ERF Working Papers Series

Measuring Multidimensional Poverty in Palestine

Marwan Khawaja, Jawad Al-Saleh, Nathan Reece and Adriana Conconi

ECONOMIC RESEARCH FORUM
منتدى البحوث الاقتصادية

Working Paper No. 1477
August 2021

MEASURING MULTIDIMENSIONAL POVERTY IN PALESTINE

Marwan Khawaja[1], Jawad Al-Saleh[2], Nathan Reece[3] and Adriana Conconi[4]

Working Paper No. 1477

August 2021

Send correspondence to:
Marwan Khawaja
UN-ESCWA
Marwan.khawaja@gmail.com

[1]Marwan Khawaja, Ph.D. Chief, Demographic and Social Statistics, UN-ESCWA, Riad El-Solh Square Beirut, Lebanon.
[2] Palestinian Central Bureau of Statistics, Ramallah, Palestine; email: jawad@pcbs.gov.lb
[3] Statistics Division, ESCWA, Beirut, Lebanon; email: nathan.reece@un.org
[4] Oxford Poverty & Human Development Initiative (OPHI); email: adrianaconconi@gmail.com

First published in 2021 by
The Economic Research Forum (ERF)
21 Al-Sad Al-Aaly Street
Dokki, Giza
Egypt
www.erf.org.eg

Abstract

Poverty is of particular concern to policy makers and international agencies in the context of Palestine because of the continued and increased hardship caused mainly by a prolonged colonial occupation. In this paper, we provide a multi-dimensional poverty index (MPI) for Palestine using data from the most recent Palestine Expenditure and Consumption Survey (PECS) survey conducted in 2016/2017. The sample design of this survey was proportional to population size including 3,739 completed interviews and was specifically designed to provide requisite data for designing an MPI.

The proposed Palestine MPI is unique in the region in at least two respects: it is rights-based and includes monetary as well as non-monetary dimensions. It consists of 7 dimensions and 22 indicators, with the current monetary poverty line as one of the dimensions and indicators and the remaining non-monetary dimensions including education, health, employment, housing conditions, safety and use of assets, and personal freedom. The findings show that about 24% of the Palestinian population is multi-dimensionally poor. The incidence of poverty is four times higher in the Gaza Strip than in the West Bank. Significant differences in poverty are observed by place of residence, refugee status and household size. In terms of poverty composition, monetary poverty accounts for about 45% of overall poverty in Palestine. Education, employment, and housing conditions also have relatively high contributions to poverty – over 10% each. It is hoped that this index will be a useful instrument for monitoring poverty and informing public policy.

Keywords: Poverty, Occupied Palestinian Territory, West Bank, Gaza Strip, violence, living standards, labor market, education, health.
JEL Classifications: I32, I31, O15, D63, C18.

Introduction

Poverty has adverse consequences on the daily lives of people, and poses a threat to sustainable development and human rights. It is of particular concern to policy makers and international agencies in the context of Palestine because of the continued and increased hardship caused by a prolonged colonial occupation. There has been therefore an urgent need among the various Palestine National Authority (PNA) Ministries to develop policies and programs to minimize the impact of the occupation on continuing hardship and to formulate long-term strategies for poverty eradication in the road to sustainable human development.

In its effort to provide evidence-based policies, the PNA established a National Poverty Commission in 1997 to oversee the assessment and monitoring of poverty in Palestine and develop strategies to alleviate it. The Commission established a national monetary poverty line, and released the first national poverty report in 1998 (Khawaja, 1998; PCBS, 1998). PCBS continued to release regular reports of poverty profile in Palestine with the poverty line updated to changes in cost of living over time.

> *The National Poverty Line is based on a budget of basic needs for a reference household. The poverty line with two boundaries (lines) has been developed according to actual spending patterns of Palestinian households. The low boundary, termed "deep poverty line," which was calculated to reflect a budget for food, clothing and housing. The upper boundary "poverty line" adds other necessities including health care, education, transportation, personal care, and housekeeping supplies. The two lines (boundaries) have been adjusted to reflect the different consumption needs of households based on their composition (household size and the number of children).*
> *Palestine Poverty Report 1998, Palestinian Authority.*

It is widely acknowledged that poverty is multidimensional in nature, consisting of both monetary and non-monetary aspects. The reliance on one aspect of wellbeing such as income or expenditure provide a one sided and narrow picture of the levels and distribution of poverty. Furthermore, some families, countries and regions within countries have high levels of income and very little poverty, but their populations rank very low in terms of social wellbeing, as is shown for example in the various UNDP Human Development Reports. Although we know quite a bit about the extent of monetary poverty in Palestine, it is unclear how the situation is regarding the extent of multidimensional poverty and its distribution among Palestinian families and geographic localities.

The purpose of this paper is to describe the new Multidimensional Poverty Index (MPI) for Palestine and present preliminary finding of the index. The paper is organized as follows.

The next section provides a brief overview of the concept of multi-dimensional poverty and related concepts of deprivation. The measurement framework used for Palestine, including a description of the selected dimensions and indicators, data source used as well as weighting and poverty

cutoff is then provided. The fourth section provides results for some widely used tests for comprehensives, parsimony and robustness. Preliminary findings of overall poverty using the new MPI and for some relevant dis-aggregations are presented in section 5. The paper ends with some concluding remarks.

Historical Development of Multi-Dimensional Poverty and Conceptual Framework

Choosing an appropriate measurement scheme should follow a clear conceptual framework of poverty. It is not the purpose of this paper to review available concepts of poverty. However, it is important to describe the concept of multi-dimensional poverty as elaborated mainly by Sen (1976, 1992), and which is consistent with related concepts such as poverty and social exclusion (Townsend, 1979), lack of basic needs (Stewart 1985) or ECLAC's Unsatisfied Basic Needs (UBN) (Santos et al., 2015).

The social exclusion literature used what Atkinson (1979) called a 'counting' approach to poverty, focusing on a material deprivation score with earlier implementation in Britain. Although the theoretical bases for this approach were lacking until recently (Alkire and Foster, 2007), empirical applications of a multidimensional counting approach were found much earlier. For example, poverty statistics on destitution in Italy in the 1950s consisted of weighted counts of the number of households without minimum levels of food consumption, clothing and housing needs (Atkinson, 1979). Various forms of multidimensional deprivation scores were 'officially' adopted in Ireland (Social Inclusion Division, 2014), the United Kingdom and the European Commission (Atkinson *et al*., 2002).

The UBN also uses a counting approach to poverty similar to the social exclusion literature and was popularized in Latin American in the 1980s. The UBN is based on counting the number of deprivations people experience, and was later used as a complementary measure to the standard monetary poverty line (Santos *et al*., 2015). The indicators for the UBN were typically selected based on their association with income poverty (in order to avoid redundancy), and were given equal weights; thus, the resulting deprivation score was insensitive to the number of deprivations counted by the poor.

Sen's (1992) capability framework considers poverty as a capability failure. The framework is anchored in two related concepts of 'functioning' and 'capabilities'. The main premise is that evaluation of progress or development should be based on the extent to which people have the freedom to choose or further the objectives that they value. The yardstick for evaluation should be based on 'functioning' or doing what people value – such as being able to walk and eat well. The concept of capability refers to information on other 'functioning' that a person lacks but could achieve. In other words, one's capabilities refer to the degree of a person's freedom to achieve his or her objectives. If a person lacks the capabilities to achieve his or her valued objective, he or she is considered 'poor'. Thus, poverty is the inability to achieve one's desired objectives, making it a multidimensional concept in nature.

Rather than viewing the poor as people with insufficient resources to meet their needs, with the poor are viewed as people with rights to valued 'objectives' that are violated or not met. The capability approach to poverty can be viewed as a rights-based approach to poverty.

Sen's (1976) initial critique of standard mechanisms of poverty measurement, simple headcount ratios and poverty gaps derived from poverty lines, focused on their inability to capture relative deprivation among the poor. By merely counting those who fall beneath a given monetary poverty line, a headcount ratio violates two axioms: the *monotonicity* axiom, that a reduction in income below the poverty line must increase the poverty measure, and the *transfer* axiom, that a pure transfer of income from a person below the poverty line to anyone richer must increase the poverty measure. This axiomatic foundation for assessing poverty enlivened the debate on poverty measurement (Foster, 1984; Atkinson, 1987; Seidl, 1988) and has spurred the design of myriad poverty indices since, such as Maasoumi (1988), Bourguignon & Chakravarty (2003), and Wagle (2005).

