# A human rights-consistent approach to multidimensional welfare measurement applied to sub-Saharan Africa

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## ARTICLE INFO

## ABSTRACT

The rights-based approach to development targets progress towards the realization of 30 articles set forth in the Universal Declaration of Human Rights. In current practice, progress is frequently measured using the multidimensional poverty index. While elegant and useful, the multidimensional poverty index is inconsistent with the Universal Declaration of Human Rights principles of indivisibility, inalienability, and equality. We argue that a first-order dominance (FOD) methodology maintains basic consistency with these principles. Specifically, FOD comparisons are independent of any applied weighting schemes and hence are free from assumptions regarding substitutability between included welfare indicators (indivisibility). FOD cannot be established when welfare in any indicator is deteriorating, no matter how great the advancement is in other indicators (inalienability). Finally, FOD requires that domination occurs throughout the population (equality), implying that welfare gains among better-off groups never offset welfare losses among worse-off groups. We discuss and compare the properties of the multidimensional poverty index and first-order dominance approach and apply both measures to 26 African countries using data near 2002 and 2012. Results across the two measures are broadly similar but not the same. For example, while the multidimensional poverty index suggests that all countries are advancing, FOD indicates that 14 countries experience broad-based progress, two countries show more moderate likelihoods of progress, and the remaining 10 countries neither improve nor deteriorate in terms of attainment of rights for the dimensions considered. We conclude that the multidimensional poverty index and first-order dominance approaches are useful complements that should be employed in tandem.

## 1. Introduction

On December 10, 1948, the United Nations General Assembly (UNGA) adopted the Universal Declaration of Human Rights (UDHR) as 'a common standard of achievement for all peoples and all nations'. The UDHR contains 30 articles that define a series of fundamental human rights. Most of these articles refer to laws or norms that govern the functioning of society. For example, Article 2 states that the rights and freedoms set forth in the UDHR apply without distinction of any kind, such as race, religion, or sex; and Article 15 affirms that everyone has a right to a nationality. These and most other articles within the Declaration can in principle be followed without reference to the material circumstances faced by the society in question. However, a subset of the articles is notably easier for wealthier societies to fulfill than for poorer societies. For instance, Articles 25 and 26 assert, respectively, that everyone has the right to an adequate standard of living and that everyone has the right to education, particularly at elementary levels.

Poor countries may confront enormous or even insurmountable (within short timeframes) obstacles in meeting these obligations of the UDHR, regardless of the collective desire of those with decision-making power within those societies (labeled duty-bearers) to fulfill them. This gap between stated goals and circumstances on the ground makes it necessary to interpret the UDHR as an aspirational declaration whose tenets, under favorable circumstances, gradually become satisfied for an increasing share of the world's peoples and nations.

This same gap also generates a rationale for development assistance as an instrument to speed-up progress towards achieving the

aspirations set forth in the UDHR and for the setting of clear goals, such as the Sustainable Development Goals (United Nations, 2017), to monitor progress. Many development institutions, notably the programs and specialized agencies of the UN, specifically link the rights set forth in the UDHR, their development programs, and attainment of the Sustainable Development Goals (SDGs). These links relate both to final goals and to the processes these institutions seek to put in place to attain development goals (such as the SDGs). The rights-based approach to development is meant to forge these links by specifically targeting 'the realization of human rights as laid down in the Universal Declaration' and by applying human rights principles as a guide to 'all development cooperation and programming in all sectors and in all phases of the programming process' (United Nations Children's Fund [UNICEF], 2004, p. 91).

In terms of principles, the UN Statement of Common Understanding of the UDHR (see United Nations Children's Fund, 2004, Appendix B) insists that human rights are (among other properties):

1. Indivisible: rights have equal status and cannot be ranked in a hierarchical order;
2. Inalienable: rights cannot be given up or taken away;
3. Interdependent: the realization of one right may depend, at least in part, on the realization of others; and
4. Equal: all human beings are entitled to their human rights.

This article is concerned with measurement of progress towards the attainment of human rights, which are inherently multidimensional. It falls within a large literature, both theoretical and empirical, related to the measurement of welfare across multiple dimensions of wellbeing (Alkire et al., 2015; Ravallion, 2016). It seeks to make three contributions. First, it assesses whether the main approach currently employed for measuring welfare across multiple dimensions, the multidimensional poverty index (MPI) of Alkire and Foster (2007) (henceforth AF) is, in fact, human rights-consistent. We assert that, while elegant and practical, the AF approach is inconsistent with human rights principles.

