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From Multidimensional Poverty Measurement to Multisector Public Policy for Poverty Reduction: Lessons from the Colombian Case

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Abstract:

This paper focuses on the analysis of conceptual, normative and institutional issues of the Colombian Multidimensional Poverty Index (C-MPI). The principal questions are the following: What is the decision-making process that lies behind the Colombian experience? What are the main lessons from the Colombian case in terms of institutional arrangements for the implementation of its index? Although the medium and longer-term effects of the C-MPI on poverty reduction are still to be seen and thus to be evaluated, there are some important lessons. First, a multidimensional poverty index's utility in terms of public policy depends not only on the mathematical and statistical robustness guaranteed by the Alkire Foster methodology but also on the ability of the policy maker to represent the public policy priorities through its normative choices. Second, acknowledging the inherent trade-offs involved in conceptual, statistical and public policy concerns is key to accurately defining the purpose of the measure. Finally, if the purpose of the MPI is to stimulate coordinated action to reduce poverty, an accurate design will not be enough; it is also necessary to provide a solid institutional architecture that supports the process from the design of the index to its application.

Keywords: multidimensional poverty, Colombia, Alkire Foster measures, deprivation, public policy, targeting, social policy.

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“Just like there are ideas that move the world, so too there are numbers and statistics that move the world. A number can awaken consciences; it can mobilize the reluctant, it can ignite action, it can generate debate; it can even, in the best of circumstances, lay to rest a pressing problem” (Székely 2005, p. 13).

1. Introduction

The Alkire Foster (AF) method can be understood as a framework of analysis to measure poverty that leads to an aggregate measurement of multidimensional poverty and of the joint distribution of deprivations (Alkire and Foster 2011a). The method is flexible and it can provide multidimensional poverty indicators for academic analysis through its adjustment to particular research objectives, for international comparisons by means of the use of internationally accepted dimensions and cutoffs, or for public policy orientation when the particular design and its normative choices reflect social agreements, policy priorities, and plans.

In order to identify general guidelines for the application of the AF method in public policy, this paper focuses on the analysis of conceptual, normative, and institutional issues of the Colombian Multidimensional Poverty Index (C-MPI). The principal questions are the following: What are the conceptual and normative elements of the AF method that should be taken into account for its application in the public policy context? What is the decision-making process that lies behind the Colombian experience? What are the main lessons from the Colombian case in terms of institutional arrangements for the implementation of the C-MPI?

The paper is divided into five sections. The first corresponds to this introduction; the second proposes a framework of analysis that considers conceptual, normative, and institutional issues; the third section analyzes the case study from Colombia; and the final section includes the main lessons from the case study.

2. Concepts and Framework of Analysis

2.1. Concepts and Definitions of the AF Method in a Public Policy Context

Atkinson (2003) identifies two general frameworks for measuring multiple deprivations: the social welfare approach and the counting approach. The welfare approach considers different dimensions of poverty as arguments of a social welfare function through which the situation of each individual or household is evaluated.¹ The counting approaches² ‘concentrate on counting the number of dimensions

¹ For more on the social welfare approach, see Bourguignon and Chakravarty (1998a, 1998b, 2002).

in which people suffer deprivation' (*ibid*, p. 60). The AF method is a counting approach that further advances the extent to which counting-based measures fulfill several properties that can be useful for public policy.

Intuitively, the AF method understands poverty as the existence of multiple deprivations faced by individuals (or households) in a simultaneous way (Alkire and Foster, 2011a; 2011b). Therefore, the notion of poverty behind the AF method considers not only deprivations in different dimensions that configure an accurate picture of poverty but also the intensity of those deprivations accumulated by individuals or households.

Identification and Aggregation Processes of the AF Method

According to Sen (1976/1992) any method to measure poverty can be generalized as the operationalization of two main steps: the *identification* of people (or households) living in poverty and the *aggregation* of these people into an overall measure. Therefore, designing a poverty index implies a response to two basic questions: (1) Who is poor? and (2) How to aggregate this measure in order to express an overall level of poverty?

The AF method responds the first question by proposing a *dual cutoff* methodology for identification that consists of fixing a *cutoff per dimension* to indicate when an individual or household is deprived in each dimension and, subsequently, defining a cross-dimensional *poverty cutoff* to indicate when an individual or household has to be considered poor as a consequence of accumulating multiple deprivations. To apply the *poverty cutoff* it is necessary to allocate a weight to each dimension that reflects the relative importance of each dimension and indicator to the overall measurement.³

After the identification process, there is an intermediate step that is often overlooked (Alkire and Foster 2011b): The information of the non-poor population is censored in order to apply the aggregation only to individuals (or households) considered poor. By censoring all the information from the non-poor in the aggregation process, the methodology is able to fulfil several properties including a *focus on poverty* (meaning the index is strictly sensitive to changes to the poor households' achievements) and *decomposability* (which allows the overall measurement of poverty to be estimated as a weighted average of subgroup poverty levels). Both properties are useful for targeting social programs and for public policy design.

² Alkire et al. (2015) offers a detailed review of applications of the counting approach in Europe and Latin America. See also Atkinson (2003) and the footnotes 7 to 9 from this paper.

³ The structure of weights depends on several technical and normative decisions regarding the identification and aggregation processes. In some cases, weights are not required. For an in-depth discussion of this, see Alkire *et al.* (2015).

Regarding the second question, the AF methodology adapts the traditional Foster-Greer-Thorbecke (FGT) method for one-dimensional indexes (Foster et al. 1984) to the multidimensional space. This aggregation method leads to a family of poverty indexes that express the level and the gap of poverty plus the distribution of deprivations such as⁴

- *Headcount ratio*: the proportion of people living in multidimensional poverty (expressed as a percentage of population)
- *Adjusted headcount ratio*: the headcount ratio multiplied by the average share of deprivations (intensity) in order to take into account the breadth of poverty in terms of deprivation accumulation
- *Adjusted poverty gap*: includes a measure of how far poor households are from overcoming their situation. It is expressed as the adjusted headcount ratio multiplied by the average poverty gap between each household's achievement on a dimension and the cutoff for that dimension.
- *Adjusted severity index*: estimated as the adjusted headcount ratio multiplied by the average of the squared normalized gaps. Intuitively, the squared normalized gaps guarantee more relative importance to the households with the highest poverty gaps.

The adjusted poverty gap and the adjusted severity index can only be estimated using cardinal indicators, i.e. indicators that can be expressed as a degree of deprivation rather than a category of deprivation. Consequently, the public policy applications of the MPI have all used the *adjusted headcount ratio*.

Processes of identification, censoring, and aggregation can only be estimated using a source in which all variables link at the individual (or household) level in the same survey. Hence, the AF method cannot combine different sources of data. This requirement, necessary to take advantage of the potential of the method, sets a significant trade-off when the designer has priorities for public policy that cannot be operationalized using the same survey.