This framing of poverty measurement by Sen (1976, 1992), as well as the corresponding literature, is contingent on measuring poverty in two stages: identification of the poor and aggregation of relative deprivations into an index (Tsui, 2002). As Alkire & Foster (2007) note, whereas the debate that ensued from Sen's axiomatic framework mainly focused on the aspect of aggregation, a renewed focus is deserved for the necessarily preceding step of identification. A distinction is made between two prevailing methods within the literature to identify the poor across multiple dimensions; the *union* method, in which a person identified as multidimensionally poor if they are deprived in at least one dimension, and the *intersection* method, in which a person is identified as multidimensionally poor if they are deprived in all dimensions. Both methods have obvious drawbacks in terms of accuracy and precision; although more accurate, the union method will naturally include persons who should not be counted as poor, and will fail to capture relative deprivation among the poor. Conversely, the intersection method will be precise in identifying the poorest of the poor while considering persons to be non-poor who are nevertheless considerably deprived. The Alkire-Foster framework (Alkire & Foster, 2007) seeks to mitigate these shortfalls by implementing a 'dual cutoff' method, in which an intermediate cut-off level is used between the extremes of 1 deprived dimension and all deprived dimensions. The poor are thus identified by aggregating weighted deprivation prevalence rates of indicators into deprivation scores for each dimension, to which a cut-off is applied to identify if a person is considered poor in each dimension. These deprivation scores are then aggregated into an overall deprivation score, to which the second cut-off is applied, essentially denoting a minimum percentage of dimensions in which an individual must be deprived to be considered multidimensionally poor. Using a counting approach, the multi-dimensionally poor are identified as those whose overall deprivation score is greater than or equal to the selected cut-off percentage. In the Global MPI (a recurrent release originally published by OPHI and UNDP (Alkire & Foster, 2010), a cut-off of 33 per cent is used for identifying a multi-dimensionally poor household.

The Palestine MPI

Measurement Framework

There are various ways to measure multi-dimensional poverty using the Alkire-Foster framework. The most well-known framework is the one adopted in the Global MPI. The Global MPI uses a simple framework mirroring the HDI global index which has been published annually since 1990 (UNDP 2016), but with household level micro data. It consists of three dimensions (health, education, and standard of living) comprised of two health indicators, two education indicators, and six living conditions indicators. (Table 1).

The Global MPI is essentially designed to reflect acute poverty in low income countries and may not reflect the extent of human poverty in middle and upper income countries (Alkire and Santos (2010). The most recent index (2019) shows Palestine with an index of 0.004 and overall poverty rate of 1%. An earlier version of the index (2014) shows similar rates for the UAE. This framework is clearly inadequate for this setting, which is characterized by prolonged conflict, economic hardship, and a series of restrictions on the movement of people and goods.

Given this, several countries have adapted the Alkire-Foster method, to design national MPIs which are better tailored to their national contexts and priorities. In doing so, they have opted to use different dimensions, indicators, weights and cut-offs to separate the poor from non-poor. The proposed framework here differs from those available in the region in two important aspects. First, it is rights-based. The selection of dimensions corresponds to a set of rights found in the basic law as well as the child protection and labor laws in Palestine. Second, the index includes monetary poverty as one of its main dimensions. Here, we build on the successful experiences of multi-dimensional poverty measurement by some countries in Latin America (e.g. Mexico and Ecuador) and elsewhere (e.g. Armenia), which include the monetary poverty line as one dimension of poverty. There are arguments for keeping the MPI separate from the monetary poverty line, with the former capturing access to services provided by the State free of charge and the latter lack of resources available to satisfy basic needs. However, it is well known that some services are provided in the market, and not free of charge. Another concern for keeping the two separate is that income is highly correlated with non-monetary dimensions of deprivation, and thus the two could be redundant. There are empirical (as found in the redundancy tests below) and substantive evidence (Klasen, 2000) suggesting that this is not necessarily the case. In other words, there are households and people who lack resources but not deprived in other dimensions and vice versa. Integrating the monetary poverty line in a multi-dimensional index using the Alkire-Foster methodology would provide us with an estimate of the contribution of monetary poverty to overall poverty, and the contribution of non-monetary poverty to overall poverty next of monetary poverty. There is also a concern that including monetary poverty in the MPI would dominate the index because monetary poverty is more sensitive to economic cycles than non-monetary indicators (Santos, 2019), thus changes in the MPI essentially reflect standard of living at the expense of other dimensions such as education and health. There is however some evidence suggesting otherwise (Santos *et al*., 2010). Finally, income (or expenditure) as a measure of

welfare is volatile, and is known to be underreported in household surveys especially from developing countries. Here, we rely on consumption expenditure rather than reported income as a measure of welfare.

Otherwise, our proposed methodology uses a modified Alkire-Foster framework, with a slightly different weighting scheme but the same cut-off point for the multi-dimensionally poor.

Data Source

A basic requirement for this kind of multi-dimensional poverty measurement is to use data for all indicators pertaining to the same households/individuals. Normally, a single cross-sectional household survey is used for all estimations and analyses, although more than one source can be used if it is possible to link the information on the same households across data sources. The inclusion of monetary poverty as a fundamental component of the multi-dimensional poverty measure requires the use of data from the Palestinian Consumption and Expenditure survey (PECS) rather than a DHS-type health survey. PECS is the source of data for the current national poverty line.

Following the proposed concept for Palestine, the 2011 PECS survey was the most recent data source that could be used to evaluate multi-dimensional poverty in Palestine.

This survey includes relevant indicators for the various proposed dimensions including education, health, employment, housing conditions, and access to social services in addition to monetary poverty. However, the survey did not include data on the remaining proposed dimensions, and the set of indicators for the available dimensions were restrictive.

We therefore decided to use the forthcoming 2016/17 PECS survey for multi- dimensional poverty estimation, with substantial revisions on the household part of the instrument to accommodate the proposed new measure of poverty in Palestine (MPI). Thus, unlike the previous rounds of PECS, the 2016/2017 PECS instrument is rather long and detailed for an expenditure survey. It consists of five parts:

Part One: Socio-Economic Data
Household Roster, Education; Basic Health indicators; Marital Status
Labor Force indicators
Part Two: Housing Conditions
Part Three: Copying strategies; (Loans, Credits, Risk; and Assistance) Part
Four: Expenditure and Consumption
Diary of Daily Expenditure on Food and Nonfood Commodities (two weeks)
Monthly, Quarterly, and Annual Expenditures which includes

- Expenditures on Nonfood Services and Commodities (past month)
- Expenditures on Nonfood Services and Commodities (past three months)

- Expenditures on Nonfood Services and Commodities (past 12 months)

Part Five: Income and income sources

The PECS is a representative national sample survey that was conducted during the period from October 2016 to September 2017 on a monthly basis by the Palestinian Central Bureau of Statistics to collect detailed household expenditures using the diary method, as well as background information on individuals and households. The sample was a two-stage stratified cluster sample. In the first stage, a random sample of 391 enumeration areas was selected proportional to population size, and in the second stage, a random sample of 12 households from each enumeration area was systematically selected. The final sample consisted of 3,739 households with completed interviews (PCBS 2018).

Selecting Dimensions and Indicators

There are various ways to choose the dimensions covered by a multi-dimensional poverty index: legal bases, such as the constitution or basic laws by legislators, participatory exercises, following international standards, or expert opinions. There are some examples, for instance, Mexico, where the dimensions are entirely based on articles within the countries' constitution. Here we select dimensions mainly based on the Palestinian Basic Law (the second part of the Basic Law identifies a set of rights that all Palestinians should enjoy; see Appendix I for Basic Law articles) as adopted by the Parliament (amendment dated 18 March 2003) and partly on expert opinion and discussions with members of the National Poverty Commission. The index we propose here is thus rights-based.

The framework used here consists of two spaces: economic well-being and social well- being. The economic well-being was captured by one dimension and one indicator: the usual National monetary poverty line. The preliminary social well-being component comprised of 48 indicators grouped into 10 dimensions.

Ultimately, the measures proposed should indicate 'deprivation'. For the purpose of poverty measurement, indicators with very low or much higher than expected prevalence should, therefore, be excluded or otherwise merged with similar indicators. Moreover, all deprivation results were produced for all households with non-eligible households treated as non-deprived as commonly assumed in MPI methodologies.

The preliminary proposed list was revised in light of available data from the PECS survey, including the first 6 rounds of data collection, (*Overall, 1,900 household questionnaires were completed after 6 months of data collection, from a total sample of 2,929 households. The overall response rate was about 70%. Simple checks on the overall quality of the (un-weighted) data reveal that the survey data were of good quality – as expected)*. Based on data from the first 6 months of data collection in the survey, a revised list of 6 dimensions and 21 indicators in addition to the single indicator for monetary poverty were identified.

