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## **Are Italians getting multidimensionally poorer? Evidence on the lack of Equitable and Sustainable Well-being**

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# Are Italians getting multidimensionally poorer? Evidence on *the lack of Equitable and Sustainable Well-being*

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## **Abstract**

According to official statistics, the last decade has seen the incidence of absolute poverty in Italy sharply growing from 3.3 in 2005 to 7.3 in 2013 and 7.9 in 2016. Still, standard poverty measures consider only the monetary aspect of poverty, neglecting the multidimensional nature of the phenomenon. In this context, solid empirical evidence, as well as a sounded policy interest, fostered national governments and international institutions on tackling multidimensional poverty. Italy has put very low effort on multidimensional poverty. The goal of this paper is to derive a national MPI (multidimensional poverty index) as according to the Alkire-Foster method, by using the National Italian BES framework (equitable and sustainable wellbeing) as the normative basis for the construction of the index. The contribution of the paper is threefold: i) it aims at enhancing the debate on building national MPIs (especially in developed countries) by proposing as normative ground a national framework for measuring wellbeing; ii) it aims at providing empirical evidence on the level, the composition, and the trends of multidimensional poverty in Italian regions; and iii) it wishes to inform policymakers on the nature of such a multidimensional phenomenon. Results highlight that multidimensional poverty boosts over time with the percentage of individuals considered as multidimensionally poor increasing from 9.5 per cent in 2005 to 17.5 per cent in 2015. Moreover, dimensional breakdown report mixed figures across regions and logistic regression shows that being older, female, from the South and married or widowed increase the probability of facing multidimensional poverty.

## **keywords**

MPI (multidimensional poverty index); BES (equitable and sustainable wellbeing); capability approach; Alkire Foster method; monetary poverty

## **Highlights**

The paper derives a national Multidimensional Poverty Index as according to the Alkire-Foster method by using the Italian Equitable and Sustainable Wellbeing as the normative base.

Results highlight that multidimensional poverty boosts over time. The percentage of individuals multidimensionally poor increase from 9.5 (2005) to 17.5 (2015).

Results show that being older, female, from the South and married or widowed increase the probability of facing multidimensional poverty.

## 1. Introduction

Due to the recent economic crisis, monetary poverty has sharply increased in almost all the more developed countries, with the *at-risk-of-poverty rate* of the EU-28 countries, moving on average from 16.5% in 2010 to 17.3% in 2016. Still, standard poverty measures consider only the monetary aspect of poverty, neglecting the multidimensional nature of the phenomenon. In this context, both academic and policy advancements occurred in the last decades. Indeed, on one side, eminent authors affirmed the existence of significant mismatches between income-monetary poverty and multiple deprivations -both material and non-material- and the need to consider different aspects of poverty for human development (Klasen (2000); Alkire and Klasen (2013); Nolan and Whelan (2011); Whelan, Layte and Maitre (2004); Alkire et al. (2015); Bourguignon et al. (2003, 2006); Drèze and Sen 2013). On the other, great policy attention was devoted to the recognition and the measurement of poverty from such a multidimensional perspective, with the *Voices of the Poor initiative* first, and the *Atkinson Report* thereafter (Narayan, 2000; World Bank 2017).

In Italy, a considerable effort led to the launch of the Equitable and Sustainable wellbeing (BES), aimed at depicting a framework able to measure the level of national wellbeing. The latter is born as a joint initiative of the National Committee for Economy and Labour (Cnel) and Italian Statistical Institute (Istat) and the project became the Italian reference framework through which sustainable wellbeing can be measured and monitored. It is built on 134 indicators divided into 12 domains (individual domains: health, education, labour and time balance, economic wellbeing, subjective wellbeing, security, social relations, environment; and context domains: politics and institutions, research and innovation, quality of services, and territorial and cultural heritage) and 7 reports have been published<sup>1</sup>. In this context, poverty is measured within the economic wellbeing domain through four indicators: *at risk of poverty rate*; *absolute poverty*; *material deprivation* and *very-low work intensity*. Even though the latter goes beyond a purely monetary evaluation of poverty, complementing monetary poverty

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<sup>1</sup> Each report is published at: <https://www.istat.it/it/archivio/rapporto+bes>

with indicators of material deprivation and working intensity, still they do not accommodate a real multidimensional perspective.

Moreover, according to official statistics, the incidence of absolute poverty in Italy has sharply grown from 3.3 in 2005 to 7.3 in 2013 and 7.9 in 2016. Still, Italy has put very low effort on the measurement of multidimensional poverty, either from an empirical perspective or within the institutional setting. Therefore, the paper aims at supporting, within the Italian context, the use of such multidimensional poverty measures in accomplishment to the wellbeing perspective embraced by the Italian institutions in recent years. The contribution of the paper is threefold: i) it enhances the debate on building national MPIs (especially in developed countries) by extending a national framework for measuring wellbeing as a normative ground to poverty measurement; ii) it provides empirical evidences on the level, the composition, and the trends of multidimensional poverty in Italian regions; and iii) it wishes to inform policymakers on the nature of this multidimensional phenomenon promoting the use of such a valuable national normative framework of wellbeing as an evaluation grid for poverty.

The following section elaborates on the role and the evolution of the academic and policy effort made to measure multidimensional poverty; section 3 presents the Alkire-Foster method; section 4 discusses the normative as well as the empirical strategy applied; section 5 reports the main findings, section 6 offers final remarks.

## **2. On the role and the evolution of multidimensional poverty measurement**

Since the beginning of the century the debate on *Beyond GDP* was formally shaped, firstly during the conference organized by the European Commission, European Parliament, Club of Rome, OECD, and WWF in 2007 and then with the communication of the European Commission “GDP and beyond: Measuring progress in a changing world” (August 2009) and the report of the Stiglitz-Sen-Fitoussi commission (September 2009.)<sup>2</sup>. The discussion claimed

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<sup>2</sup> It is worth highlighting that two recent updates followed that Commission, and, in 2018, two new reports on this topic were issued: “Measuring What Counts For Economic And Social Performance” and “For Good Measure Advancing Research On Wellbeing Metrics Beyond Gdp” edited by Joseph E. Stiglitz, Jean-Paul Fitoussi, Martine Durand.

to develop a broader perspective on the measurement of human development and, after that, growing academic literature as well as growing policy effort has been made to identify the limits of GDP as the leading measure of progress and offer a new conceptual and measurement framework. In this vein, the revolutionary vision of justice and inequality innate in the Capability Approach (Sen 1980, 1992) is recognized as the theoretical milestone. The Stiglitz-Sen-Fitoussi Commission extended the debate also to official statistics and among policymakers, nurturing numerous national and international attempts aimed at measuring human progress<sup>3</sup>.