According to Alkire and Foster, the AF method is a general technology that can be used for different purposes and in different contexts: 'Our methodology is a general framework for measuring multidimensional poverty – an open source technology that can be freely altered by the user to best match the measure's context and evaluative purpose' (Alkire and Foster, 2011b, p. 17). Those adaptations that shape the index according to specific purposes are the normative choices, which, in order to achieve a solid indicator for public policy applications, require a coherent decision-making process.

⁴Definitions are based on Alkire and Foster (2008, 2011a, 2011b).

2.2. Normative Choices and a General Decision-Making Process to Build a Multidimensional Poverty Index Based on the AF Method

The first and the most important normative choice for building a multidimensional poverty index in the public policy context is designating the purpose of the measurement. For instance, it can be used to create an academic tool in order to answer several questions for poverty analysis,⁵ to make international comparisons and rankings,⁶ or to orient national public policy.⁷ These objectives are not always mutually exclusive. For example, the academic approach can provide public policy recommendations and the public policy-oriented approach could inspire relevant academic questions. However, the main purpose should be defined in order to guide the subsequent decisions.

If the main purpose of the measurement is to guide public policy for poverty reduction at the national level, then all of the elements required by the AF measure, such as dimensions (and variables), *cutoffs* per dimension, poverty *cutoff*, and weights, should reflect the explicit normative choices (which are informed by social agreements, policy objectives, priorities, and plans) that shape the poverty measure.

A General Decision-Making Process to Build a Public Policy-Oriented Application of the AF Method

Figure 1 shows a general decision-making process that reflects a sequence of questions and tasks directed to the application of the AF method in the context of public policy.⁸ Each step involves different trade-offs and assessments, from conceptual and policy concerns to empirical ones.

The first step, *defining guiding principles*, involves preliminary questions, which are crucial to shape the index to cohere with public policy goals and design; for instance, some of the main questions could be the following:

- What is the concept of poverty and the social agreements that the index embodies?
- Is there an explicit strategy to reduce poverty as a background to the index?
- What is the desirable term of monitoring? Short, medium, or long run?
- What is the relationship between the multidimensional poverty index and the traditional monetary measurement? Is it a substitute or a complement?

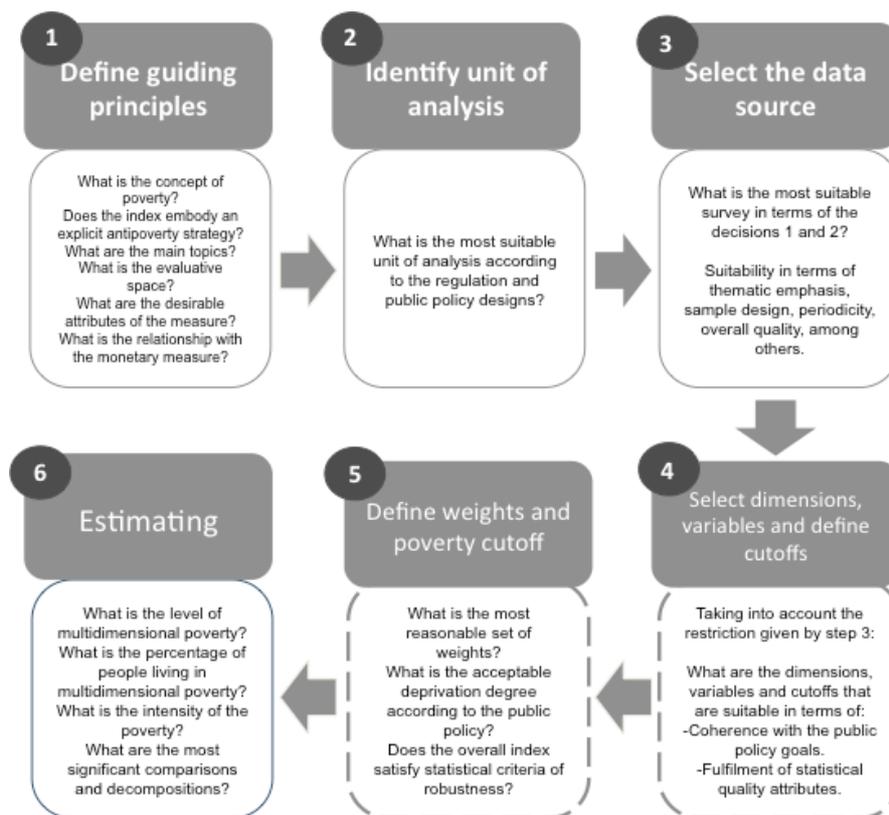
⁵ Some examples are Alkire and Roche (2011) who developed an MPI for child poverty and Alkire and Seth (2015) who analyzed the multidimensional poverty changes and trends in India.

⁶ The most representative examples that follow this objective are the global MPI proposed by Alkire and Santos (2013, 2014), the MPI for six Latin American countries developed by Battiston et al. (2013), and the MPI for Latin America by Santos et al. (2015).

⁷ CONEVAL (2009, 2010), National Statistics Bureau, Royal Government of Bhutan (2014), Angulo et al. (2015), and MDS (2015) explain in depth the official methodologies from México, Bhutan, Colombia, and Chile, respectively.

⁸ The process is a generalization based on public policy oriented applications from Colombia (Angulo et al. 2015) and Chile (MDS 2015). Alkire et al. (2015) propose a more general framework that can be applied to a wide range of purposes.

Figure 1: A General Decision-Making Process to Build an MPI for Public Policy Orientation



The second and third steps lead to connections between public policy design and empirical issues. Selecting the unit of analysis (individuals or households) has conceptual and empirical relevance. This decision guarantees that the index uses the same language as public policy. However, the data source selected in the third step imposes limits on the measurement in terms of thematic issues and statistical representativeness.

Based on the guiding principles and the selected source, the designer has to reflect public policy priorities (indicators) and social agreements (cutoffs) in making a thematic and statistical assessment and faces several trade-offs (the fourth step). For instance, one variable can be extremely relevant in terms of public policy, but, at the same time, it may not fulfil the minimal quality requirements such as a showing a smaller or lower percentage of missing values, being a representative estimation, or other criteria of statistical qualification.⁹

The fifth step gathers two relevant normative choices. The first is selecting weights per variable (and therefore per dimension if it is defined as a set of variables). In the case of a public policy-oriented application, weights tend to reflect the relative importance of each goal as represented by a set of

⁹ Alkire and Santos (2014) propose a methodology to analyze the data quality and robustness of a multidimensional poverty index.

indicators or, in public policy language, of each sector in a multisector strategy.¹⁰ The second is selecting the *poverty cutoff*. This should reflect the scope of the strategy to reduce poverty. Both processes, fixing weights and the poverty cutoff, imply, in a similar way to the fourth step, public policy discussion and statistical assessment. Although these two normative choices are significant for determining the overall level of multidimensional poverty, it is desirable that the index is robust – that is, the orders provided (between subgroups such as regions, cities, among others) should be robust to a range of plausible normative views.¹¹

The last step consists of estimating the identification and aggregation process explained before. Although the process has been explained as a sequence, it is possible that, in practice, it will be necessary to iterate some steps, adjusting choices according to partial results and statistical tests.