Second, an alternative approach based on first-order dominance (FOD) principles is presented and assessed (Arndt et al., 2012; Arndt, Østerdal, & Siersbæk, 2016; Østerdal, 2010). The FOD approach is in line with the four human rights principles listed above.

Third, the AF and FOD approaches are applied to data for 26 African countries to determine welfare rankings around the year 2002 and for the most recent data point available (approximately the year 2012). The AF and FOD approaches generally provide similar country rankings in both time periods and both point broadly to progress over time. Divergences between the AF and the FOD approaches do occur, and provide significant additional information. The AF and FOD approaches are therefore best viewed as complementary methodologies that should be employed in tandem.

The remainder of this study is structured as follows. Section 2 presents the AF and FOD approaches and assesses them in the context of a rights-based development approach. Section 3 presents the application to welfare assessment for sub-Saharan Africa (SSA), while Section 4 concludes.

## 2. The multidimensional poverty index and first-order dominance

### 2.1. Review of recent applications

The United Nations Development Programme's (UNDP) MPI (Alkire & Santos, 2010) and the underlying AF methodology

(Alkire & Foster, 2007; Alkire et al., 2015) provide an important avenue for within- and cross-country multidimensional welfare comparisons and for comparisons over time. The MPI is relatively easy to compute from, for example, standard Demographic and Health Surveys (DHS) and/or UNICEF's Multiple Indicator Cluster Surveys (MICS) and is decomposable following the Foster, Greer, and Thorbecke (1984) class of poverty measures. Batana (2013) applies the AF method across 14 SSA countries to study poverty of women in the dimensions of assets, health, schooling, and empowerment. Alkire and Housseini (2014) present an extensive evaluation of multidimensional poverty in 37 SSA countries based on the 2014 MPI and on a modified index capturing severe deprivation. Analysis was extended to sub-regional decompositions and an assessment of poverty dynamics in 19 countries with consistent time-series.

FOD is also well-suited to within- and cross-country multidimensional welfare comparisons. It is, perhaps, particularly well-suited to welfare comparisons through time. It was applied to Vietnam and Mozambique by Arndt et al. (2012), and FOD has since been applied to numerous countries, including the Democratic Republic of the Congo (DRC), Ghana, Nigeria, Tanzania, and Zambia. The results of the work on the countries just listed are presented in companion volumes examining growth and poverty in sub-Saharan Africa (Arndt, McKay, & Tarp, 2016) and techniques in poverty measurement (Arndt & Tarp, 2016). Also, Permanyer and Hussain (2017) applied FOD analysis to a cross-country study of 38 developing countries and, using the same set of indicators, compared their results to other multidimensional methodologies.

The next two subsections provide a brief review of each approach.

### 2.2. Multidimensional poverty index

A detailed development of the MPI can be found in Alkire et al. (2015). Briefly, the AF approach aggregates household or individual welfare statuses across multiple dimensions into a single index that provides insight into both the incidence and intensity of poverty. The approach depends upon dual cut-offs that identify dimension-specific deprivation thresholds and an across-dimension threshold ($k$), which specifies a share of weighted indicators. Households with weighted deprivation shares of at least $k$ are deemed poor and the proportion of such households yields the multidimensional poverty headcount ($H$). The method further identifies the intensity of poverty ($A$) as the average weighted deprivation share among the poor. The final AF poverty index is referred to as the adjusted headcount ratio ($M_0$ or MPI), expressed as the product of the headcount ratio and the intensity of poverty:

$$M_0 = H \cdot A \tag{1}$$

In this analysis, we follow the Alkire and Housseini (2014) MPI analysis of SSA and set the AF poverty threshold ($k$) equal to one-third of weighted indicators.

### 2.3. First-order dominance

Østerdal (2010) and Arndt, Østerdal, and Siersbæk (2016) provide detailed treatments of FOD theory. A discussion of FOD in practice can be found in Arndt and Mahrt (2016). The FOD methodology builds upon earlier contributions to the dominance literature (Atkinson & Bourguignon, 1982; Bérenger, Bresson, Makdissi, & Yazbeck, 2013; Bourguignon & Chakravarty, 2003; Cowell & Victoria-Feser, 2007; Duclos & Échevin, 2011; Duclos & Makdissi, 2005; Duclos, Sahn, & Younger, 2007, 2011; Gravel & Mukhopadhyay, 2010; Gravel, Moyes, & Tarroux, 2009; Lehmann, 1955; Levhari, Paroush, & Peleg, 1975; Shaked & Shanthikumar, 2007).