In this context, *"if poverty is understood to be a shortfall from wellbeing, then it cannot be conceptualized or measured in isolation from some concept of wellbeing. This is to say that ... these endeavours [wellbeing and poverty] are inherently connected"* (Alkire, S., et al 2015 p.4). Indeed, as well as for the debate on GDP and beyond, the debate on *going beyond monetary indicators* in the field of poverty measurement is at the forefront. In 2015, a high-level Commission led by Sir Anthony Atkinson was asked to advise the World Bank on the methodologies currently used for tackling poverty. The emerging report<sup>4</sup> stressed national and international institutions to take action for monitoring extreme poverty either at global or at the national level to overcome the methodological issues related to non-monetary measures<sup>5</sup>. Several are the reasons supporting the use of multidimensional poverty' measure. As clearly pointed out in Alkire [and co-authors] (2015), the reasons behind the use of multidimensional poverty measures go beyond the ethical motivation and rely on technical, empirical and policy issues. From a technical perspective, since the mid-eighties, the availability and accuracy of

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<sup>3</sup> It is the case of the Millennium Development Goals (MDGs), the Sustainable Development Goals (SDGs), or also the various National experiments to create similar informational framework for wellbeing: Canadian Index of Wellbeing, Measures of Australia's progress, OECD Better life index, Italian Equitable and Sustainable Wellbeing, just to mention few.

<sup>4</sup> Atkinson, A. B. (2017). Monitoring global poverty: Report of the commission on global poverty. World Bank, Washington.

<sup>5</sup> Indeed, as according to recommendation 2 and 11 "the National Poverty Statistics Reports (NPSR) of each country should include the dashboard of nonmonetary indicators" and similarly at the global level "the world bank should publish, alongside the global poverty count, a portfolio of Complementary Indicators ... [where] the selection of the Complementary Indicators should be based on an explicit set of principles, and the implementation of these principles should follow external consultation, including external audit body."

multi-topic household survey has increased as well as data on income and expenditure. Moreover, technological progress in processing and analyzing data as well as increased computational power has led to the generation of new indices. Likewise, empirical evidence has supported the use of multidimensional measures. Bourguignon [and co-authors] (2010) showed that the trends of \$1/day poverty did not match the trends in other Millennium Development Goals (MDGs), concluding that monetary poverty diverges from non-monetary deprivation. Moreover, significant mismatches between income and multiple deprivations were found in Klasen (2000); Alkire and Klasen (2013); Nolan and Whelan (2011). Whelan, Layte and Maitre (2004) and Nolan and Whelan (2011) reported for Europe a certain mismatch between income poverty and material deprivations. Also if considering associations across non-monetary deprivations, empirical evidence showed there is no single non-income deprivation reflecting all others (Alkire et al. 2015). In addition, the correlation between growth in GDP per capita and improvements in non-income deprivations is very low (Bourguignon et al. 2003; 2006; Drèze and Sen 2013). For these reasons, multidimensional measures are particularly important from a policy perspective where the provision of a set of measures has to inform public policy and guide it towards the best direction. Moreover, it is worth remarking that the global policy agenda is more and more sensitive to the issue of multidimensionality and the SDG number 1 explicitly claims for multidimensional poverty (End poverty in *all its forms*, everywhere).

According to the Atkinson report different approaches to multidimensional poverty has been implemented worldwide and the process is still ongoing.

### ***Subjective assessment***

The 2000-2001 World Development Report was based on the “Voices of the Poor” background study. The study spotlighted the usefulness of qualitative information for poverty assessment and depicted the borders of multidimensional poverty as according to the poor's perceptions. It provided “*a review of participatory studies involving some 40,000 poor people in 50 countries, and a comparative study in 23 countries engaging about 20.000 poor people*” (World Bank 2001, p.3). The idea was that *the poor are the true poverty experts* and their

experiences, priorities, and recommendations have to be taken into account. Hence, poor people were asked to share their ideas of good and bad experiences of life and their definition of wellbeing and ill-being. The study delivered five final related dimensions of wellbeing, whose lack determines misery: *material wellbeing, physical wellbeing and security, freedom of choice and action, and good social relations.*

### ***Basic needs (UBN)***

By contrast, according to the idea that *poverty means lack of things that are necessary* (Boltvinik, 1999), a connection between wellbeing, resources and needs 'satisfaction is drawn. In Latin American Countries, the Economic United Nation's Economic Commission for Latin America and the Caribbean (ECLAC) and the Institute of Statistics and Census of Argentina (INDEC) firstly developed the basic needs approach (UBN), which was extensively used since the beginning of the 1980s (Feres and Mancero, 2001). The approach is anchored in the Rawlsian Theory of Justice<sup>6</sup> in such a way that the set of primary goods is to be considered the constituent elements of wellbeing and necessary to live a good life (Streeten et al. 1981). It was implemented on population census information and accurately reported the condition of households, the access to sanitary services, the education and the economic capacity of household members. The indicators chosen<sup>7</sup> identified the proportion of households unable to satisfy one, two, three, or more basic needs. The UBN approach has also been used in some Arab Regions (e.g. "Mapping Living Conditions in Lebanon" 1998).

### ***Capability approach (CA)***

According to Amartya Sen, *poverty is an absolute concept in the space of capabilities* (Sen 1983). It means that the lack of basic capabilities determines misery, which translates reports of starvation, malnutrition and visible hardship into a diagnosis of poverty (Sen 1981, p. 17). In this vein, lack of possibilities to live a worthy life implies the identification of multiple dimensions of life and the (in)-ability to reach such achievements in a multidimensional

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<sup>6</sup> For an extended review of this theory see: Rawls, J. (2009). A theory of justice. Harvard university press.

<sup>7</sup> Overcrowding; households with precarious housing; households with no kind of toilet; households with children of school age not attending school; households with four or more dependents per occupied member and whose household head's education was at most second grade of primary education

assessment. As discussed thereafter (section 3), the Oxford Poverty and Human Development Initiative (OPHI) and the UNDP developed an approach to poverty grounded in the CA and synthesized into a class of indexes known as Multidimensional Poverty Index (MPI).

### ***2.1 The European context***

In Europe, poverty has been linked to the concept of social exclusion. The latter focuses on those mechanisms and factors supposed to hamper individuals from taking part in the social exchanges and from the rights of social integration. In this context, Townsend (1979) firstly conducted an early seminal study to assess the magnitude of relative deprivation in the United Kingdom. His study inspired many subsequent works assessing poverty through both resource and deprivation measures and perception of deprivations (Mack and Lansley's 1985; Ringen 1988; Callan et al. 1993; Muffels and Vriens 1991; Whelan et al. 2001; Nolan and Whelan 2011). In this context, poverty is intended as the ability to participate in a society: "individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the types of diet, participate in the activities and have the living conditions and amenities which are customary, or at least widely encouraged or approved, in the societies to which they belong" (Townsend 1979, 31). The EU has developed such a framework within the Europe 2020 agenda for smart, sustainable and inclusive growth by adopting 4 targets of which the fourth focuses on Poverty and social exclusion<sup>8</sup>. Moreover, a sounded stream of research has validated the European deprivation measure defined as the lack of a combination of items related to some aspects of living conditions such as housing conditions, possession of durables and capacity to afford basic requirements (Atkinson et al. 2017; Fusco et al. 2013). However, concerning multidimensional poverty in a broader sense, where not only material deprivation but basic capabilities is considered, few researchers proposed some attempts of

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<sup>8</sup> The headline indicator is 'people at risk of poverty or social exclusion'. Three sub-indicators compose it: monetary poverty, severe material deprivation and very low work household intensity.