These two subsections have focused on the conceptual issues and normative choices that shape a multidimensional poverty index based on the AF method and directed to a public policy orientation. However, who produces and applies these methods in order to guide public policy? Far from being a purely academic exercise, designing, estimating, and applying official poverty indexes involves a strong relationship between statistics, public policy, and politics.

2.3 Institutional Architecture for Official Poverty Indexes

“Official statistics do not merely hold a mirror to reality. They reflect presuppositions and theories about the nature of society. They are products of social, political, and economic interests that are often in conflict with each other” (Alonso and Starr, 1987, p. 1).

Deaton (2014) recognizes that the relationship between poverty measurement and policy usually leads to unavoidable connections between measurement and politics. Although in some situations politics can debilitate a measurement, this link is not always a bad thing; it is merely the nature of the official statistics – ‘There is (usually) no measurement without politics’ (Deaton 2014, p. 3). Several links are identified by Deaton:

- Measurement is frequently used to orient public policy so official statistics can be designed according to the needs of the State or for solving its problems.
- Statistics can be part of a political strategy. As Deaton suggests ‘Politics is often disguised as science’, that point not necessarily leads to manipulation, at least can be affect the application, even the ‘apolitical objectivity is often an effective political strategy’ (Deaton 2014, p. 2).
- When the statistics are relevant for the civil society, there could be pressure from the government on the statistics offices during the production process. Additionally, the official

¹⁰ Alkire *et al.* (2015) analyzes in depth the philosophical and technical implications of this normative choice in a general approach.

¹¹ Using the global MPI, Alkire and Santos (2014) explain and apply several robustness tests for different sets of weights and poverty cutoffs.

numbers can be affected by the political debate after their dissemination if they are not strongly supported.

- Measurements contribute to deciding who the beneficiaries of public policy are and what their needs are; in some cases, ‘the state may delegate political decisions to statistical agencies’ (Deaton 2014, p. 2).

The interaction between statistics and politics through public policy identified by Deaton is present in the stages of design, production, and application of official statistics, suggesting the natural complexity of actors and interests involved in the whole process. In fact, those numbers are not produced only by an author or researcher but also by a whole system. Starr (1987) defines a statistical system as ‘a system for production, distribution and use of numerical information’ that is shaped by political judgments (Starr 1987, p. 8). ‘Our point, rather, is that political judgments are implicit in the choice of what to measure, how to measure it, how often to measure it, and how to present and interpret the results’ (Starr 1987, p. 3).

Starr (1987) identifies the social and cognitive structures that shape the official numbers. While the social structure is formed by the social and economic relations between public and private actors, such as state agencies, private firms, and international organizations, that produce statistics, the cognitive structure involves knowledge, rules, and assumptions that organize data in terms of interpretation and presentation.

Deaton’s annotations and Starr’s approach are useful for understanding the institutional architecture suitable for managing a poverty index with a public policy orientation. Following their reasoning, the *institutional architecture* could be defined as the set of public and private actors, their relations, rules, and methods that are involved in the design, production, dissemination, and use of the official multidimensional poverty measurement.

As explained in the first section, the AF methodology is flexible and is able to embody public policy priorities and plans. Therefore, the statistical system concept takes into account the wide range of actors who participate in its decision-making process, disseminating an application of the poverty numbers.

Figure 2: Statistical System General Structure

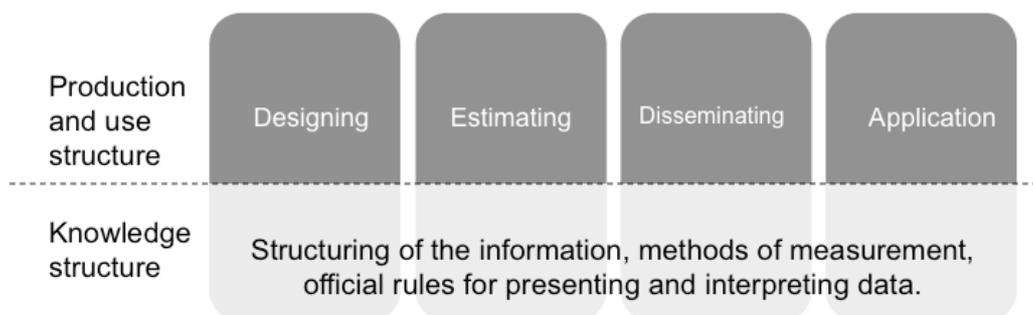


Figure 2 proposes a general structure of a statistical system based on an adaptation of the concepts of Starr (1987) and Deaton (2014). The system involves the process of designing, estimating, disseminating, and applying official statistics. Each process, at the same time, involves two general structures: first, the structure of use and production, which gathers the public and private actors who execute each process from design to application of the official numbers. And second, the knowledge structure that includes structuring information, methods of measurement, and official rules for presenting and interpreting data. Both structures interact: public and private actors produce and use statistics based on the knowledge structure, and, at the same time, they can influence and define methodologies for production and rules for interpretation (as Deaton's links suggest).

3. The Multidimensional Poverty Index of Colombia: Analysis and Main Lessons

Based on the Colombian case, this section analyzes the application of the main concepts of the AF method, normative choices, and institutional architecture to manage a multidimensional poverty index in the context of public policy.

3.1 Context

There are two crucial elements of the Colombian context within which the C-MPI was designed and launched that can be useful for understanding the purpose of the measure: a) the index was designed and launched at the same time as the new Colombian income poverty measure and b) the C-MPI and the new income poverty measure were presented together as the official monitoring dashboard of the National Development Plan from Colombia at the beginning of President Santos' first term in office.