Below, is a summary of the prevalence rates of our preliminary set of indicators (excluding the monetary poverty component):

Education

The Basic Law (Article 24) specifically requires compulsory education up to the basic level (grade 10) for all, and calls for improving its quality. The practice in multidimensional poverty measurement is to include an indicator on educational achievement, the minimum level of adult education, some indicators on children currently enrolled in school, and in some cases grade repetition or proxies for educational quality (e.g. Pakistan). The Global MPI, for example, includes years of schooling completed as well as school assistance for school aged children; for identifying deprived households in education, we decided to focus on level of education completed for adults and some measures of educational quality. Although it might be useful to include measures of educational attainment for different age groups, adults, and school aged children, this may reflect changes that have occurred over many years, and could reflect what should be (e.g., children still at school) instead of what the situation is at the present. The proposed dimension consisted of four indicators: School enrolment, educational attainment by age groups, grade repetition or educational gap, and quality of schooling

The four indicators listed under this dimension have reasonable results, with deprivation prevalence ranging from 8% for school enrollment to 26% for educational attainment for those aged 19-50 years. It was therefore recommended to keep these indicators with the possibility of merging the school enrollment with the repetition indicators, leaving us with three or four indicators for this dimension.

Health

The Basic Law (Article 22) specifies the provision of health services to citizens especially the disabled, families of martyrs, injured, and prisoners. Health insurance is also specified in the Basic Law. Although indicators on access to health services should reflect this, access to health services may not indicate better health, and in this context access to health services may reflect the public-private sector employment divide. For example, all public-sector employees are covered by health insurance and have better access to health services. Indicators that measure the health status of household members may be better than those pertaining to health services. We decided to include indicators for both dimensions of health, namely health status and access.

The proposed dimension consisted of three indicators: Disability, chronic illness, and infant death in the past 10 years.

Data for two indicators show reasonable prevalence at about 14% but only 2% of households have infant deaths in the past 10 years. It was therefore recommended to remove the infant deaths indicator.

Employment and work conditions

The Basic Law (Article 25) specifies work as a right to every citizen and references work conditions, such as fair labor relations as well as the right to unionization and strike. The current PECS instrument includes detailed items on employment status, underemployment, and employment conditions for the adult population. A simple measure of education-work mismatch was also suggested to indicate deprivation.

The proposed dimension consisted of seven indicators: Unemployment, chronic (long term) unemployment, underemployment, labor underutilization (education-job mismatch), work discouragement, child labor, and work injuries.

Prevalence estimates for the seven indicators in this dimension were low. Only labor underutilization had relatively high prevalence of 23%. We suggested merging four indicators into one – unemployment, underemployment, long term unemployment, and discouraged workers - leaving four indicators within this dimension: unemployment, labor underutilization, child labor and work injuries. The child labor indicator could also be removed as its prevalence is only 4%. It should be noted that several measurements of unemployment were tested, including unemployment of the head of a household aged between 18 and 60 years.

Housing conditions

The Basic Law (Article 22, 23) requires adequate housing for all. This dimension can be captured by some measures of overcrowding and the materials used in the construction of the dwelling, such as floor and walls. Services connected to the dwelling such as electricity, water and sewage are also suggested as part of the housing conditions dimension.

The proposed dimension consisted of seven indicators: access to piped water, disruption of water and electricity supply, ventilation problems, pollutants, floor and roof materials, overcrowding, and sleeping arrangements for boys and girls.

The results for all seven indicators seem reasonable with high overcrowding (33%) and ventilation problems (21%). Given the low prevalence of access to piped water, it was suggested to merge it with frequency of water and electricity supply indicators. The floor and roof material indicator also exhibited low prevalence, suggesting it should be removed, leaving five indicators within this dimension.

Access to social services

The Basic Law (Article 22) specifies access to education, health, and social services in general terms. There is some overlap between this dimension and the dimension of social protection below as the Law specifies the provision of social insurance, retirement benefits and disability benefits. This dimension is restricted to social services and not those associated with the

dwelling such as water and electricity.

The proposed dimension consisted of five indicators: access to health services, access to schools, access to public transport, day care, and elderly care facilities.

Four of the five indicators here exhibited low prevalence, with access to health maternal services being the exception. It was therefore suggested to remove this dimension and add the health access indicator to the health dimension.

Personal safety

The Basic Law (Article 13,29*)* requires protection from violence, workplace mistreatment, and torture. It specifies child protection as a requirement by including prohibition of using violent disciplinary measures against children. This dimension is meant to include a wider set of safety measures such as victimization by others and the State, including Occupation, as well as domestic violence.

The proposed dimension consisted of three indicators: theft or damages to property, domestic violence, and occupation violence.

Two of the three indicators had reasonable prevalence rates, although the indicator on occupation violence at the household level was low (1%); it was suggested to merge occupation violence with the domestic violence indicator, leaving us with two indicators within this dimension.

Personal freedom

There is a wide range of issues associated with personal freedom and choices in the Basic Law (Article 11, 19, 20, 28). These include arbitrary detention and search without a warrant, restrictions on movement, freedom of speech, expression, and assembly, and deportation. Restrictions on a women's right to choose whom to marry and the number of children to have are also considered for inclusion

The proposed dimension consisted of seven indicators: child marriage, freedom of movement and speech, arbitrary detention, control over women's income, restrictions on the participation of women in the labor market, and the enrollment of women in higher education.

Like some other dimensions, only two indicators (out of seven) in this dimension provided reasonable prevalence estimates – child marriage and restrictions on movement.

This was contrary to our initial expectations. However, the majority of indicators in this dimension are perception items, and measurement errors can be large in this kind of survey using proxy respondents (Kasprzyk 2005). It was suggested to remove three indicators from this dimension: detention, freedom of speech, and restrictions to the enrollment of women in higher

education. Additionally, the two indicators concerning the use of women's income and restrictions to women's participation in the labor market could also be merged pending final results. It was recommended to merge this dimension with the personal safety dimension under a new name: personal safety and freedom.

Social Protection

The Basic Law (Article 22) specifies the provision of social insurance including disability and old age benefits to all. It refers specifically to the protection of the families of martyrs, disabled, injured, and detained persons

The proposed dimension consisted of four indicators: employment benefits, pension, social transfers, and health insurance.

The employment benefits and social transfer indicators exhibited low prevalence and were deemed unusable. It was therefore suggested to remove this dimension and move the remaining indicators as follows,

- Move pension to the employment dimension after merging it with employment benefits
- Move health insurance to the health dimension.

Some concerns were raised concerning the measurement of the pension indicator., as its prevalence was high at 40%.

Social participation

The Basic Law (Article 26) includes the right to participate in political and social activities. It specifies the right to hold meetings and participate in public life, and to have memberships in unions, political parties, clubs, and associations. It does not include the right to social participation in general such as the ability to visit and socialize with friends and family. However, the lack of social capital, and isolation in particular, has been shown to be associated with better health, wealth, and life chances (Kawachi and Berkman 2000; Nayaran and Pritchett 1999). The social exclusion literature puts particular emphasis on the lack of social participation as an important dimension of deprivation (Gaventa 2017).

The proposed dimension consisted of four indicators: membership in clubs or associations, visits to relatives, friends or co-workers, help received/given, and cultural practice. The prevalence estimates for three of the four indicators under this dimension were very high - reaching over 90% for two of them. The only indicator with a reasonable estimate was visiting relatives, friends, or co-workers at 11%. However, it was recommended to remove this dimension from the MPI.

Ownership and use of own assets

The Basic Law (Article 21) specifies freedom of economic activity including the right to land

ownership, and against any land confiscation except for use in public facilities. This is an important dimension of deprivation in the Palestinian context where many families were made worse off or destitute after the confiscation of their agricultural land or businesses.

The proposed dimension consisted of three indicators: confiscation of land or property, use of agricultural land, and demolition or destruction of houses or property.

Likewise, prevalence estimates for the three indicators in this dimension were low at 2, 4 and 7%, respectively. It was suggested to merge the first two indicators owing to low prevalence, leaving us with only two indicators for this dimension.

A revised index

After careful examination of preliminary results of the potential index using the full data-set of PECS, the final framework consists of two spaces: economic well-being and social well-being. The economic well-being was captured by one dimension and one indicator: the usual National monetary poverty line. The social well-being component comprised of 21 indicators grouped into 6 dimensions: Education (4 indicators); health (4 indicators); employment (4 indicators); housing (4 indicators); safety and use of assets (3 indicators); and personal freedom (2 indicators), (as presented in Table 2). The number of indicators and dimensions were reduced as indicators with very low or too high prevalence were excluded or merged with similar indicators in order to avoid biases in the overall index.