National Multidimensional Poverty Indexes for developed countries (Suppa 2018; Alkire and Apablaza 2016; Glassman 2019).

## *2.2 The Italian context*

In Italy, official measures of poverty entail standard monetary indicators like absolute poverty or relative poverty and the EU2020 set of indicators for social exclusion. The latter goes beyond a purely monetary evaluation of poverty, complementing monetary poverty with indicators of material deprivation and working intensity. Still they do not accommodate a real multidimensional perspective in which a full set of quality of life dimensions is considered (e.g. health, social relations, environment). It is worth remarking indeed, that social exclusion measures were included in the National framework for measuring wellbeing (BES 2013-2019) within the economic domain. In this context, if a multidimensional approach is considered, Italy has put very low effort either from an academic and empirical perspective or within an institutional setting. A bunch of contribution focuses on multidimensional poverty in developed countries by offering cross-countries comparisons, in which Italy appears as one of the countries (Brandolini 2008; Aaberge and Brandolini 2014; Alkire and Apablaza 2016; Alkire, Apablaza, Jung 2014). Yet, to the best of my knowledge, very few researchers have focused on multidimensional poverty in Italy and at the sub-national level (Coromaldi, Zoli 2007, ISFOL 2012) and no contributions are proposing a National MPI for Italy.

## **3. Methodology and the Alkire-Foster Aggregation Method**

The Oxford Poverty and Human Development Initiative (OPHI) and the UNDP developed an approach to poverty grounded in the CA. In 2010, the first Multidimensional Poverty Index was launched following the Alkire Foster method (AF). Since then, the Global MPI measures acute poverty across three dimensions (Health; Education; Living Standards) and using a set of 10 indicators<sup>9</sup> The index is currently provided over more than 100 developing countries,

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<sup>9</sup> Child Mortality; Nutrition; Years of schooling; School attendance; Cooking fuel; Toilet; Water; Electricity; Floor; Assets.

and it is also suited to adaptation within national and sub-national context<sup>10</sup>. The index embraces a Capabilities perspective and the measurement process involves most of the steps required for the operationalization of the CA. From the identification of the unit of analysis (persons, households, countries) to the selection of dimensions and indicators, the focus is on poor “individual” and their inability to properly function. The claim of capturing the joint deprivations among different life capabilities reflects the attempt to interpret the complex relations among different life domains and their interlinkages. From a technical point of view, the AF measures satisfy several of desirable properties (ordinality; dimensional monotonicity; dimensional breakdown; poverty focus). From a practical point of view, the measure uses the counting approach to identify the poor and highlight the joint distribution of deprivations. In particular, the MPI is suitable to use ordinal or binary data and it is particularly attractive to inform policy (Alkire et al 2015).

The identification process follows a dual cut-off strategy and entails several steps (Alkire et al 2015). The first three steps are common to every wellbeing measurement process, while the last steps follow the AF aggregation strategy: 1) Definition of the set of indicators; 2) Identification of the deprivation cutoffs ( $z$ ) for each indicator in order to classify deprived individuals in each indicator; 3) Selection of the relative weights ( $w$ ) ; 4) Sum of the weighted deprivation for each person, where the deprivation score ( $c$ ) is given by the weighted sum of individuals' deprivations for each indicators ( $I$ ) in each dimension ( $d$ ),  $c_i = w_1 I_1 + w_2 I_2 + w_d I_d$  ; 5) Determination of the poverty cut-off ( $k$ ) and identification of the multidimensionally poor, namely those individuals deprived in more than  $k$  dimensions,  $c_i \geq k$ . A key property of the index is *the focus on the poor*, accomplished by the censoring procedure (censored deprivation score:  $c_i(k)$  ). The latter refers to the process of considering as not deprived people deprived in some dimensions but not reaching the poverty cut-off (it means that  $c_i \geq k$  implies  $c_i(k) = c_i$  ;  $c_i < k$  implies  $c_i(k) = 0$  ), and it allows identifying breath of poverty among those who are multidimensionally poor.

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<sup>10</sup> Examples of official National MPI come from Mexico, Colombia, Bhutan, and the Philippines. Full list of national MPI reports can be found at: <https://mppn.org/applications/national-measures/>

The aggregation process extends the Foster–Greer–Thorbecke (1984) class of poverty measures. Therefore, the MPI (1) is computed as the product of two partial indices: the Headcount Ratio (2) (incidence of poverty -H-) and the Intensity of poverty (3) (the breadth -A-).

Formally<sup>11</sup>:

$$M_0 = H \times A \quad (1)$$

$$H = q/N \quad (2)$$

$$A = \frac{\sum_{l=1}^N C_l(k)}{q} \quad (3)$$

with  $q$  being the number of multidimensionally poor and  $N$  the total population.

Moreover, the index allows subgroups and dimensional decomposition (4) where  $h_d(k)$  represents the censored headcount for each dimension  $D$ , as well as the analysis of the changes over time (5) where  $X_t$  and  $X_{t-1}$  is the time operator.<sup>12</sup>

$$\%contribution_D = \frac{h_d(k)*w_d}{M_0} \quad (4)$$

$$\partial M_0 = \frac{M_0(X_t) - M_0(X_{t-1})}{M_0(X_{t-1})} * 100 \quad (5)$$

#### 4. The Empirical Application: A National MPI for Italy

As stated insofar, the identification process supposes several assumptions to be normatively set (indicators selection, cut-offs and weights identification). Therefore, the first step is to define the normative space in which the measure has to lie. The Italian context represents favourable frame to set such a normative space. In 2011, thanks to the joint initiative of Cnel (National Committee for Economy and Labour) and Istat (Italian Statistical Institute) the definition of the Italian Equitable and Sustainable wellbeing (BES) had started. The process involved experts from universities, politics and civil society and 2 years later the reference framework was depicted. It currently entails 134 indicators divided in 12 domains (health,

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<sup>11</sup> Notation follows a synthetic version of Alkire et al. 2011a

<sup>12</sup> The formula used to tackle changes over time follows Alkire, S., Roche, J. M., Santos, M. E., and Seth, S. (2011). Multidimensional poverty index 2011: brief methodological note.

education, labour and time balance, economic wellbeing, subjective wellbeing, security, social relations, environment, politics and institutions, research and innovation, quality of services and landscape and cultural heritage), and approach sustainable wellbeing by looking at social, economic and environmental phenomena. In this context, it seems reasonable to rely on such framework to justify any normative decision. As a matter of fact, the framework was the result of a participatory process in which all groups of civil society were included and lots of experts were involved in the definition of indicators. This gives legitimacy to the life domains identification and reliability to the measurement setting.