Due to the first element, the C-MPI was created as a complement to, and not a substitute for, income poverty measurement in Colombia. In September of 2011, the Colombian government launched its official new methodologies of both monetary and multidimensional poverty measures after more than four years of technical and media discussions around methodological concerns and low credibility from civil society. The crisis was triggered by a set of changes in the official household surveys introduced by the National Statistics Office (DANE) in 2006 and the obsolete methodology of the traditional monetary measure,¹² which had been adopted and maintained since the eighties. An expert committee developed the government's solution to the crisis in two phases. During the first phase (2008–2009), comparable time series for employment, income poverty, and inequality were estimated. The second

¹² Azevedo (2013) explains the 'turnaround' of the income poverty measurement in Colombia during this process of discussion and re-design and summarizes the main lessons of the process. The discussion had two phases: the first was about the methodology to provide comparability between old and new surveys and the second was focused on the new poverty line and income measure (MESEP 2009, 2012).

phase (2009–2011) focused on designing a new income poverty measure. As an indirect result of the discussion at the end of the second phase, the C-MPI was designed by the National Planning Department (DNP) with assistance from the Oxford Poverty and Human Development Initiative (OPHI) and was presented by the government as an innovation to complement the picture of poverty in Colombia provided by the income poverty measure.¹³

The second point related to the Colombian context highlights the public policy orientation of the C-MPI. The C-MPI was designed at the same time as the National Development Plan 2010–2014 and for the same institution, which is responsible for coordinating and monitoring the plan. Therefore, the C-MPI embodied, on one hand, the framework of analysis of the overall strategy to reduce poverty and, on the other hand, the sector discussions and goals of the National Development Plan designed to facilitate the definition of the C-MPI's normative choices. As consequence of this 'timing' between poverty measure designs and the construction of the National Development Plan, both methodologies were presented as part of a dashboard for monitoring the poverty reduction strategy in Colombia during the period 2010–2014.

3.2 Motivation and Purpose of the Measure

According to the original paper of the C-MPI, the National Planning Department proposed a multidimensional poverty index based on the AF method because '(...) a first conceptual and general justification to adopt an integrated index as the AF measures is the possibility to analyze multiple dimensions of the poverty that are suffered by the households simultaneously' (Angulo, Díaz, and Pardo 2011, p. 11).

Despite the undeniable advances in the measurement of both multidimensional poverty and standards of living in Colombia during the last two decades, the authors identified four specific justifications to specifically use the AF method: first, multidimensional poverty profiles are comparable with income poverty profiles in terms of their axiomatic properties. Second, the index is easy to communicate. Third, the method is able to include dimensions of quality of life that are relevant for both society and public policy. Finally, because of the attributes mentioned before, the index facilitates accountability and promotes multisectoral coordination (Angulo, Pardo, and Díaz 2011, pp. 11–12).

Returning to the suggested questions in the first step of the general decision-making process to build a multidimensional poverty index, the guiding principles of the C-MPI are summarized in the next table:

¹³ Gómez (2011).

Table 1: Guiding Principles of the Multidimensional Poverty Index of Colombia (step 1)

Question	Answer/guiding principle	Source/quotation
What is the evaluative space to define poverty that the index embodies?	Standard of living	‘The C-MPI embodies a standard of living notion that considers household deprivations as constitutive elements to describe the lack of a minimum standard of living’ Angulo, Díaz, Pardo (2015).
What is the relationship between the Multidimensional Poverty Index and the traditional monetary measurement?	Complementary	‘The ability to compare multidimensional measures of poverty with one-dimensional income-based poverty measures has important advantages to evaluate and monitor policies’ (Ibid).
Is there an explicit strategy to reduce poverty as a background to the index?	Yes	‘The standard of living notion expressed by the C-MPI is represented by dimensions and indicators of quality of life, which summarize the social policy priorities of the government and the national social agreements’ (Ibid).
What is the desirable term of monitoring?	Short and medium run	‘Poverty incidence and extreme income poverty and multidimensional poverty incidence are part of the official indicators of the National Development Plan 2010–2014 to monitoring the strategies to reduce poverty’ DNP (2012).

3.3 Design: The General Decision-Making Process to Build an MPI Applied to the Colombian Case

The overall design of the C-MPI is explained in Angulo, Pardo, and Díaz (2011, 2013, and 2015). Therefore, this section only summarizes the most relevant issues in order to illustrate the general decision-making process applied to the Colombian case and, thus, extracting some general lessons useful for further developments.

The C-MPI’s unit of analysis is the household. Four reasons support this decision. First, several of the most significant tools of the poverty reduction strategy in Colombia are focused on the household rather than on the individual (e.g., targeting tools, conditional cash transfers program, safety nets). Second, empirical evidence has shown that Colombian households tend to respond to negative shocks with intra-household solidarity. Third, social agreements in Colombia recognize the family as the basic institution

of society. Finally, the C-MPI has comparability with income poverty measures in terms of its axiomatic properties and robust poverty profiles (Angulo, Díaz and Pardo 2011, 2015; DNP 2012).

In terms of data sources, the C-MPI uses the Colombian Living Standards Measurement Surveys (LSMS). There is a trade-off behind this decision: Although this survey provides the most complete coverage of quality-of-life themes among the available datasets in Colombia, its sample restricts the statistical representativeness for only nine great regions.¹⁴

Dimensions, variables, and cutoffs were defined taking into account the thematic possibilities of the LSMS and a review of the following issues: dimensions frequently used in multidimensional indexes from Colombia and Latin America, discussion with experts, priorities in terms of social rights established by the Constitution, qualitative studies such as *Voices of the Poor* for Colombia, the Millennium Development Goals (MDGs Colombia), and the government's social policy to reduce poverty (Angulo, Díaz and Pardo 2011, 2015; DNP 2012). Table 2 summarizes the structure of the C-MPI showing dimensions, variables, indicators, cutoffs, and weights:

Table 2: Dimensions, Variables, Indicators, Cutoffs and Weights of the C-MPI

Dimension	Variable	Indicator	Cutoff
Household education conditions (0.2)	Educational achievement (0.1)	Average education level for people 15 and older living in a household	9 years
	Literacy (0.1)	Percentage of people living in a household 15 and older who know how to read and write	100%
Childhood and youth conditions (0.2)	School attendance (0.05)	Percentage of children between the ages of 6 and 16 in the household who attend school	100%
	No school lag (0.05)	Percentage of children and youths (7–17 years old) within the household who are not suffering from school lag (according to the national norm)	100%
	Access to childcare services (0.05)	Percentage of children between the ages of 0 and 5 in the household who simultaneously have access to health, nutrition, and education	100%
	Children not working (0.05)	Percentage of children between 12 and 17 years old in the household who are not working	100%
Employment (0.2)	No one in long-term unemployment (0.1)	Percentage of a household's economically active population (EAP) who are not facing long-term unemployment (more than 12 months)	100%

¹⁴ This point could be considered as a limitation because of the diversity of the Colombian geography (1,119 municipalities and 33 departments).