Weighting and cutoff

The weighting issue is perhaps the most researched and contested one in constructing composite indexes, including the multi-dimensional poverty index (Belhadj, 2012; Bellani, 2013). Weights are rather important because they determine the contribution of the selected indicators/dimensions to well-being, and the extent of substituting one indicator/dimension with another, and the choice of weights can impact the identification of the poor (Decancq *et al*., 2013). There are strong arguments for using either equal weights or varying weights for dimensions and/or indicators. The standard practice is to use equal weights for the various dimensions, and then equal weights within indicators in each given dimension, as is the case for the Global HDI and MPI, but such weighting may not be reasonable giving the large differences in the 'value' we put on, for example, human lives vis a vis availability of material resources or access to services (Ravallion, 2011). For varying weights, the main alternatives are to use value judgment or data-based procedures for assigning appropriate weights to dimensions/indicators (Decancq and Lugo 2013). For the former, one can elicit the weighting structure directly from experts or a group of respondents in a survey. Alternatively, costing at market prices has been suggested to provide weights that reflect a tradeoff between dimensions (Srinivasan, 1994). However, adding a monetary value of non-monetary dimension to income or consumption may be problematic, and conceptually inappropriate for comparisons of welfare (Thorbecke, 2007).

For data-driven procedures in weighting, there are two main alternatives: frequency- based approaches and multivariate statistical techniques. Following Desai and Shah (1988), one can assume that the smaller the proportion of people with a certain dimension, the larger the weights assigned to that dimension. It turned out that such a procedure may lead to unreasonable or unbalanced structure of the weights. There are various multivariate statistical techniques used to aggregate dimensions including principal components (Klasen, 2000; Lelli, 2005), factor analysis (Whelan et al. 2001), or latent class analysis (Navarro and Ayala, 2008) among others. Although all of these approaches are robust from a statistical perspective, they may yield results that are not consistent with a normative aspect in the choice of weights. It should also be pointed out that the resulting weights from such techniques are by-products of estimating individual attributes and may lack independent meaning.

Here, we rely on normative considerations in assigning weights to dimensions. The main advantage of using normative criteria for weights is transparency and allows for comparisons over time and across groups (Santos, 2019). Given the importance of economic well-being in determining social well-being, and the widespread use of a monetary poverty line across countries in the world for the purpose of public transfers and monitoring public policies, we assigned a larger weight to monetary poverty than non-monetary dimensions. Economic well-being as measured by the usual poverty line is assigned 20% of overall poverty, and the remaining human dimensions account for 80%. Equal weights are given to each of the 6 human development dimensions. All indicators within each of the chosen dimensions will also be weighted equally.

In monetary poverty, identifying the poor is decided by establishing the minimal consumption standards for all necessary goods. Determining the minimal standards or deprivation threshold is arbitrary in the case of univariate analysis of income or consumption-based measures, as the 'norm' is to use an absolute criterion, but relative or legal criteria have also been used (Callan and Nolan, 1991). Defining the poverty threshold in a multidimensional setting is perhaps more challenging and contentious (Thorbecke, 2007; Santos 2019). Basically, which cut-off to use is a normative decision, but should reflect policy priorities. One way to establish the minimum is to sum weighted deprivations across all dimensions, yielding a single variable, and then decide on a reasonable cutoff to separate the poor from non-poor. Here, we follow this procedure, using the 33.33% cut-off point as in the Global MPI. Therefore, a household could be multidimensionally poor if it is deprived in income and one social dimension, or deprived in three social dimensions but not income deprived.

Aggregation

The most commonly used measure of monetary poverty is the headcount ratio which gives the percentage of poor in the population. For the multi-dimensional case however, Alkire-Foster (2007) show that the simple headcount ratio (***H0***) is insensitive to the increase in the scope of poverty, violating the principle of what they call 'dimension monotonicity.'

Thus, if a person is poor in one dimension, and becomes poor in another dimension, the level of poverty remains the same. They proposed an **adjusted headcount ratio (*M0*)**, which is the headcount index weighted by the average deprivation rate among the poor. The deprivation rate among the poor is simply the number of deprivations for the poor divided by the total possible deprivations.

Comprehensiveness, Parsimony, and Robustness

Comprehensiveness

Comprehensiveness analysis seeks to ensure that our index is accurate in capturing poverty in Palestine by including deprivations that are widely recognized as constituent elements of poverty (Santos et al.,2015). The selections of dimensions and indicators were largely based on normative considerations, 'reasonable' prevalence as well as inspiration from the global poverty literature. Empirical validation of the selection of indicators was conducted with Exploratory Factor Analysis (EFA), building on the methodology of Santos et al (2015).

As is the case with most MPIs, all of our indicators are dichotomous as they denote households as either deprived or not. Table 1 shows the results of the EFA using a matrix of tetrachoric correlations, a type of polychoric correlation that is reserved for dichotomous variables; by using this matrix, we circumvent the requirement that factor analysis be performed on continuous data (Costello and Osborne, 2005; Santos et al. 2015).

The purpose of exploratory factor analysis is to uncover a possible underlying or latent structure in the variables, which in turn can validate our theoretical assumptions and the accuracy of the MPI in capturing poverty. Table 3 displays an EFA restricted to seven factors with an orthogonal rotation. The selection of seven factors is justified by the Scree test, as well as qualifications for a clean factor structure that include, "item loadings above .30, no or few item cross loadings, no factors with fewer than three items," (Costello and Osborne, 2005). Although the factors do not enjoy five or more strongly loaded items (0.5 or better), which Costello and Osborne (2005) denote as ideal, the factors are not weak as they all contain more than three items with loadings above 0.4. Furthermore, since our sample size does not extend to more than one country nor multiple years, lower factor loadings in general should be expected.

All of the 22 indicators considered have absolute factor loadings above 0.32, which Tabachnick and Fidell (2001) cite as a minimum threshold for satisfying an *a priori* factor structure. 15 indicators have strong loadings above 0.5, validating our underlining assumption that these selected indicators account for poverty, and as no indicators exhibited all absolute factor loadings below 0.32, this factor analysis affirms our normative decisions and does not suggest that we remove any indicators. Although this underlying factor structure suggests that our MPI would be better suited to regrouping the indicators into dimensions that correspond to the factor structure, we consider our normative arguments to be sufficient bases to maintain our proposed structure, as well as necessary to keep our index rights-based.

Parsimony

Whereas the consideration of comprehensiveness seeks to ensure that our MPI is accurate in capturing poverty, parsimony analysis seeks to ensure that our MPI is precise insofar as our indicators are not redundant. We consider the Cramer V correlation coefficient as recommended by Alkire, Foster, et al. (2015), calculating it for indicators within dimensions (Table 4) and against our income indicator (Table 5), as similarly implemented by Santos et al. (2015).

As observed in tables 4 and 5, the absolute values of Cramer V statistics are below 0.3 for all pairwise comparisons and less than or equal to 0.25 for all pairwise comparisons with the income indicator. The highest absolute Cramer V statistic was observed between the employment indicators, concerning unemployment and employment benefits (Table 5); a slight negative correlation here is expected, as unemployed individuals are, by definition, not deprived in the employment benefits indicator which only focuses on the employed population. Nevertheless, the Cramer V statistic is not high enough to warrant the removal or collapsing of these indicators.

All indicators exhibit low Cramer V statistics when tested against our monetary poverty indicator (Table 4). The highest of 0.25 was recorded with the ventilation indicator; housing conditions are notoriously a strong indicator of monetary poverty.

Robustness

Upon establishing that our index is accurate in capturing poverty in Palestine, and that it is precise insofar as the selection of indicators is concerned, our final consideration is robustness; that our MPI is robust to changes in its parameters, which as Santos et al. (2015) affirm is significant if we intend this index to influence public policy. The analysis below focuses on changes in the value of the poverty cutoff percentage k and the resulting changes in MPI (Figure 1). Overall unadjusted and adjusted headcount ratios H and $M0$, respectively, for five sub-regions of Palestine can be found in Figure 2.

Figure 1 visualizes a rank-robustness analysis of our MPI disaggregated by five sub- regions of Palestine (three areas of the West Bank and two areas of the Gaza Strip), for increasing values of k in increments of 5. For all values of the poverty cutoff percentage k more than 50 per cent, the MPI within each Palestinian sub region fall below 2 percent and eventually converge to zero, making it sensible to restrict our rank-robustness analyses for values of k between 10 and 50 per cent (Santos et al. 2015). For these nine values of k between 10 and 50 per cent), the ranking of the five sub regions is constant for values of k from 10 to 40 per cent, with Northern Gaza being the poorest sub region followed by Southern Gaza, Southern West Bank, Northern West Bank, and Central West Bank. For k values of 45 and 50 per cent, a slight change is observed as Northern West Bank is marginally poorer than Southern West Bank. However, this change in the ranking is not statistically significant; therefore, all pairwise comparisons are statistically robust. Moreover, the Kendall Tau b and Spearman correlation coefficients between these rankings are over 80 and 90 per cent respectively.