Therefore, the following analysis, aims at deriving a national MPI (multidimensional poverty index) as according to the AF method, by using the National BES framework as the normative basis for the construction of the index. In this context, it wishes to propose a measure able to inform policymakers on the level, the composition, and the trends of multidimensional poverty, as well as the main determinants of multidimensional poverty.

#### **4.1 Data and empirical strategy**

The empirical application uses data from the national household's survey "Aspect of daily life" over the time period 2005-2015. The survey, carried out each year since 1993<sup>13</sup> by the Italian National Statistical Institute, collects information on citizen's habits and daily life. The thematic areas entail wide arrays of information, from the economic situation to social life, health, lifestyle, leisure and work time, as well as individual personal satisfaction on different life dimensions and on the quality of public services. The dataset provides objective and subjective measures with the aim of depicting a general understanding of the national quality of life. The survey is a repeated cross-section, yet information is comparable across time. Moreover, it represents an important source of information for the BES framework, namely around 30% of the BES indicators belong to this survey or information gathered from that survey could replicate some BES indicators. In this context, the definition of a national MPI has to be understood in terms of lack of Equitable and Sustainable

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<sup>13</sup> Even though the survey is available since 1993, this analysis starts from 2005 because some relevant measures are available since that year.

Wellbeing, where dimensions and indicators are chosen following three principles: 1) the relevance of the dimension/indicator within the theoretical framework of the BES; 2) the availability of the information in the survey; 3) the empirical robustness<sup>14</sup>. Therefore, the resulting multidimensional poverty index embraces 4 dimensions (health, education, economic wellbeing, neighbourhood quality) and 12 indicators. Deprivations' cut-offs are defined based on metadata available for the BES indicators, explicitly revised to account for the shortfall of poverty. The unit of analysis is the individual, whereas the unit of identification for most of the indicators computed is the households. The weighting scheme assumes equal weights across dimensions. The choice of equal weights relies on a moral reason and a practical reason. The moral reason emphasizes each dimension as equally important for human development where dimensions represent “a combination of various 'doings and beings', with quality of life to be assessed in terms of the capability to achieve valuable functionings” (Sen and Nussbaum 1993. The quality of life. page 27). The practical reason support the decision adopted in the BES framework, which does not attribute any formal weights to dimensions/indicators and aggregates the composite index assuming equal weights (BES Report 2016). Box 1 reports the conceptual framework where dimensions, BES indicators, deprivation indicators, cut-offs and weights are presented.

Finally, the study concludes with a logistic regression analysis aimed at disentangling the main socio-demographics factors relating to multidimensional poverty.

Formally: 
$$MPI_{irt} = \alpha + \beta_j IC_{irt} + \mu_r + \lambda_t + \varepsilon_{irt} \quad (6)$$

Where

***MPI*** is a dummy variable assuming value 1 if the individual *i* in region *r* at time *t* is multidimensionally poor, and value 0 otherwise ;

***IC*** is the set of socio-demographic characteristics (married, divorced, widow or other forms of marital status, age, gender, household size. Full variables description in Appendix 1);

**$\mu_r$**  and  **$\lambda_t$**  represent respectively region and time fixed effect.

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<sup>14</sup> The original set of indicators considered was larger. Then association analysis was carried out through Cramer's V and Redundancy  $R^0$  (Alkire et. al 2015 chapter 7) and some indicators were dropped because redundant either for statistical reason or for normative ones.

**Box 1. The normative Framework: domains, indicators, deprivation and weights.**

Domains	BES indicators	Deprivation Indicators	Deprivation cut-offs	weights
Health	Nutrition: percentage of persons aged 3 years or more that consume at least 4 portion of fruit and/or vegetables per day over the total population of 3 years or more	Nutrition	Person deprived if consume less than 3 portions of fruits or vegetables per day	1/8
		Chronic illness	Person deprived if suffers of chronic illness	1/8
Education	People with at least upper secondary education; People with tertiary education	Education deprivation	Elementary school not completed	1/8
	Cultural participation: Percentage of people aged 6 years and over who have carried out 3 or more activities (activities are: go to the cinema at least four times, at least once to the theatre, exhibitions and museums, archaeological sites, monuments, concerts of classical music, opera, concerts of other kind of music; read the newspaper at least three times per week, read at least four books.	Cultural deprivation	Persons that in the last 12 months from the interview have join less than 3 activities. <i>The activities considered are: at least once to: cinema, theatre, exhibitions and museums, archaeological sites, monuments, concerts of classical music, opera, concerts of other kind of music; read the newspaper at least once a week; read at least one book in the 12 months preceding the interview.</i>	1/8
Economic wellbeing	Severely materially deprived people: <i>Proportion of people living in households with at least 4 out of 9 deprivation items</i>	Material deprivation*	Person deprived if holds less than 4 out of 6 items (items are: washing machine, tv-color, scooter/moto or car, phone, personal computer, can't afford an holiday)	1/20
	People suffering poor housing conditions: <i>Proportion of people experiencing overcrowding in houses without some services and with structural problems</i>	Housing deprivation*	Person deprived if experience 3 or more deprivation related to the house (items are: overcrowding; distance from basic services (pharmacy, shops, school); overall bad conditions of the floors and/or walls; expenses to high; house not owned)	1/20
	Irregularities in gas distribution: Percentage of household declaring that the apartment is supplied with methane gas on total number of households.	Gas	Person deprived if declares the house is not served by methane gas	1/20
	Irregularities in water supply: Percentage of households who report irregularities in water supply on total number of households.	Water	Person deprived if declares experience irregularities in the water supply	1/20
	People unemployed	Unemployment*	Person deprived if unemployed	
Neighbourhood Quality	Satisfaction for the environment: Percentage of people aged 14 and over very or quite satisfied of the environmental situation (air, water, noise) of the area where they live on total population aged 14 and over.	Noise	Persons deprived if the area in which lives is declared to be very noisy; at risk of criminality; polluted	1/12
		Crime		1/12
		Pollution		1/12

Note: \* Indicators for material deprivation, housing and unemployment are built, in the BES original framework, on data coming from EU-Silc survey.

Yet using information from the survey "Aspect of daily life" some proxies have been created. These proxies slightly differ from the original indicators in terms of items considered, still capture the underlined phenomenon.