	Formal employment (0.1)	Percentage of a household's EAP who are employed and affiliated with a pension fund (formality proxy)	100%
Health (0.2)	Health insurance (0.1)	Percentage of household members over the age of 5 who are insured by the Social Security Health System	100%
	Access to health (0.1)	Percentage of people within the household who have access to a health institution in case of need	100%
		Urban households are considered deprived if they lack access to a public water system.	
	Access to water source (0.04)	Rural households are considered deprived if the water used for the preparation of food is obtained from wells, rainwater, spring source, water tank, water carrier or other sources.	1
		Urban households are considered deprived if they lack access to a public sewer system.	
	Adequate elimination of sewer waste (0.04)	Rural households are considered deprived if they use a toilet without a sewer connection, a latrine or simply do not have a sewage system.	1
Access to public utilities and housing conditions (0.2)	Adequate floors (0.04)	Households with dirt floors are considered deprived.	1
	Adequate external walls (0.04)	An urban household is considered deprived if the exterior walls are built of untreated wood, boards, planks, guadua or other vegetation, zinc, cloth, cardboard, waste material or when no exterior walls exist. A rural household is considered deprived when exterior walls are built of guadua or other vegetation, zinc, cloth, cardboard, waste materials or if no exterior walls exist.	1
	No critical overcrowding (0.04)	Number of people sleeping per room, excluding the kitchen, bathroom and garage.	Urban: 3 or more per room. Rural: more than 3 per room

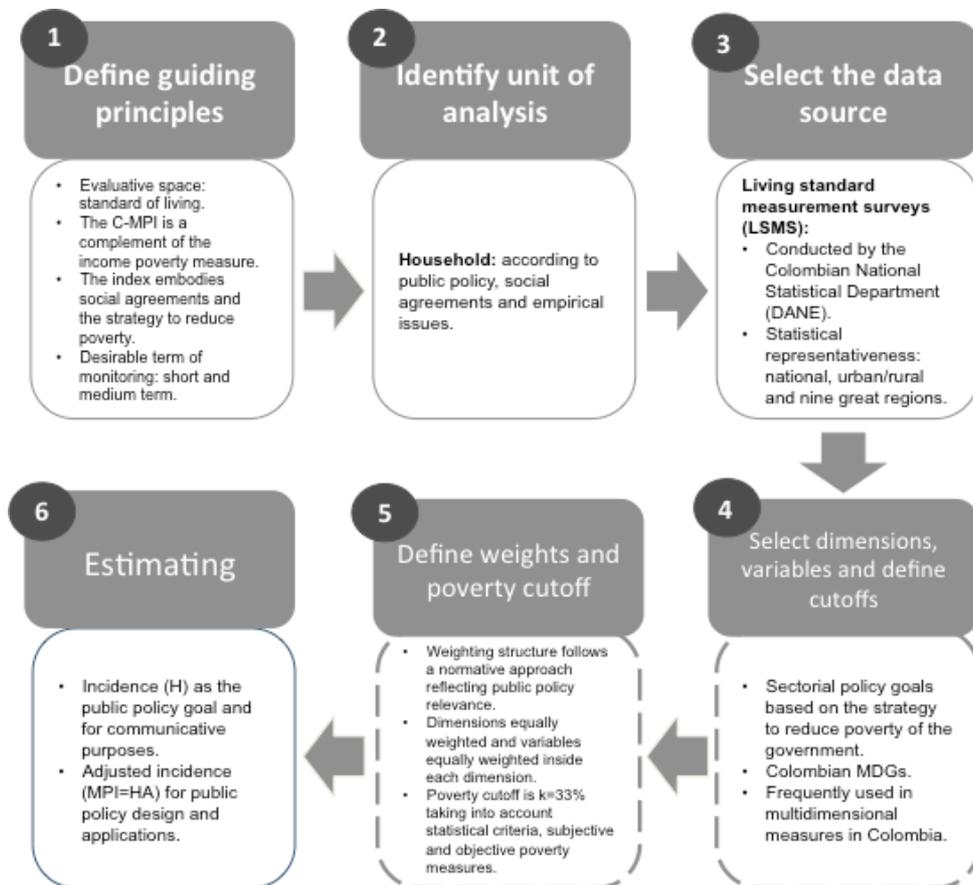
Source: Based on Angulo, Díaz and Pardo (2011, 2015)

The weighting structure follows a normative approach: all dimensions have the same weight (0.2) and all variables are equally weighted inside each dimension.¹⁵ This structure reflects that each dimension has the same relevance as a constitutive element of the standard of living and for public policy. Although there is an open debate around the empirical possibilities for defining weights, this structure has been frequently accepted by different applications (Angulo, Pardo, & Díaz 2015).

¹⁵ Weights per variable are different because they depend on the number of variables per dimension.

Finally, the poverty cutoff is 33% and is determined in a ‘reasonable’ way based on statistical criteria (avoiding poverty cutoffs leads to non-representative estimations) and a threshold given by different poverty measures (subjective and objective). The next figure summarizes the general decision-making process applied to the Colombian case.

Figure 3: General Decision-Making Process Applied to the Colombian Multidimensional Poverty Index



3.4 Institutional Architecture: The Statistical System of the Colombian Multidimensional Poverty Index

As result of the timing between the designing and launching of the C-MPI, the new income poverty measure, and the National Development Plan, the institutional architecture of the C-MPI has taken several lessons from the crisis of income poverty data and the official platform for monitoring national government goals. In fact, once the C-MPI was included as a strategic goal of the National Development Plan, the government formalized an institutional arrangement to guarantee continuity, quality, and transparency in the production of both measures in an official public policy document.¹⁶

¹⁶ CONPES (2012).

