Where Did Identification Go?[1]

Sabina Alkire,[2] James Foster,[3] and Maria Emma Santos[4]

(to be published in *Journal of Economic Inequality*)

We recently introduced a general method for measuring poverty when there are multiple dimensions [1,2] and provided a specific cross-country implementation (the MPI) as part of the 2010 Human Development Report [4,11] to complement existing methods. Our recent piece in the *Journal of Economic Inequality* (also OPHI WP 43) sought to clarify the presentation and address possible misunderstandings [3]. The present note – a longer version of the one published in JEI – responds to Martin Ravallion's paper in the same issue, and also benefited from contributions by other authors in this Forum. We value this exchange and vigorous debate and hope it will ultimately lead to better measures and policies.

Single Index?

Ravallion's first critique of our work is that "…it is not credible to contend that any single index could capture all that matters in all settings" [9]. A problem with this critique is that we contend no such thing.[5]

Our position is that "multidimensional measures provide an alternative lens through which poverty may be viewed and understood" [3 (p.289)]. We propose a methodology which - like all credible approaches to measuring poverty - has an identification step and an aggregate measure. Yet we go beyond a single measure in two ways. First, we go inward. We report a set of consistent subindices that unpack the AF index and supply powerful analyses. These include the headcount ratio and intensity of poverty, the censored dimensional headcount ratios, and the contribution of each indicator to overall poverty [3(4.3-4), 4].[6] So why aggregate if we break the index down again? Ravallion's question misleads because our subindices are not independent - as marginal dashboard entries are - but instead rely on the joint distribution through the identification step [3(4.2)].[7] Moreover, only the aggregate index fully embodies the concept of poverty, satisfies desirable properties and conveys overall direction of change. This is vital: policymakers demand a coherent summary statistic to show how overall poverty has changed.

Second, we go outward, and analyse additional indicators. For example, we explicitly state that the MPI aims to *complement* income poverty measures [4 (p.64)] and contrast MPI with a variety

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[2] (corresponding author) Oxford Poverty and Human Development Initiative (OPHI), Department of International Development, University of Oxford, 3 Mansfield Road, Oxford OX1 3TB UK; sabina.alkire@qeh.ox.ac.uk
[3] The Institute for International Economic Policy, the Elliott School, The George Washington University, 1957 E Street, N.W., Suite 502 Washington, D.C. 20052, USA, and Oxford Poverty and Human Development Initiative (OPHI), Department of International Development, University of Oxford, 3 Mansfield Road, Oxford OX1 3TB, UK
[4] Departamento de Economía, Universidad Nacional del Sur and CONICET, 12 de Octubre y San Juan, 7 Piso. 8000 Bahía Blanca. Argentina, and Oxford Poverty and Human Development Initiative (OPHI), Department of International Development, University of Oxford, 3 Mansfield Road, Oxford OX1 3TB, UK
[5] Ravallion's use of the term 'composite index' to describe the AF methodology ignores the key role of the identification step which censors the data of the nonpoor [3 (5.1)]. Ravallion is likewise imprecise with the terms "mashup" and "multidimensional," which would appear to be any function of a vector, and the term "uni-dimensional," which sometimes refers to the range of a measure and sometimes to the domain [8,9].
[6] There is a strong analogy to how normative multidimensional indicators are used in medicine to monitor and diagnose a broad range of conditions [6,7].
[7] Only in union identification will the raw and censored deprivation matrices coincide.

of other relevant indicators [4 (p.39-45)]. Additionally, we evaluate multiple implementations for robustness [4, 5] and encourage the development of better measures. As Sen stresses, the evaluative purpose of an index fundamentally shapes its construction [3(5.5)]; the measure will clearly vary as the purpose varies.

Space?

Ravallion's second critique is that aggregation should be conducted in attainment rather than deprivation space, preferably using prices as weights. This is entirely consistent with our methods [3(2)]; where we depart is in the fundamentally multidimensional case where aggregation is not possible in attainment space (say across income, health, and education in the dashboard). Ravallion brings aggregation to a dead stop. We move on to deprivation space – which is arguably as salient as attainment space for poverty measurement – and aggregate according to a concept of poverty as multiple deprivations, with explicit deprivation values and tradeoffs. Ravallion's extensive arguments against our approach are inapplicable here since they assume that attainment MRS's are uniform across people and "data" to the researcher, when in fact neither is true in this scenario.