## 5. Results

As stated insofar, the AF adjusted headcount ratio follows a dual cut-offs strategy. Therefore, the deprivations' cut-offs were set in line with the definition of the BES indicators, properly adapted to account for the shortfall of poverty. Conversely, before choosing a unique poverty cut-off, results describe some regional and yearly trends for multiple poverty cut-offs ( $k$  from 10% to 100%). In particular, figure 1 depicts the adjusted headcount at different cut-offs per year (2005-2015), whereas figure 2 depicts the adjusted headcount at different cut-offs per areas (North, Centre, South, Islands). As far as the cut-off increases the level of the adjusted headcount reduces, since the decision rule is getting more and more demanding and a higher number of deprivations is required to fall into multidimensional poverty. Thus, for cut-off values higher than 60%, the adjusted headcount approximates to zero; it means there are no individuals jointly poor in more than 60% of total deprivations. It worth noting that, results already show higher MPIs for 2015 and for regions belonging to the South and the Islands. Then, the analysis set a poverty cut-off of 50%, which require a person to be poor in more than two dimensions or the equivalent sum of weighted deprivations from several dimensions. The latter decision rule relies on the *popular understandings of "multidimensional" poverty* (Alkire and Apablaza 2016). Thus, figure 3 (panel a, b, and c), report the incidence, the intensity and the multidimensional poverty over the years and by areas for a poverty cut-off of 50%. Results for Incidence H and  $M_0$  reports a three peaks structure, where the first peak is registered in 2006, the second between 2008/2009 and from 2013 there is a change in the trend. Besides, these figures display a clear divergence process over time between North/Centre and South/Islands with the latter experiencing a dramatic increasing in both incidence and intensity of poverty. Yet it is worth noting that, overall, multidimensional poverty boost over time with an MPI moving from .055 in 2005 to .102 in 2015 and the percentage of individuals' multidimensionally poor increases from 9.52% to 17.57% (Table 2). Further disaggregation at the regional level is reported in table 1 and figure 4 (panel a, b and c) where Italian regions are ranked per  $M_0$ , H and A. The gap between

Northern/Central and Southern regions is confirmed with Southern regions placed at the bottom of the rank. Yet, regions belonging to the Centre and the North distribute heterogeneously across the rank. Indeed, Molise results as the second-best performing region and Abruzzo, Marche and Basilicata are ranked within the top 6. Conversely Veneto, Lombardia and Lazio have placed at the bottom just a step before Southern regions. In addition, it is worth noting that Abruzzo, Basilicata, and Molise are the only three regions, all from the Centre, to experience, in 2015, a convergence to the national value. Table 2 reports results for the uncensored headcount and the censored headcount for each indicator. It worth specifying that, uncensored headcount reports the proportion of individuals' deprived in each indicator, whereas the censored headcount report those deprived in that indicator and multidimensionally poor. Therefore, the percentage from the first measure results sensibly bigger than the censored percentage. Here, if we look at individuals defined as multidimensionally poor, we can observe that the percentage of deprived individuals in each dimension increases over time, with nutrition reporting the biggest booming (around 10 percentage points). Overall when looking at the MPI growth rate over the period 2005-2015 (figure 5), the largest pick figures during the years of the crisis, namely in 2008 (more than 40 percent increasing) and in 2013 (more than 50 per increasing).

Instead, Figure 6 and 7 disentangle the contributions of each indicator to  $M_0$  both over time and across regions. The dimension of health accounts between 20 and 30 per cent of the total  $M_0$  and the trend is increasing especially due to nutrition since 2013. The education dimension accounts another 30-35 per cent of the index and the effect is mostly due to cultural deprivation, which seems to steadily be the indicator with the higher percentage contribution. Also the Neighbourhood Quality dimension accounts for almost 30 per cent of the index and the impact of pollution is slightly higher than the impact of crime and noise. The remaining economic dimension account only for around 10 per cent of the index. By contrast, when looking at dimensional composition across regions, it is worth noting that the economic dimension displays a greater contribution in Calabria,

Sicily, and Sardinia, whereas the contribution of nutrition deprivation is sensitively lower in Campania, Puglia, Basilicata, Calabria and Sicilia.

Finally, table 3 reports logistic regression estimates as according to equation (6).

The goal of this part of the analysis is to test the probability of facing multidimensional poverty as according to some basic socio-demographic characteristics. As the age pattern is concerned, being 65 years old or more increase the probability of facing multidimensional poverty: indeed, with respect to the elder, the youngest report an 86% lower probability of getting poor; those less-younger an 85% lower probability; those middle-aged report a 67% lower probability of getting poor. Female are 19 % more likely to become poor than male. Married report a 20% higher probability of getting poor than single individuals, divorced/separated individuals a 7% higher probability, whereas widowed a dramatic 85% higher probability of facing poverty with respect to single individuals. Living in a household composed by two to five individuals reduce the probability of experiencing poverty by 10 -30 %, on the contrary households with more than five component report an higher probability of being poor than single households. With respect to the region of origin, the reference region is Piemonte. Hence it is worth noting that those living in Campania report a probability of getting poor more than twice higher than those living in Piemonte, and also those living in Puglia and Sicilia report a probability of getting poor almost twice of those in Piemonte.

## **6. Conclusions**

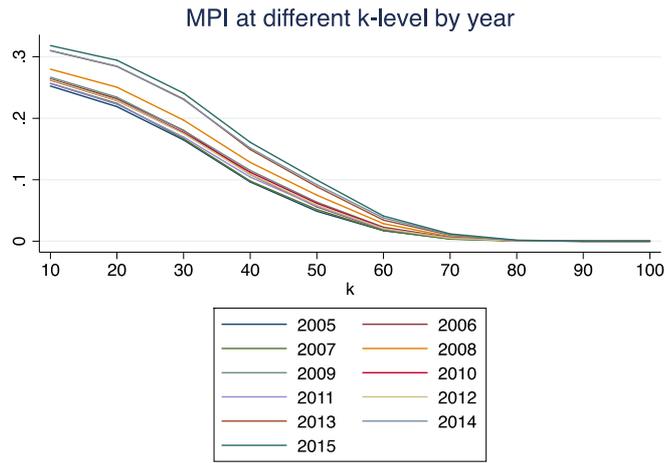
Based on the AF method and the use of the National Italian BES framework as normative base, the paper offers the first attempt at building a National MPI for Italy. In this context, the index aims analysing the trends and the composition of multidimensional poverty over a time span of 10 years. The contribution of the paper is threefold: i) it contributes to the debate on building national MPIs (especially in developed countries) by proposing as normative ground a national framework for measuring wellbeing; ii) it provides empirical evidences on the level, the composition, and the trends of multidimensional poverty in Italian regions; and iii) it informs national policymakers on

the nature of this multidimensional phenomenon by promoting the use of such a valuable national framework of wellbeing as an evaluation grid for poverty measurement.