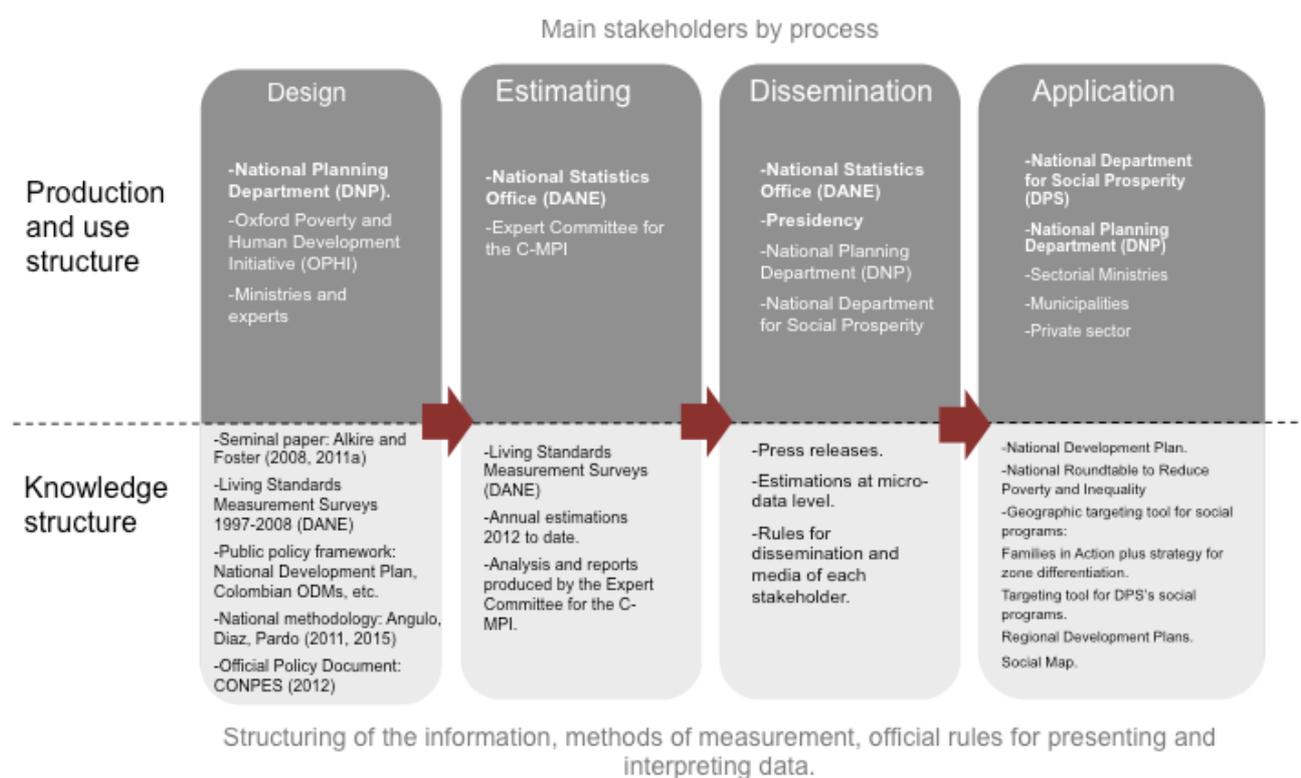
This section analyzes the institutional architecture of the C-MPI following the general structure for a statistical system proposed in the framework of analysis.

Processes, Stakeholders, and Knowledge Structure

There are three crucial stakeholders that perform at least one process in the institutional architecture for the C-MPI: the National Planning Department, the National Statistics Office (DANE), and the Department for Social Prosperity (DPS). All of these institutions are ministerial level administrative departments of the presidency and provide technical support for the national government. In general terms, the institutions have the following functions:

- National Planning Department: DNP is responsible for designing and monitoring the National Development Plan. The DNP has two main functions: designing, guiding, and evaluating strategic policies aimed at achieving the National Development Plan goals and managing the national public investment budget (DNP 2015).
- National Statistics Office: DANE produces and disseminates statistical information for both strategic decisions and research (DANE 2015).
- Department for Social Prosperity: The principal function of the DPS is to ‘Formulate, adopt, direct, coordinate and implement policies, general plans, programs, strategies and projects for poverty reduction, social inclusion, reconciliation, recovery of territories and provide care and compensation to victims of violence (...)’ (DPS 2015). Unlike the other two institutions, the DPS is able to spend from the public budget in order to implement direct interventions for the population. Therefore, the DPS formulates public policy to reduce poverty and vulnerability and also operates social programs such as conditional cash transfers (Families in Action Plus), food security, and programs for income generation.

Applying the framework for statistical systems explained above, Figure 4 synthesizes the institutional architecture applied to the Colombian case; each process has several stakeholders from the public or private sector. At the same time, each process is supported by a set of methodologies, information, and rules, which compose the knowledge structure.

Figure 4: Institutional Architecture for the Colombian Multidimensional Poverty Index

Design

As mentioned before, the DNP led this process as its hierarchy and functions facilitated the coordination required for the design of the C-MPI. In addition, the DNP was the natural leader due to its prior experience with multidimensional poverty measurement of its responsibilities in targeting, monitoring, and evaluation of public policies. The other key stakeholder in this process was OPHI, which provided technical assistance to the DNP during the whole process.

Regarding the knowledge structure, the methodology was provided by Alkire and Foster (2008, 2011a), the data source was the LSMS conducted by DANE until 2010, and the public policy framework was provided mostly by the NDP, the Colombian MDGs, and the social agreements enumerated before. The process was finalized with the publication of a technical methodology¹⁷ and an official document that formalized the measure as an official statistic¹⁸ and as part of the dashboard to monitor the poverty reduction strategy of the NDP. It is important to add that, once the C-MPI was designed and included by the DNP in the NDP, this institution developed a process of knowledge transfer directed to DANE in order to delegate the official estimation of the index.

¹⁷ Angulo, Díaz, and Pardo (2011) was the first version.

¹⁸ DNP (2012) formalized both income and multidimensional poverty measures.

Estimation

Estimations of the C-MPI are coordinated and performed by DANE following the methodology provided by the DNP.

Nevertheless, there is a crucial stakeholder in this process: the Expert Committee for the Multidimensional Poverty Measure, officially convened by the government in order to guarantee transparency, comparability, and methodological stability in multidimensional poverty data (CONPES 2012). The committee is coordinated by DANE and is composed of representatives from the DNP and DPS, two experts from multilateral organizations, and two independent experts in poverty measurement. Taking into account that the DPS member has no voting rights (only the right to debate the issues), choices in the committee are made by two members of the government and four experts. The main functions of the committee, which was designed following the lessons from the income poverty data crisis, are the following: i) Validating estimations and official reports produced using the multidimensional poverty measure; ii) ensuring that DANE preserves the methodological design in the LSMS; and iii) monitoring the thematic pertinence of dimensions and variables currently included in the C-MPI in order to propose future actualizations of the overall design.¹⁹

In general, the knowledge structure in this process consists of annual estimations and technical documents produced by the committee. However, beyond this output, the committee has a role (related to the links defined by Deaton 2014) in shielding the estimating process from the natural pressure from the government and filtering changes in the methodology or in the data source, using both academic and policy criteria.

Dissemination

Once the expert committee validates the annual estimates of multidimensional poverty, DANE has to disseminate the official numbers following its general methodologies for publishing official information. However, DANE is the only authorized agency to release the numbers annually. After the official release, estimations are published in a message by the President that is usually complemented by messages from the DNP and DPS. While the DNP tends to focus on the overall picture of poverty and macroeconomic explanations, the DPS focuses on direct public policy.

Application

While DANE is the main actor in the dissemination process, the application process at the national level is carried out by the DNP and the DPS according to their respective mission statements. On the one

¹⁹ Summarizing from DANE (2012).

hand, the DNP focuses on monitoring the NDP and public policy design. On the other, the DPS tends to use the C-MPI either as a targeting tool or for designing and operating social programs. However, unlike the other three stages of the system, the application process involves a wide range of actors. Ministries and institutions at the national level that are involved in the poverty reduction strategy are monitored by the DNP. At the same time, the government has promoted the use of the C-MPI at the municipal level and by private actors. As can be seen in Figure 4, the knowledge structure in this process gathers a wide diversity of applications. Some of the most significant applications are described in Table 3.