Results

Table 4 presents the MPI indices for the total population and disaggregated by relevant population characteristics. Results for both the unadjusted head count ratio, H, or poverty incidence, and the adjusted head count ratio, M0, are presented. Overall poverty incidence is 24%, with a large difference between the West Bank (11%) and Gaza Strip (45%). Poverty in the Gaza Strip is four times as prevalent than in the West Bank. These figures are close but slightly lower than the monetary poverty line, which is hardly surprising. Although unemployment is very high in the State of Palestine, especially in the Gaza Strip, the education, health, and related fields are not as deprived as compared to material well-being. Overall, the adjusted head count ratio, or MPI, is 0.10, with a similar distribution to the incidence of poverty between the two regions. Consistent with evidence elsewhere (Alkire and Santos, 2014), the average proportion of deprivation among the poor is slightly larger in Gaza Strip than the West Bank, but in both *H* and *M0*, poverty in Gaza is four times as prevalent than in the West Bank.

Table 4 shows the two MPI indices disaggregated by relevant characteristics. The results show that poverty is more severe in refugee camps than urban and rural places.

Incidence of poverty is 39% in refugee camps as compared to 14% in rural areas and 24% in urban places. This is largely a reflection of high poverty incidence in the Gaza Strip, as the Strip is mainly urban and houses the majority of refugees in Camps. The adjusted head count ratio shows a similar distribution ranging from .17 in camps to 0.06 in rural areas. Similarly, the incidence of poverty among refugees is much higher at 31% than non-refugees (19%). Surprisingly, the incidence of poverty does not vary by household headship. However, poverty increases consistently by household size. The incidence of poverty in small households with 1 to 3 members is 6% as compared to 36% in large households with 7 or more members.

Table 7 and Figures 3 and 4 present results of the composition of poverty in Palestine, breaking down poverty into different dimensions and indicators. More than half of households are deprived of employment benefits, the highest proportion of all indicators (Figure 3). Over a third of households are deprived in overcrowding. The health access indicator has the lowest deprivation percentage at 2%, followed by the ownership and use of assets indicator at 3%.

As would be expected, monetary poverty is the largest contributor to poverty accounting for 45% of overall deprivation (Table 7; Figure 4). Also, not surprising is the relatively large contribution of employment deprivation to overall poverty at 13%. The contributions of education and housing conditions are similar at 11%. Safety and use of assets as well as personal freedom contribute about 8% and 7%, respectively, to overall poverty. The smallest contributor to poverty is the health dimension at 5%.

There are some variations of poverty contribution within dimensions (Figure 4). Aside from the monetary poverty dimension which consists of only one indicator with 45%, the interpersonal

and state violence indicator is the second largest contributor to poverty with 7%. Employment benefits, overcrowding, and the economic freedom of women are the next largest with 5%. The relative contributions of the remaining indicators are small, ranging from less than 1% (ownership and use of assets; health access) to about 4% (quality of education; ventilation).

Conclusions

In this paper, we described a proposed multi-dimensional poverty index (MPI) for Palestine and provided some preliminary results of the index using data from the recent (2016/2017) PECS survey. The proposed Palestine MPI is unique in the region in at least two respects: it is rights-based and include monetary as well as non-monetary dimensions. Articles from the Basic Law were used as the basis for selecting the dimensions and indicators. The Index consists of 7 dimensions and 22 indicators, with the current monetary poverty line as one of the dimensions and indicators. The remaining non-monetary dimensions include education, health, employment, housing conditions, safety and use of assets, and personal freedom. The monetary poverty dimension has a weight of 20%, and the remaining dimensions are equally weighted at 13.3% each. The indicators are also equally weighted within dimensions. Aside from the monetary poverty indicators, the weights of the 17 indicators range from 3% to 7% of the overall index. The proposed index was tested for comprehensiveness, parsimony, and robustness.

Calculating this index using the most recent data from the PECS survey reveals that about 24% of the Palestinian population is multi-dimensionally poor. The incidence of poverty is four times higher in the Gaza Strip than in the West Bank. Significant differences in poverty are observed by place of residence, refugee status and household size. In terms of poverty composition, monetary poverty accounts for about 45% of overall poverty in Palestine. Education, employment, and housing conditions also have relatively high contributions to poverty – over 10% each.

Exploratory factor analysis suggests that the proposed index captures deprivation rather well, with some minor contributions by a few indicators. Overall, tests of association indicate that the indicators chosen are parsimonious and not redundant. The results seem robust to changes in the poverty cutoff. There are of course some limitations of the index and data used to construct it. For one, some of the indicators used were merged together owing mainly to very low prevalence. For example, school enrollment and repetition are treated as one indicator, different employment benefits are lumped together, and violence regardless of its type is one indicator. This may pose some difficulties in terms of policy interventions, but finer disaggregation is always possible if requested by policy makers. Second, the PECS survey sample is usually small in size preventing us from undertaking detailed disaggregation of the overall poverty. It is an expensive survey and is rather demanding on respondents because of its length and the diary method used to capture the data, with implications for sample size considerations. Thirdly, there is an inability to collect detailed data on some relevant indicators in this kind of survey such as child deaths using birth histories or nutritional status. Fourth, the perception indicators were collected from the

responding adult in the household (i.e., proxy), and not directly from the concerned respondent, implying that such indicators may have measurement problems. Finally, this was the first round of data collection for multi-dimensional poverty, so examining trends overtime in poverty incidence was not possible. Future rounds of the survey may include additional items lacking in this survey to better capture poverty in all its dimensions. Of course, there is no one procedure for designing a multi-dimensional poverty index, and all of them have limitations and pose challenges in implementations (Santos 2019). It is hoped that this index will be a useful instrument for monitoring poverty and informing public policy.

References

Alkire, S. & Foster, J. (2007, revised in 2008). Counting and multidimensional poverty measurement. *OPHI Working Paper 7*, University of Oxford.

Alkire, S. and Santos, M.E. (2010). "Acute Multidimensional Poverty: A New Index for Developing Countries." *OPHI Working Papers 38*, University of Oxford. Alkire, S., Chatterjee, M., Conconi, A., Seth, S., & Vaz, A. (2014). Global multidimensional poverty index 2014.

Atkinson, A. B. (1987). On the measurement of poverty. *Econometrica: Journal of the Econometric Society*, 749-764.

Atkinson, A. B. (1992). Measuring poverty and differences in family composition. *Economica*, 59(233), 1-16.

Atkinson, A. B. (2003). Multidimensional deprivation: contrasting social welfare and counting approaches. *The Journal of Economic Inequality*, *1*(1), 51-65.

Atkinson, T., et al (2002). *Social Indicators: The EU and Social Inclusion*. Oxford: Oxford University Press.

Belhadj, B., (2012). New weighing scheme for the dimensions in multidimensional poverty indices". *Economics Letters* 116, 304-307.

Bellani, L., (2013). Multidimensional indices of deprivation: the introduction of reference groups weights". *Journal of Economic Inequality* 11, 495-515.

Bourguignon, F., & Chakravarty, S. R. (2003). The measurement of multidimensional poverty. *The Journal of Economic Inequality*, 1(1), 25-49.

Callan, T., and Nolan, P., (1991). Concepts of poverty and the poverty line. *Journal of Economic Surveys* 5, 243–261.

CONEVAL, C. (2009). Metodología para la medición multidimensional de la pobreza en México.

Decancq, K., Lugo, M.A. (2013). Weights in multidimensional indices of wellbeing: an overview". *Economic Review* 32, 7-34.

Decancq, K., Van Ootegem, L., Verhofstadt, E. (2013). What if we voted on the weights of a multidimensional well-being index? An illustration with Flemish data". *Fiscal Studies* 34, 315-332.

Foster, J., Greer, J., & Thorbecke, E. (1984). A class of decomposable poverty measures. *Econometrica: journal of the econometric society*, 761-766.

Foster, J. E., & Shorrocks, A. F. (1991). Subgroup Consistent Poverty Indices. *Econometrica,* 59(3), 687-709.

Gaventa, J. (2017). Poverty, participation and social exclusion in North and South. *IDS Bulletin* 48: Available at: <https://bulletin.ids.ac.uk/idsbo/article/view/2908>. Date accessed: 22 sep. 2019. doi:http://dx.doi.org/10.19088/1968-2017.143.

Jaber, J. O., & Probert, S. D. (2001). Energy demand, poverty and the urban environment in Jordan. *Applied Energy*, *68*(2), 119-134.

Khawaja, M. 1998. Poverty assessment in Palestine. Ramallah: PCBS. Unpublished Ms.

Kronfol, N.M. (2012). Access and barriers to health care delivery in Arab countries: a review. *EMHJ - Eastern Mediterranean Health Journal, 18 (12), 1239-1246, 2012*

Kasprzyk, D., (2005). Measurement error in household surveys: sources and measurement. In *Household Sample Surveys in Developing and Transition Countries*. Pp. 171-198. New York: United Nations.

Lanjouw, P., & Ravallion, M. (1995). Poverty and household size. *The economic journal*, 105(433), 1415-1434.

Lelli, S. (2005). Using functionings to estimate equivalence scales. *Review of Income and Wealth* 51, 255-284.

Mideros, A. (2012). Ecuador: defining and measuring multidimensional poverty, 2006- 2010. *Cepal Review*.