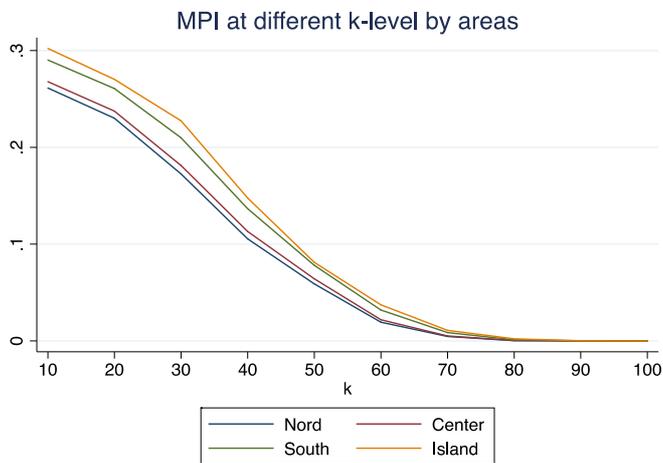
Results highlight that multidimensional poverty boost over time with an MPI moving from .055 in 2005 to .10 in 2015 and the percentage of individuals considered as multidimensionally poor increasing from 9.5 per cent to 17.5 per cent. In addition, by looking at the MPI growth rate over time, the largest pick figures in 2008 and 2013, mirroring the two worst years of the crisis. As the dimensional decomposition is concerned, the biggest change over time is found in nutrition, which experiences a booming around 10 percentage points. Surprisingly, when deepening the dimensional contributions to the index, the economic dimension account only for around 10 per cent whereas the other dimensions (Health, Education and Neighbourhood Quality) account each around 20-30 per cent. By contrast, when looking at such figures across regions, it is worth noting that the economic dimension displays a greater contribution in some regions from the South whereas the incidence of nutrition is sensitively lower in the same regions. Finally, logistic regression estimates show that being older and female increase the probability of facing multidimensional poverty. Also marriage, and even more widowhood, increases the probability of poverty, whereas household size report an inverse U shape pattern, with a higher probability of being poor reported by those households composed by one individual or more than five.

All in all, the paper offers a first analysis of multidimensional poverty in Italy and grounds the normative decisions within the Italian BES framework for measuring wellbeing. It is worth remarking that this attempt needs to be considered in a flexible perspective and the size, as well as the composition of the measure may change as according to the normative setting adopted. In particular, the analysis was aimed at investigating multidimensional poverty not only across regions but especially over time, therefore some important indicators or dimensions present in the BES framework (e.g obesity and BMI, informatics skills, social participation, satisfaction with some life domains, just to mention few) were not included in the analysis due to the impossibility of harmonization over time. Hence, further research to include such important dimensions for multidimensional poverty is envisaged. Moreover, logistic estimates were aimed at tackling the basic poverty profile, yet the lack of proper panel data hampered a deeper analysis of the poverty transition per socio-demographic characteristics. Therefore, also in this way further research is worth.

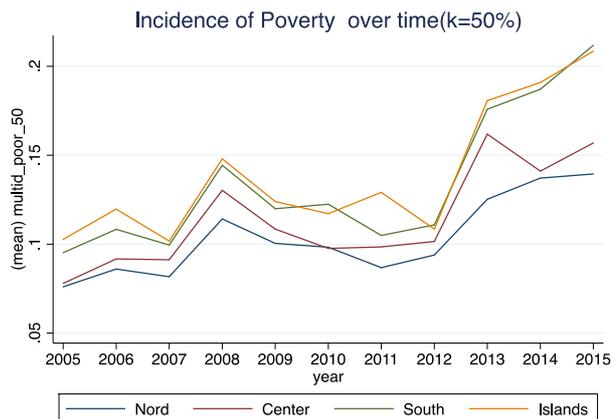
**Figure 1: MPI at different k levels**



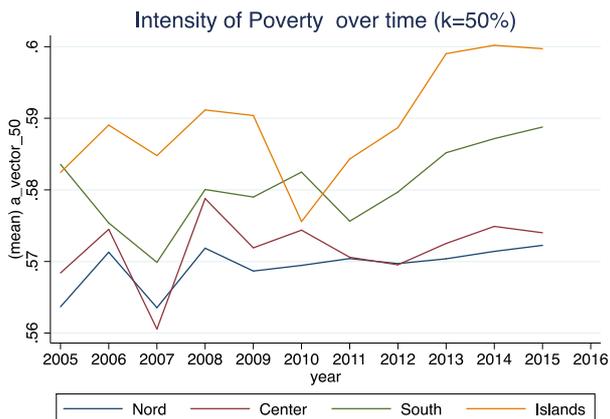
**Figure 2: MPI at different k levels (years' average )**



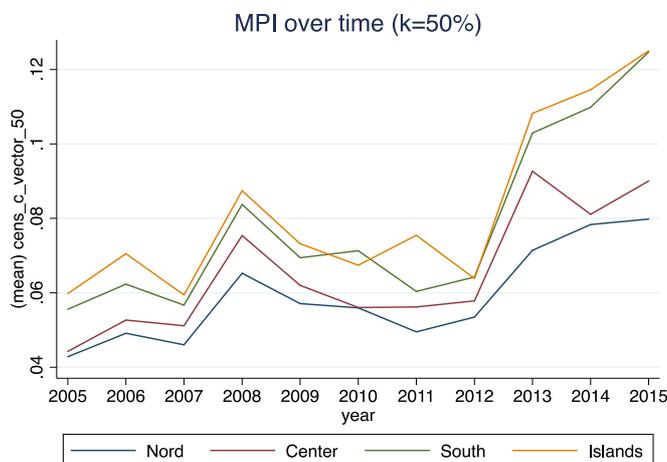
**Figure 3a : Incidence of Poverty over time (H)**



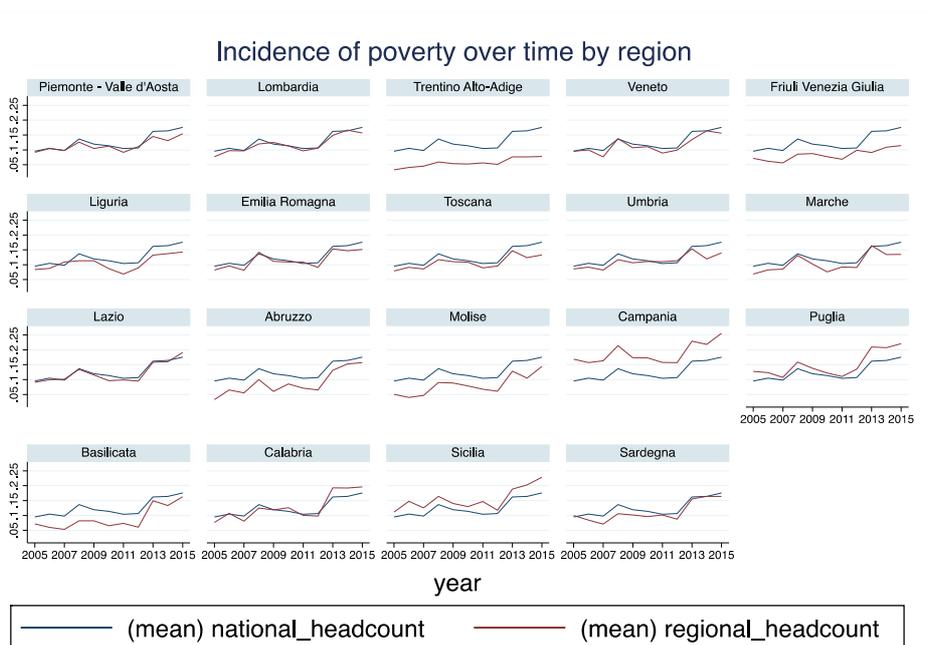
**Figure 3b: Intensity of Poverty over time (A)**