Ravallion also claims that we "reject prices as weights". This misrepresents our position, in which there is wide scope for their use when they are available and meaningful [3(2)]. We have noted [2(fn 13)] that meaningful prices may *not* be available across *all* dimensions of relevance to poverty. Ravallion seems to support this view: "It is widely agreed that prices can be missing for some goods and deceptive for others" [9 (p.247)]. Where we differ is in what comes afterwards.

Marginal Dashboard?

Ravallion recommends a technology for evaluating poverty when there is a vector of attainment variables that cannot all be plausibly combined to construct a monetary equivalent or other aggregate. He proposes applying a standard unidimensional measure to *each* dimension to obtain a dashboard of dimensional measures. If, for example, the dimensions of poverty are income, education and health, he analyzes poverty using a vector of income poverty, education poverty, and health poverty.[8]

There are practical and conceptual problems with such an approach. First, as the Stigliz Sen Fitoussi report puts it:

> Dashboards… suffer because of their heterogeneity, at least in the case of very large and eclectic ones, and most lack indications about… hierarchies amongst the indicators used. Further, as communications instruments, one frequent criticism is that they lack what has made GDP a success: the powerful attraction of a single headline figure allowing simple comparisons of socioeconomic performance... [10(p.63)].

A dashboard leaves the difficult questions about tradeoffs completely open. It does not catalyse expert, political, or public scrutiny and debate on these tradeoffs, nor encourage transparency and accountability.[9]

Second, as Ferreira emphasizes, Ravallion's dashboard is blind to joint deprivations. Look again at the example from [3(5.1)][10]:

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[8] Ravallion is silent on the significant aggregation challenges that will arise in the non-income entries of his dashboard, where attainments can be ordinal and diverse (unlike his inapplicable two-dimensional example with continuous data [9]). Our methods address these challenges directly.

[9] The vigorous discussion of tradeoffs in the global MPI was facilitated by its transparent definition.

<div align="center">

Matrix 1   Matrix 2

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$$g^0 = \begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 1 & 1 & 1 & 1 \end{bmatrix} \cdots \begin{bmatrix} 0 \\ 0 \\ 0 \\ 4 \end{bmatrix} \qquad g^0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \cdots \begin{bmatrix} 1 \\ 1 \\ 1 \\ 1 \end{bmatrix}$$

Both matrices have identical marginal headcount ratios for each dimension (25%), yet in the first matrix one person is deprived in all dimensions and three people experience zero deprivations; in the second matrix, four people are deprived in one dimension each. The dashboard of marginal measures cannot distinguish these two situations. Our measure – and the people involved – could. And this is not purely academic: policy options are restricted by marginal lenses. In particular, it is impossible to target multiply deprived families first.

Finally, we have noted elsewhere [2 fn 11] that a dashboard of marginal measures can indeed be useful for some purposes. However, it is not particularly well suited to answering basic questions required of a poverty methodology: Who is poor overall? How many poor people are there? How poor are they?

The Way Forward

We have argued that Ravallion's dashboard is, incomplete and, indeed, the prospect of headlines like 'Government says poverty is higher, lower and unchanged' hardly inspires confidence. How is our proposal different? Imagine the following: You are the director of the Office of National Statistics reporting government figures on national poverty using our methods. The public wants to know: "has poverty gone up or down?" You release the answer, which appears in the headlines. The next question is, "why – what is behind the change?" You immediately drill down to show how each of the components moved and impacted the poor. You present striking maps of progress across states, compare ethnic groups, and show how the poorest of the poor fared. To complete the briefing, you report key indicators not included in the index: this year you focus on homicide rates and atmospheric conditions. Other scenarios and purposes for our technology can likewise be vividly illustrated.

In sum, our methodology for measuring multidimensional poverty can usefully augment the tools available for poverty analysis. Like older methodologies that currently hold sway, we expect that it will continue to be refined, pressing empirical questions answered, and data constraints eased.

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[10] Please note that Matrix 1 and 2 in [3] were misprinted; the correct matrices appear in this note.

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