Maasoumi, E., & Nickelsburg, G. (1988). Multivariate Measures of Well-Being and an analysis of Inequality in the Michigan Data. *Journal of Business & Economic Statistics*, 6(3), 327-334.

Navarro, C., Ayala, L. (2008). Multidimensional housing deprivation indices with application to Spain. *Applied Economics* 40, 597-611.

Nayaran, D., & Pritchett, L. (1999). Cents and Sociability: Household Income and Social Capital in Rural Tanzania. *Economic Development and Cultural Change*. 40(4), 871-897. Kawachi, I., & Berkman, L, (2000). Social Cohesion, Social Capital and Health, in *Social*

Epidemiology, (Berkamn, L., & Kawachi, I. Eds.), pp. 174- 190. New York: Oxford University Press. Klasen, S., (2000). Measuring poverty and deprivation in South Africa. *Review of Income and Wealth* 46(1): 33-58.

Palestinian National Authority. (1998). Palestine Poverty Report. Ramallah: Ministry of Planning.

PCBS. (2018). Main Findings of Living Standards in Palestine. Expenditure, Consumption and Poverty, 2017. Ramallah: Palestinian Central Bureau of Statistics.

Ravallion, M., (2011). On multi-dimensional indices of poverty. *The Journal of Economic Inequality,* 9 (2): 235-248.

Santos, M. E., (2019). *Challenges in Designing Multidimensional Poverty Measures*. Santiago, UN-ECLAC.

Santos, M. E., Lugo, M. A., Lopez-Calva, L. F., Cruces, G. and Battiston, D. (2010), Refining the

basic needs approach: A multidimensional analysis of poverty in Latin America, *Research on Economic Inequality Vol. 18: Studies in Applied Welfare Analysis: Papers from the Third ECINEQ Meeting. Bingley: Emerald: 1 – 29*.

Santos, M. E., Villatoro, P., Mancero, X., & Gerstenfeld, P. (2015). A Multidimensional Index for Latin America, *OPHI Working Paper, No. 79, Oxford Poverty and Human*

Development Initiative, University of Oxford.

Seidl, C. (1988). Poverty measurement: a survey. In *Welfare and efficiency in public economics* (pp. 71-147). Springer, Berlin, Heidelberg.

Sen, A. (1976). Poverty: an ordinal approach to measurement. *Econometrica: Journal of the Econometric Society*, 219-231.

Sen, A. (1985). Commodities and capabilities. Lectures in economics: Theory, institutions. *Policy, 7.*

Sen, A. (1992). Inequality Reexamined–Cambridge. *Massachusetts: Harvard University*.

Sorenson, S. B., Morssink, C., & Campos, P. A. (2011). Safe access to safe water in low income countries: water fetching in current times. *Social science & medicine*, *72*(9), 1522-1526.

Social Inclusion Division (2014). *What is Poverty?* http://www.socialinclusion.ie/poverty.html, accessed on 23, 9, 2019.Stewart, F. (1985). *Planning to meet basic needs*. Springer.

Srinivasan, T.N. (1994). Human development: A new paradigm or reinvention of the wheel? American Economic Review Papers and Proceedings 84, 238-243.

Thorbecke, E. (2007). Multidimensional poverty: Conceptual and measurement issues. In: Kakwani, N., Silber, J., (Eds.), *The Many Dimensions of Poverty*, 3-19. Basingstoke: Palgrave Macmillan.

Townsend, P. (1979). Poverty in the United Kingdom. Harmondsworth: Penguin. *Turner, B. (1984) The Body and Society Oxford Blackwell. Ungerson, C. (1987) Policy is Personal: Sex, Gender and Informal Care London Tavistock*.

Tsui, K. Y. (2002). Multidimensional poverty indices. *Social Choice and Welfare*, 19(1), 69-93. UNDP (2016). Human Development Report 2016: Human Development for Everyone. New York: United Nations Development Programme.

Wagle, U. (2005). Multidimensional poverty measurement with economic well-being, capability, and social inclusion: a case from Kathmandu, Nepal. *Journal of Human Development*, 6(3), 301-328.

Whelan, C.T., Layte, R., Maître, B., Nolan, B. (2001). Income, deprivation, and economic strain. An analysis of the European Community Household Panel. European Sociological Review 17, 357-372.

Appendix I

Articles were taken from the Amended Basic Law of Palestine ((Promulgated March 18, 2003)

1. Education

Article 24

1. Every citizen shall have the right to education. It shall be compulsory until at least the end of the basic level. Education shall be free in public schools and institutions.
2. The National Authority shall supervise all levels of education and its institutions, and shall strive to upgrade the educational system.
3. The law shall guarantee the independence of universities, institutes of higher education, and scientific research centers in a manner that guarantees the freedom of scientific research as well as literary, artistic and cultural creativity. The National Authority shall encourage and support such creativity.

2. Health and Nutrition

Articles 22

1. Social, health, disability and retirement insurance shall be regulated by law.
2. Maintaining the welfare of families of martyrs, prisoners of war, the injured and the disabled is a duty that shall be regulated by law. The National Authority shall guarantee these persons education, health and social insurance.

3. Housing conditions

Articles 22, 23

Article 22

1. Social, health, disability and retirement insurance shall be regulated by law.
2. Maintaining the welfare of families of martyrs, prisoners of war, the injured and the disabled is a duty that shall be regulated by law. The National Authority shall guarantee these persons education, health and social insurance.

Article 23

Every citizen shall have the right to proper housing. The Palestinian National Authority shall secure housing for those who are without shelter.

Articles taken from the Palestinian Child Law ((Promulgated 2012) – unofficial translation from Arabic

1. Education

Article 37

In accordance with the provisions of law:

A. Every child shall have the right to free education and learning in public school until the completion of secondary stage schooling.
B. Education is compulsory until the completion of the stage of higher basic schooling as a minimum.

2. Health and Nutrition
Article 22

1. The child shall have the right to obtain the highest attainable standards of free health services, while taking into account the Health Insurance Law, and its relevant applicable regulations.
2. No Fees shall be charged for immunization of children.

3. Housing conditions
Article 26
The State shall take all appropriate measures in order to,
1. Prevent children from the hazards of environmental pollution, and for combating such pollution.
…
.

4. Protection
Articles 42
1. The Child shall have the right to protection from all forms of violence, physical, psychological, or sexual harm or injury, negligence, homelessness, and any other form of ill treatment or exploitation.
…
.
Article 43
Exploitation of children in begging and soliciting alms shall be prohibited. Further, it shall be prohibited to putting the child to work under conditions that violate the law, or burdening the child with work that may obstruct his or her education, or be injurious to his or her health, or physical or moral safety.

5. Personal development
Article 11.
1. Each child shall have the right to life and security.
2. The State shall guarantee the growth, development, and care of the child to the maximum and possible extent.

Table 1. The dimensions, indicators, deprivation cutoffs and weights of the Global MPI

Dimensions of Poverty	*Indicator*	*Deprived if--*	*Weights*
Education	Years of Schooling	No household member aged 10 years or older has completed six years of schooling.	1/6
	Child School Attendance	Any school-aged child is not attending school up to class 8.	1/6
Health	Child Mortality	Any child under 18 years of age has died in the family in the five-year period preceding the survey.	1/6
	Nutrition	Any person under 70 years of age for whom there is nutritional information is malnourished.	1/6
Living Standards	Electricity	The household has no electricity.	1/18
	Improved Sanitation	The household's sanitation facility is not improved (according to SDG guidelines), or it is improved but shared with other households	1/18
	Improved Drinking Water	The household does not have access to improved drinking water (according to SDG guidelines) or safe drinking water is more than a 30-minute walk from home, roundtrip.	1/18
	Housing	The household has inadequate housing: the floor is made of natural materials or the roof or wall are made of rudimentary material.	1/18
	Cooking Fuel	The household cooks with dung, agricultural crops, shrubs, wood, charcoal or coal.	1/18
	Assets ownership	The household does not own more than one radio, TV, telephone, computer, animal cart, bike, motorbike or refrigerator and does not own a car or truck.	1/18

Source: Alkire et al., 2019, Multidimensional Poverty Index 2019: Brief Methodological Note and Results[6].