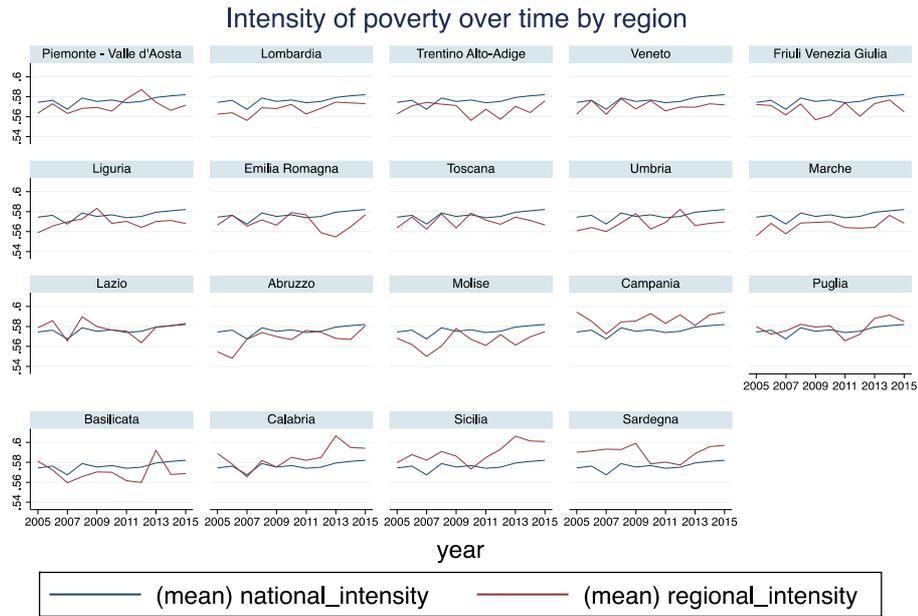
**Figure 3c: MPI over time (M0)**



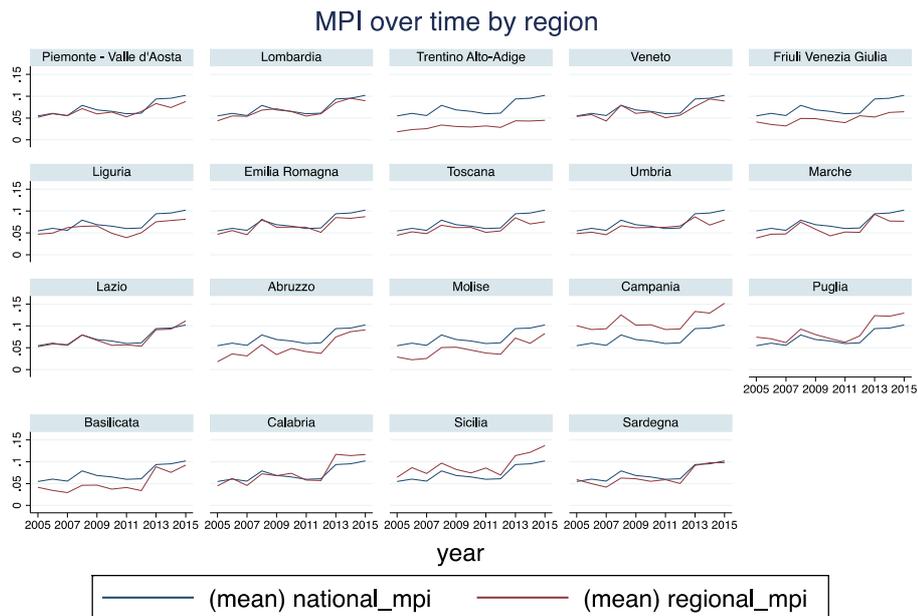
**Figure 4a: Incidence of poverty over time by Regions (H)**



**Figure 4b : Intensity of poverty over time by Regions (A)**



**Figure 4c: MPI over time by Regions**



Note: k-level 50%

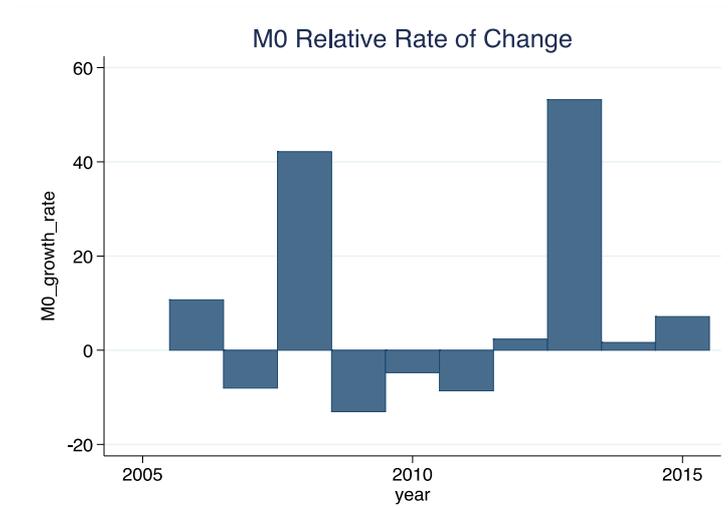
**Table 1. Multidimensional Poverty by Italian Regions (years' average )**

<b>Region</b>	<b>Rank_H</b>	<b>Rank_A</b>	<b>Rank_M</b>
Trentino Alto-Adige	1	3	1
Molise	2	4	2
Friuli Venezia Giulia	3	1	3
Basilicata	4	13	4
Abruzzo	5	7	5
Marche	6	2	6
Liguria	7	8	7
Piemonte - Valle d'Aosta	8	11	8
Toscana	9	10	9
Umbria	10	5	10
Sardegna	11	18	12
Emilia Romagna	12	9	11
Veneto	13	12	13
Lombardia	14	6	14
Lazio	15	14	15
Calabria	16	16	16
Puglia	17	15	17
Sicilia	18	19	18
Campania	19	17	19

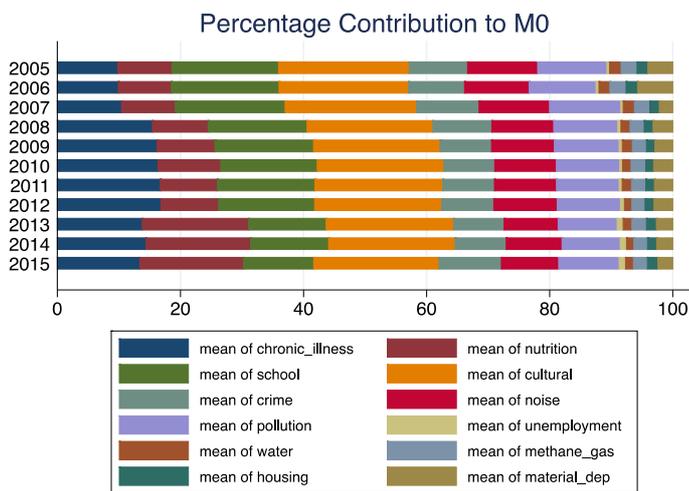
**Table 2. Deprivations and Multidimensional Poverty over time**

