ With a particular normalization of the variables, it has also been the method used by the Scottish Area Deprivation Index (Kearns, Gibb and Mackay 2000), as well as by the Multidimensional Poverty Assessment Tool (MPAT) (Cohen 2010; Saisana and Saltelli 2010), among others.

⁴⁵ Schreiner (2010) divides the sample into components for 'construction' (50%), 'calibration' (25%), and 'validation'.

⁴⁶ UNDP and MoSA (1998, 2007); UNDP and MDPC (2006); League of Arab States (2009); Nehmeh (2013).

With the method described above, Schreiner developed poverty scorecards for various microfinance institutions, and also developed adaptations such as the Progress out of Poverty Index (PPI).⁴⁷ A related method was used by the Benazir Income Support Programme in Pakistan, which targets benefit recipients using a scorecard of twelve observable indicators, each of which receives a weight based on an Ordinary Least Squares (OLS) model of household expenditure per adult equivalent regressed on various sets of predictors (proxy-means test) (Khan and Qutub 2010).⁴⁸ The approach thus has spread widely yet without clarifying fundamental methodological concerns.

In the area of targeting, the AF methodology is also underway both via academic studies and in policy programmes. For example, Robano and Smith (2014) examine the TUP programme of BRAC, developing M_0 measures for the existing targeting methods as well as for a proposed alternative, and present and implement an impact evaluation methodology using M_0 rather than any single outcome as the dependent variable. Azevedo and Robles (2013) propose an M_0 multidimensional targeting approach to identifying beneficiaries that explicitly takes into consideration the multiple objectives of conditional cash transfer programmes and the multiple deprivations of the poor household. Using data from Mexico's prominent Oportunidades programme, they find M_0 multidimensional targeting to be significantly better than either the current targeting method or an alternative income proxy-means test at identifying households with deprivations that matter for the programme objectives. An *ex ante* evaluation suggests that programme transfers could have a greater impact if potential beneficiaries were selected by the AF method. Alkire and Seth (2013c) set out the powerful benefits of linking multidimensional targeting methods to national multidimensional poverty measures, such as policy coherence, monitoring and evaluation synergies, and the ability to update the targeting methodology and the targeting census instrument consistently across time. They suggest how an M_0 targeting method can be developed, justified, and linked with a national multidimensional poverty measure. This kind of approach is being implemented with increasing frequency: for example, Angulo et al. (2013) describe the geographical targeting that is used in Colombia.

In sum, the necessity of defining a target population for poverty reduction programmes has motivated the use of counting methods with a variety of specificities and prompted the development of related new identification methods. However, the measurement properties and features of the

⁴⁷ <<http://www.progressoutofpoverty.org/ppi-construction>>, accessed April 2013.

⁴⁸ <http://www.bisp.gov.pk/SC_Introduction.aspx>, accessed April 2013.

alternative targeting instruments are rarely discussed (or, one suspects, clearly communicated), which makes it difficult for policymakers to make an informed decision.

4.5 Final Comments on Counting Approaches

Counting approaches emerged as a natural procedure for identifying the poor with the basic needs and the social exclusion approaches, giving form to various direct methods to measure poverty. Counting the number of observable deprivations in core indicators has an appealing intuition and simplicity that has attracted not only academics but also policymakers and practitioners. Over time, counting methods have been implemented in a variety of useful formats in terms of poverty measurement—namely, the European Measures of Relative Deprivation, the Consensual Approach to Poverty Measurement, the Consistent Poverty Approach, the Latin American Basic Needs Approach—and it has been incorporated into solid axiomatic poverty measures in the academic literature. Moreover, the counting approach has also been used to measure child poverty and to construct targeting tools for poverty reduction programmes. The counting approach has motivated the collection of new data in some cases, and the construction of powerful policy tools such as poverty maps, in others.

It is also worth observing some prominent approaches that look similar to the counting approach yet differ in fundamental ways—such as assigning (by a normative or a statistical procedure) cardinal values to categories of ordinal variables, or using an aggregate line approach—and thus, in the end, are altogether different. This is the case in Boltvinik’s improved integrated method and Schreiner’s poverty scorecard method, among others.

The AF methodology uses a counting approach to identify the poor, and, as a consequence, it inherits its simplicity and intuition and stands on the shoulders of this venerable tradition in both academic and policy circles. Additionally, it introduces axiomatic rigour by (a) scrutinizing the counting approach as an identification method of the multidimensionally poor in a formal framework and (b) combining it with sound aggregation methodologies also within a formal axiomatic framework. Chapter 5 will present the AF methodology in depth.

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