[6] https://ophi.org.uk/wp-content/uploads/OPHI_MPI_MN_47_2019_vs2.pdf

Table 2. The dimensions, indicators of the Palestine MPI

Dimensions of Poverty	***Indicator***	***Deprived if--***
Education	*School enrolment*	*Household has any child aged 6-17 not enrolled in school (not including those who graduated secondary school)*
	Repetition	*Household has any child aged 7-18 ever enrolled in school and repeated a school year, OR Household has any has any child aged 7-18 never been enrolled*
	Educational attainment – persons aged 19-50	*All household members aged 19-50 not completing secondary school*
	Quality of education – household with children age 6-17 years enrolled in school	*Household has any child aged 6-17 who had problems with education quality. (Indicated a serious problem with the school in terms of poor teaching or lack of teachers or lack of books or lack of facilities.*
Health	*Disability*	*Any household member having great difficulty in hearing, vision, movement, communication, OR understanding*
	Chronic disease	*All household members aged 30+ suffering from a diagnosed chronic disease.*
	Health insurance	*Household lacking health insurance: (the head OR any member has health insurance defined as NOT deprived)*
	Health Access	*Household lives more than 5 km away from the nearest doctor clinic or hospital*
Employment	*Unemployment*	*None of adults aged 18+ currently employed*
	Employment benefits	*Wage earners aged 15-60 lacking paid sick leave, maternity leave or annual vacation*
	Quality of work	*Household has any working member 18+ who is currently an irregular wage employee, OR does not have a contract OR is a seasonal & causal worker OR has worked only 6 months during last 12 months.*
	Youth NEET	*Household has any youth aged 18-24 who is not in school or training and unemployed*
Housing conditions & access to services	*Access to piped water*	*Dwelling is not connected to public network*
	frequency of water and electricity supply	*Disruption of water supply (daily) during the past year*
	Ventilation problems in dwelling	*Dwelling suffers from noise, smoke or any other pollutant*
	Overcrowding	*More than 3 persons per sleeping room*
	Theft or damage to property	*Stealing from household or damage of household property as a result of attacks last year*

Safety and use of assets	*Ownership and use of assets*	*Household lost land, house/building or business establishment during the past year due to confiscation or demolition* *Household was unable to use agricultural land or private property due to restrictions of movement*
	Interpersonal and state violence	*Any household member attacked or forcibly assaulted with or without a weapon last year* *OR, any child or women hit or attacked by another family member during the past year.* *OR Injuries, deaths or torture in household from state/settler violence during the past year*
Personal freedom	*Freedom of movement*	*A household member was not able to visit family, relatives, or friends because of checkpoints, wall or travel restrictions during the past year*
	Control of women's income or women's participation in the labor market	*Any women in household who does not have a separate bank account or does not control her use of income or earnings OR* *Any women in household does not work (or look for work) because of husband/father/brother's restrictions*
Monetary resources	*National poverty line*	*Household is below the national poverty line*

Table 3: Exploratory Factor Analysis Factor Loadings

	1	2	3	4	5	6	7
School Enrolment	0.13	0.02	**0.87**	0.02	0.06	-0.08	0.05
Repetition	0.15	0.15	**0.82**	-0.04	0.07	0.20	0.06
Quality of Education	0.00	0.15	0.29	-0.09	**0.65**	0.16	-0.03
Educational Attainment	0.02	0.07	**0.49**	0.08	-0.03	-0.22	0.47
Disability Prevalence	-0.27	0.30	**0.44**	-0.13	-0.25	0.20	-0.25
Chronic Disease Prevalence	-0.33	0.19	-0.06	-0.11	**-0.53**	0.26	-0.26
Health Insurance	0.30	-0.38	0.05	0.15	-0.25	0.22	**0.40**
Health Access	-0.02	-0.03	0.21	**0.48**	-0.47	0.04	0.03
Unemployment	**-0.90**	0.13	-0.03	-0.03	-0.27	0.08	-0.05
Quality of Work	**0.91**	0.06	0.07	-0.04	-0.08	0.08	-0.11
Employment Benefits	**0.80**	0.13	0.18	0.07	-0.16	0.03	0.09
NEET	0.25	0.30	0.06	-0.08	-0.32	0.26	**0.41**
Access to Piped Water	-0.02	0.10	-0.01	**0.94**	0.10	-0.02	0.08
Disruption of Water Supply	-0.06	0.19	0.02	**-0.93**	0.14	-0.07	0.13
Ventilation	0.02	**0.79**	0.04	0.00	0.05	-0.06	-0.01
Overcrowding	0.25	**0.47**	0.35	0.11	0.23	-0.12	0.14
Theft or Damage to Property	0.07	0.04	-0.02	-0.03	0.35	**0.57**	0.21
Ownership and Use of Assets	0.00	-0.13	0.10	0.15	-0.07	**0.76**	-0.02
Interpersonal and State Violence	0.02	0.50	0.07	-0.07	**0.56**	0.10	0.20
Freedom of Movement	0.00	-0.01	-0.04	-0.10	0.41	**0.45**	0.07
Economic Freedom of Women	-0.10	0.13	0.12	-0.14	0.23	0.07	**0.70**
Monetary	-0.03	**0.78**	0.15	-0.14	-0.02	-0.03	0.09

Table 4: Cramer V Correlation Statistic Within Dimensions

Indicator 1	Indicator 2	Cramer V
School Enrolment	Repetition	**0.40**
School Enrolment	Quality of Education	0.07
School Enrolment	Educational Attainment	0.17
Repetition	Quality of Education	0.14
Repetition	Educational Attainment	0.15
Quality of Education	Educational Attainment	0.03
Disability Prevalence	Chronic Disease Prevalence	0.11
Disability Prevalence	Health Insurance	-0.06
Disability Prevalence	Health Access	0.02
Chronic Disease Prevalence	Health Insurance	-0.04
Chronic Disease Prevalence	Health Access	0.03
Health Insurance	Health Access	0.06
Unemployment	Quality of Work	-0.27
Unemployment	Employment Benefits	-0.29
Unemployment	NEET	-0.07
Quality of Work	Employment Benefits	**0.49**
Quality of Work	NEET	0.06
Employment Benefits	NEET	0.15
Access to Piped Water	Disruption of Water Supply	-0.09
Access to Piped Water	Ventilation	0.01
Access to Piped Water	Overcrowding	0.05
Disruption of Water Supply	Ventilation	0.10
Disruption of Water Supply	Overcrowding	0.05
Ventilation	Overcrowding	0.19
Theft or Damage to Property	Ownership and Use of Assets	0.07
Theft or Damage to Property	Interpersonal and State Violence	0.11
Ownership and Use of Assets	Interpersonal and State Violence	-0.01
Freedom of Movement	Economic Freedom of Women	0.08

Table 5: Cramer V Correlation Statistic with Income

Indicator	Cramer V
School Enrolment	0.05
Repetition	0.11
Quality of Education	0.11
Educational Attainment	0.08
Disability Prevalence	0.14
Chronic Disease Prevalence	0.03
Health Insurance	-0.09
Health Access	-0.03
Unemployment	0.1
Quality of Work	0.04
Employment Benefits	0.06
NEET Rate	0.11
Access to Piped Water	-0.01
Disruption of Water Supply	0.14
Ventilation	0.25
Overcrowding	0.22
Theft or Damage to Property	0.01
Ownership and Use of Assets	-0.02
Interpersonal and State Violence	0.22
Freedom of Movement	-0.03
Economic Freedom of Women	0.08

Table 6: Palestine MPI by household characteristics

	H (*95% CI*)	M_0 (*95% CI*)
Palestine Total	24.2 (*22.0, 26.4)*	0.103 (*0.093, 0.112)*
Region		
West Bank	10.7 (*9.0, 12.4*)	0.043 (*0.036, 0.050)*
Gaza Strip	45.0 (*40.8, 49.3)*	0.195 (*0.176, 0.215)*
Locality Type		
Urban	24.4 (*21.6, 27.2)*	0.104 (*0.091, 0.116)*
Rural	14.2 (*11.4, 16.9)*	0.057 (*0.047, 0.068)*
Refugee Camps	39.1 (*33.0, 45.2)*	0.170 (*0.141, 0.198)*
Sex of Household Head		
Male	24.2 (*22.0, 26.5)*	0.103 (*0.093, 0.113)*
Female	23.2 (*14.8, 31.6)*	0.100 (*0.060, 0.141)*
Refugee Status of Household Head		
Refugee	31.3 (*27.8, 34.8)*	0.132 (*0.116, 0.147)*
Non-refugee	18.9 (*16.1, 21.7)*	0.081 (*0.068, 0.094)*
Household Size		
1-3	6.3 (*3.8, 8.8)*	0.023 (*0.014, 0.032)*
4-6	14.2 (*11.8, 16.5)*	0.058 (*0.048, 0.068)*
7+	35.7 (*32.0, 39.4)*	0.154 (*0.137, 0.171)*

Table 7: Contribution of each dimension to Palestine- MPI

(%)	Weight	Contribution
Education	13.3	10.8
Health	13.3	5.3
Employment	13.3	12.5
Housing Conditions	13.3	11.2
Safety and Use of Assets	13.3	8.3
Personal Freedom	13.3	6.8
Monetary	20.0	45.1