Table 3: Examples Examples of Applications using C-MPI

Application	Description
National Roundtable to Reduce Poverty and Inequality	Use of C-MPI in a high-level committee for monitoring the national poverty and inequality reduction strategy
Geographic targeting tool for social programs	<ul style="list-style-type: none"> ○ A criterion to introduce geographic differentiation in the conditional cash transfer program (Families in Action Plus) ○ A diagnostic tool for regional development plans elaborated by the DNP and local governments ○ A criterion to distribute the overall number of beneficiaries per municipality in several programs from the DPS
Social map	A geographic tool to encourage public-private partnership to reduce poverty and inequality and improve the quality of life
Graduation criteria for the Colombian safety net to overcome extreme poverty (Unidos)	The C-MPI and the extreme poverty line are two criteria to graduate households from the safety net Unidos. In this case, the C-MPI has to be estimated using beneficiary surveys.
Definition of policy combinations to reduce multidimensional poverty and to consolidate the expansion of the middle class	<ul style="list-style-type: none"> ○ Use of the C-MPI to identify the most frequent deprivation combinations in order to design public policy and social programs ○ Use of the C-MPI, in combination with the World Bank's income methodology, to measure the middle class. The DPS is designing a public policy agenda to foster the consolidation of the middle class in the country.

3.5 The C-MPI in the National Roundtable to Reduce Poverty and Inequality

The National Roundtable to Reduce Poverty and Inequality, a high-level committee that is convened and led by the President, performs the monitoring role of the C-MPI. This committee, which began in 2011, involves all the ministries directly related to the national poverty and inequality reduction strategy as well as several institutions that operate social programs. As Figure 5 shows, there are six ministries (education, health, housing, rural development, labour, and economy) and three ministerial-level

administrative departments (DNP, DPS, and DANE). In addition, several institutions with crucial functions in the strategy, such as the Colombian Institute for Family Welfare and the National Agency for Overcoming Extreme Poverty (ANSPE), among others, are convened depending on the specific agenda to be discussed (Mac Master 2013). The meeting is compulsory for the ministers and directors of institutions and they take place at least twice a year.

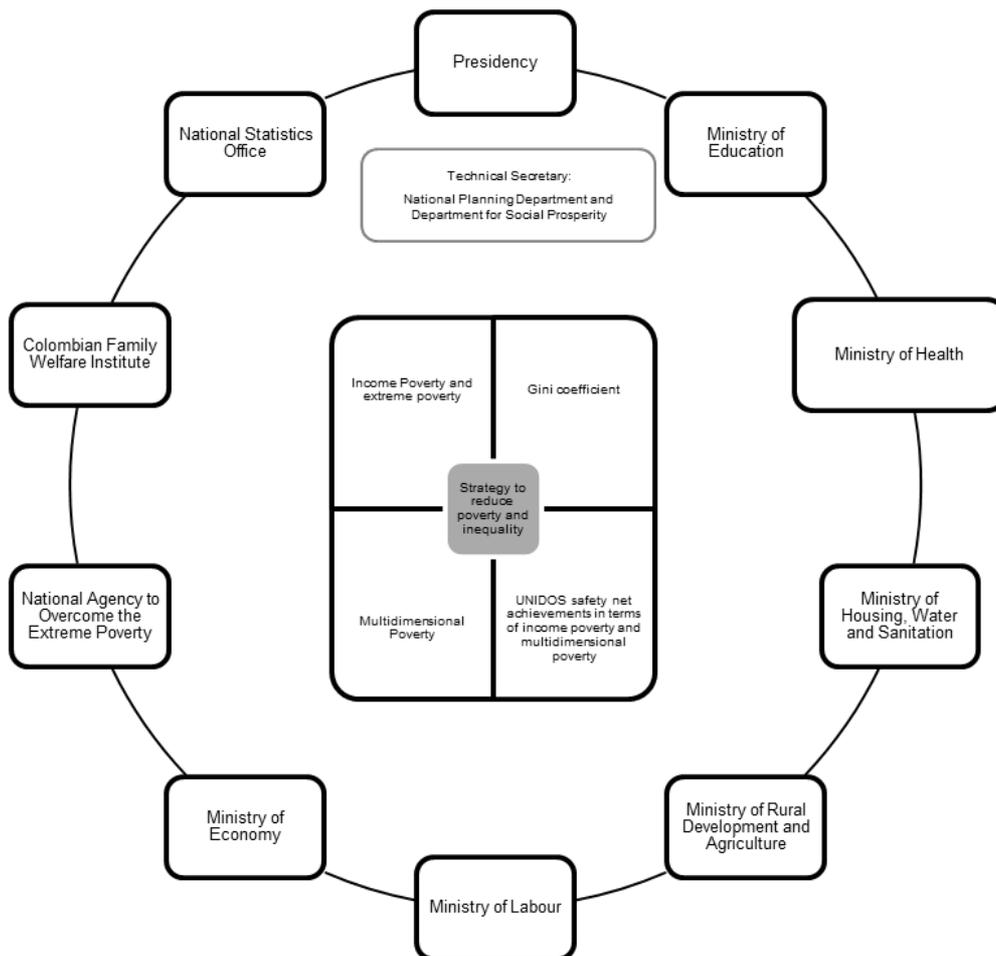
In general, the dynamic consists of reviewing the poverty and inequality dashboard, which has four strategic indicators: the monetary poverty index, income Gini coefficient, the C-MPI, and the number of families that have overcome extreme poverty in the Unidos safety net (Figure 5). Each official goal in the National Development Plan has a corresponding indicator attached.²⁰ Regarding the C-MPI, the index reflects the overall goal of multidimensional poverty reduction and sector-specific goals that conform to the measure. This last point is crucial to understand the role of the C-MPI: Given that each ministry has a set of goals in the National Development Plan, an overall goal of the C-MPI, based on the official sector-specific goals of each institution, can be generated (Angulo, Díaz, and Pardo 2015). This is possible given that sector-specific goals are usually reported through administrative data. Those goals that can be expressed in terms of the variables of the C-MPI can thus be simulated in the LSMS and, through this, translated in terms of the AF method. This provides a clear overall picture of sector-specific indicators that are on target and those affecting the achievement of the yearly overall goal.

In general, a roundtable session tends to be divided into three parts. The big picture is analyzed in the first part using the complete dashboard; the second part corresponds to a sector-specific monitoring based on C-MPI dimensions and variables; and the third part reviews one or two specific sectors. All goals are annualized; therefore, the dashboard shows the rhythm of achievement per sector.