	Variable	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Uncensored Headcount (%)	chronic illness	9.12	10.24	10.18	27.10	27.66	28.63	27.50	28.51	27.78	28.48	27.75
	nutrition	19.44	19.60	20.96	21.14	20.22	21.45	19.99	20.23	55.69	55.37	55.15
	school	27.10	26.36	26.12	24.84	23.71	22.45	21.91	21.82	19.35	19.55	18.10
	cultural	57.55	57.58	57.55	57.13	56.96	54.78	55.47	58.46	61.97	61.03	59.46
	crime	29.85	32.38	34.79	37.16	29.66	27.17	26.80	26.72	31.23	29.63	41.82
	noise	37.15	35.51	37.04	36.05	35.40	32.90	32.41	32.13	30.92	30.59	31.09
	pollution	41.08	41.09	44.13	41.24	39.80	38.20	36.92	36.02	35.91	34.09	36.75
	unemployed	4.81	5.68	5.29	6.23	7.66	7.76	8.40	9.33	11.29	11.89	11.76
	water	14.65	14.75	13.98	12.04	12.39	11.64	10.26	9.52	10.51	9.50	10.03
	gas	26.08	25.77	23.44	23.00	22.18	23.38	22.67	21.33	22.01	21.00	22.16
	housing	9.20	10.05	9.44	10.49	9.46	9.58	9.39	10.07	11.43	9.90	10.42
	material deprivation	15.49	29.67	7.08	12.05	10.40	10.60	9.92	10.60	10.02	10.30	9.92
Censored Headcount (%)	chronic illness	4.29	4.80	4.65	9.78	8.93	8.57	8.01	8.25	10.37	10.98	10.96
	nutrition	3.86	4.18	3.89	5.73	5.17	5.35	4.44	4.59	12.99	12.99	13.78
	school	7.57	8.47	7.94	10.18	8.82	8.22	7.59	7.66	9.45	9.69	9.33
	cultural	9.29	10.19	9.52	12.94	11.32	10.79	9.96	10.13	15.57	15.69	16.67
	crime	6.24	6.61	6.77	9.11	6.90	6.49	6.03	6.21	9.26	9.52	12.41
	noise	7.47	7.62	7.65	9.54	8.43	7.87	7.25	7.57	9.88	10.37	11.43
	pollution	7.39	7.90	7.74	9.89	8.69	8.11	7.33	7.56	10.78	10.82	12.07
	unemployed	0.44	0.55	0.42	0.82	0.72	0.59	0.58	0.82	1.86	1.97	2.09
	water	2.08	2.18	2.04	2.34	2.22	1.82	1.79	1.49	2.65	2.29	2.64
	gas	2.84	3.17	2.78	3.63	3.17	3.11	2.80	2.61	4.44	4.24	4.64
	housing	1.91	2.28	1.73	2.28	1.88	1.70	1.70	1.78	3.05	2.84	3.48
	material deprivation	4.43	6.91	2.43	5.07	4.01	4.07	3.55	3.74	5.00	5.00	4.96
H (%)	k=50	9.52	10.51	9.81	13.68	11.96	11.36	10.43	10.66	16.21	16.43	17.57
A (%)	k=50	57.45	57.63	56.75	57.87	57.53	57.68	57.40	57.52	57.94	58.09	58.20
M	k=50	0.055	0.061	0.056	0.079	0.069	0.066	0.060	0.061	0.094	0.095	0.102

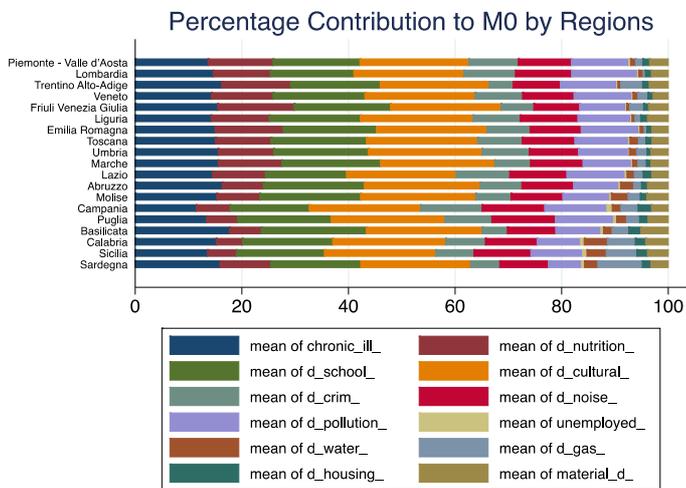
**Figure 5 : MPI Relative Rate of Change**



**Figure 6 : Dimensional Contribution to MPI**



**Figure 7: Dimensional Contribution to MPI by Regions**



**Table3: Logistic regression**

VARIABLES		ODDS RATIO	Cont.
Dependent variable: multidimensional poverty cut-off at 50%			
Age class <sup>15</sup>	very young	0.132*** (0.005)	Friuli Venezia 0.748*** (0.028)
	young	0.149*** (0.003)	Liguria 0.871*** (0.030)
	middle age	0.326*** (0.005)	Emilia 1.082*** (0.033)
sex	female	1.198*** (0.014)	Toscana 0.983 (0.030)
	married	1.205*** (0.023)	Umbria 1.039 (0.038)
Marital status <sup>16</sup>	divorced	1.073** (0.032)	Marche 0.969 (0.033)
	widow	1.853*** (0.041)	Lazio 1.300*** (0.039)
	component_2	0.923*** (0.018)	Abruzzo 0.857*** (0.030)
HH size <sup>17</sup>	component_3	0.762*** (0.016)	Molise 0.745*** (0.030)
	component_4	0.583*** (0.014)	Campania 2.659*** (0.070)
	component_5	0.748*** (0.022)	Puglia 1.805*** (0.051)
	component_m5	1.134*** (0.044)	Basilicata 0.910** (0.035)
	Lombardia	1.219*** (0.033)	Calabria 1.417*** (0.044)
Region <sup>18</sup>	Trentino Alto-Adige	0.537*** (0.020)	Sicilia 1.815*** (0.050)
	Veneto	1.236*** (0.037)	Sardegna 1.221*** (0.041)
	Constant	0.240*** (0.007)	
	Observations	361,485	
	Wald chi2 (29)	32518	
	Prob > chi2	0.000	
	Pseudo R-squared	0.144	

Significance level respectively at \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Robust standard errors in parenthesis.  
 Test on coefficients performed for each group (age, marital status, working positions). All coefficients resulted statistically different one another (p value < 0.000).

<sup>15</sup> Reference category: elder (65 years or above)

<sup>16</sup> Reference category: single individuals

<sup>17</sup> Reference category: single households

<sup>18</sup> Reference category: Piedmont-Val d'Aosta

## Appendix 1

### Variables description

<b>Age class</b>	very young = 14-24 years ; young = 25-44 years; middle age = 45-64 years; elder=65 and over
<b>Gender</b>	female=1 ; male=0
<b>Marital</b>	single individual; married; divorced; widow
<b>Household</b>	number of component living in the house
<b>Region</b>	list of Italian region

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