Figure 1: MPI-Palestine estimates of M_0 for different k values

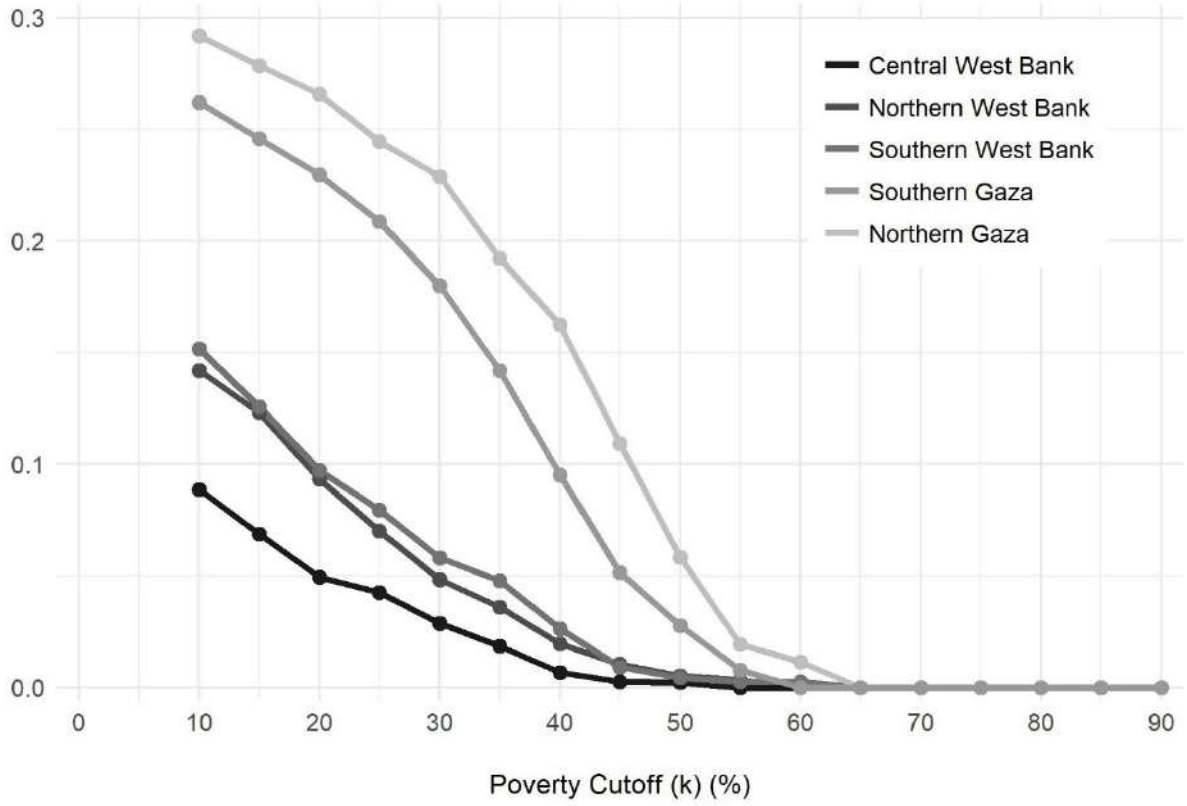

Figure 2: Poverty incidence H and adjusted headcount ratios M_0

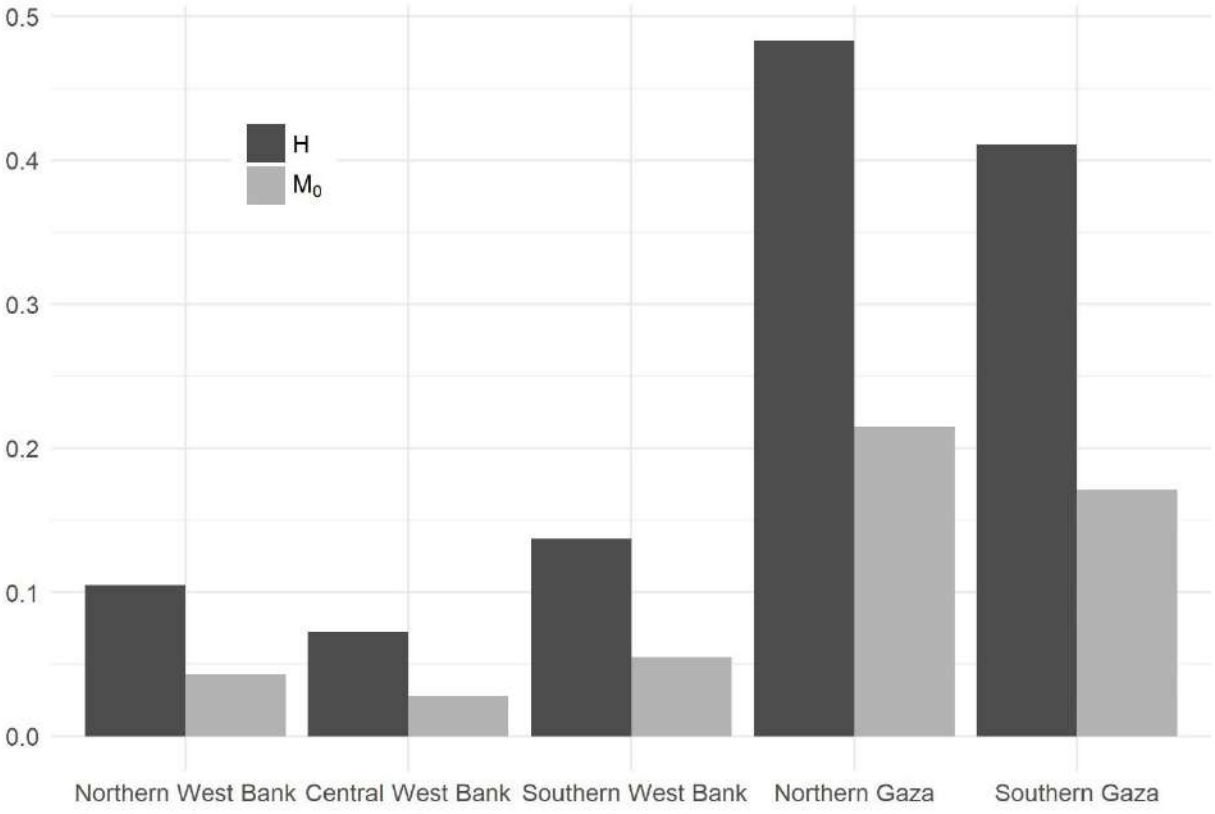

Figure 3: Percentage of households deprived by indicator

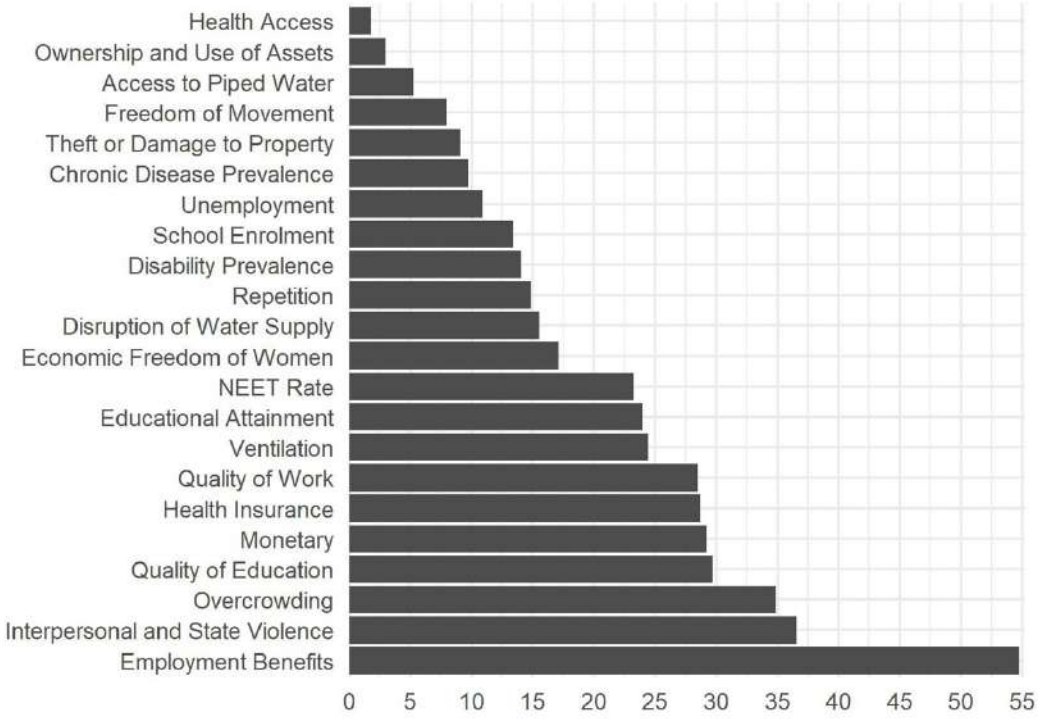

Figure 4: Percentage contribution of each indicator to Palestine-MPI