According to former Minister of Planning, Bruce Mac Master (2013), the roundtable, through the dashboard, has made decisions related to designing housing programs for extreme poverty, designing new conditional cash transfer programs (Families in Action Plus and Youth in Action), and monitoring national public policy for childcare.

²⁰ Two national development plans have included the C-MPI; the first plan was Prosperity for All (2010–2014) and All for a New Country (2014–2018).

Figure 5: Roundtable to Reduce Poverty and Inequality



Source: Based on Mac Master (2013)

3.6 The C-MPI as a Geographic Targeting Tool for Social Programs

Using census data from 2005 onwards, the National Planning Department estimated a proxy of the Colombian MPI at the municipal level in order to provide a geographic targeting tool. Although this index reflects the multidimensional picture of poverty only in the year of the last National Census (2005), the information provided allows a focus on imbalances at the municipal level. Some of the most significant uses of the C-MPI as a geographic tool are the following: 1) As a criterion to introduce geographic differentiation in the conditional cash transfer program (Families in Action Plus). The DPS defined four intervention zones according to the degree of urbanization and poverty criteria in order to distribute a progressive amount of monetary transfer (households from the poorest municipalities and with the smallest degree of urbanization receive the largest financial resources) (Mac Master 2013); 2) As a criterion to estimate the overall number of beneficiaries per municipality in several programs from the DPS; 3) As a diagnostic tool for regional development plans implemented by the DNP and local governments. Following a similar methodology for the National Development Plan, the DNP is leading strategic regional plans that articulate investments from national- and regional-level agencies in

accordance with regional goals; and 4) DPS launched ‘The Social Map’ based on the municipal estimations of the C-MPI. The Social Map gathers public and private information at the municipal level in order to contribute to designing and operating public/private partnerships directed at reducing poverty.

3.7. The C-MPI as Graduation Criteria of the Colombian Safety Net to Overcome Extreme Poverty (Unidos)

The national government is also using the C-MPI as graduation criteria for the Unidos safety net, which is coordinated by ANSPE. For this, the C-MPI is estimated for each household that receives assistance from Unidos. Therefore, this estimation is based on administrative data rather than a statistical survey. Using an exclusive survey, ANSPE applies the income and multidimensional poverty measures in order to determine which households have overcome high levels of deprivation. The Unidos safety net covers more than one million households around the country and its function is to coordinate the supply of social services from the national and local levels in order to prioritize the access of its members to these services.

3.8. Finding Multisector Public Policies to Reduce Poverty and to Consolidate the Expansion of the Middle Class

The DPS is conducting several estimations that can be useful in prioritizing variables that can lead to potential changes in public policy design:

- *The most frequent combinations of deprivations in poor households.* In order to find an efficient way to accelerate the reduction of multidimensional poverty, the DPS is estimating the most frequently occurring combinations of deprivations and is prioritizing variables from the C-MPI according to the number of combinations related to each one. For example, taking into account the 34 most-frequent combinations of deprivations, ‘informal employment’ appears in all combinations, ‘educational achievement’ in 33, and ‘no school lag’ in 24.
- *Tackling the multidimensional deprivations in order to consolidate the middle class.* Using an analysis of multidimensional deprivations per social class according to the World Bank’s methodology to measure middle class (López-Calva and Ortiz-Juárez, 2014), the DPS is designing a public policy to consolidate the expansion of the middle class in Colombia.

4. Conclusions and Main Lessons

The impact of the C-MPI as a tool to guide public policy and its influence on poverty reduction has been very strong in the first four years of its implementation. Its medium and longer-term effects are still to be seen and thus should be evaluated. Yet there are important lessons from the Colombian experience, both for the design of an official multidimensional poverty index as well as the institutional evolution needed.

1. The Alkire Foster methodology should be understood as a framework to measure multidimensional poverty. The purpose and application of the index should vary depending on social agreements and public policy priorities. The utility in terms of public policy of a multidimensional poverty index built under this methodology depends not only on the mathematical robustness guaranteed by the method but also on the ability of the policy maker to represent with high fidelity the public policy priorities through their normative choices. The decision-making process behind the normative choices is as important as applying the method accurately.
2. Therefore, designing an multidimensional poverty index involves at least three fronts of analysis and discussion: the conceptual front, which calls for the correct application of the method (identification, censoring, and aggregation); the public policy front, which has to guarantee that the index reflects the public policy priorities; and the statistical front, which has to estimate the index and provide the robustness tests. As this paper mentioned, the result will always involve trade-offs between conceptual, public policy, and statistical concerns. Defining the purpose of the measure accurately is, nonetheless, key to making decisions during the process of design and application.
3. If the purpose of a multidimensional poverty index is to ‘ignite action’, to use the same term of Székely in the quotation at the beginning of this paper, then, in order to reduce poverty through multisector coordination, an accurate design will not be enough; it is also necessary to provide a solid institutional architecture that supports the process from the design of the index to the application. The Colombian case shows relevant lessons on this front:
 - a. *Clear responsibilities in designing, estimating, disseminating, and applying a multidimensional poverty index.* The institutional architecture used in Colombia to manage the C-MPI employs the specialities of its governmental agencies in each process: the coordination function of the DNP in the design and application/monitoring process, the natural function of DANE as the official autonomous agency for statistical measures, and the application function delegated to the DPS, an institution that formulates and operates social programs

directed to reduce poverty. The government as a whole manages the C-MPI, not just one institution in isolation.

- b. *Structured interaction between stakeholders and the technical concerns.* Each process has to manage the tension between politics and technical rigour. The Colombian case is interesting because of its strategic actors, who 'protect' the measure from the natural pressures of different stakeholders. For instance, the design process included OPHI's assistance and technical validation of the index. In addition, and, perhaps the most important catalyst, the estimating process involved an expert committee (mostly formed by independent experts) to guarantee transparency and technical quality in this process. In terms of Starr (1987), a solid system of statistics needs a permanent interaction between the producer and user structures and the knowledge structure.
- c. *The application process should combine the multidimensional poverty index with other indicators and tools.* The Colombian case is using the C-MPI for both monitoring and evaluation and the design of social programs. Each application involves specific frameworks and details, which require other types of measures. The monitoring process in Colombia at the national level in addition to the C-MPI includes income poverty, Gini coefficient, and administrative goals. As a targeting tool, the C-MPI is being used as geographic criteria, which usually is combined with other variables depending on the scope and objective of the social program. Regarding this last point, the coexistence of different methodologies for targeting, especially at individual or household level, could require a significant discussion around its advantages or disadvantages.
- d. *Coherence between the notion of poverty of a multidimensional poverty index and its application.* From a conceptual point of view, a multidimensional poverty index embodies a notion of multiple deprivations that individuals or households face simultaneously; consequently, a public policy solution requires coordination between sectors to tackle poverty simultaneously. The National Roundtable to Reduce Poverty in Colombia is an interesting example of this point.

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