Multidimensional Poverty among the Villages of the South African Former Homeland of Qwaqwa

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ABSTRACT

Poverty has remained topical in international development policy efforts, particularly in the developing world. It is much more topical in the South Africa context due to the legacy left by the apartheid system. Keeping in mind the history of South Africa, this study aims to analyse the multidimensional aspects of poverty in different villages of the former South African homeland of QwaQwa. Seven dimensions of deprivation that could be constructed based on 18 indicators were identified. These dimensions include education, housing and clothing, water and sanitation, assets, air quality, income, and health. A sample of 404 households was randomly selected in eight villages of QwaQwa. The Alkire and Foster family of measures was used for the multidimensional analysis of poverty and was compared to the income poverty. The results showed that the village having the highest estimates of income headcount ratio H was not the one having the highest estimates of multidimensional headcount ratio and intensity of poverty M_0. Similarly, the village with the lowest estimates of income H was not the one having the lowest estimates of multidimensional H and M_0. This was due to the presence of high levels of deprivation in the other dimensions compared to the income deprivation. The intensity of poverty showed that Kudumane and Boitekong are the most deprived villages while Bochabela was found to be the least deprived village. The robustness of village rankings to changes in the poverty cut-off k confirmed that Kudumane and Boitekong are dominated by other villages both in poverty headcount ratio and intensity of poverty. The study has brought out meaningful results that can potentially provide useful tools for budget allocation among the villages of QwaQwa and within themselves, by applying among other things, the use of different dimensions.

Keywords: Multidimensional Poverty, Former South African Homeland, Alkire and Foster Methodology, QwaQwa
JEL Classifications: I3, I32, O55

1. INTRODUCTION

Poverty has remained topical in international development policy efforts, particularly in the developing world. It is much more topical in the South Africa context due to the legacy left by the apartheid system. One of features of this system was a procedure of active dispossession, whereby assets, such as livestock and land, were confiscated from the majority of the African population (Carter and May, 1999; May and Norton, 1997; Seekings, 2007; Woolard, 2002). Opportunities to build up these assets, such as education, infrastructure and markets, were denied to them (Carter and May, 1999; May and Norton, 1997). The black South African population faced restricted opportunities for employment or self-employment, they were limited to low-quality health care, and were restricted to reside in impoverished areas of the countryside or cities (Seekings, 2007). Explaining the effect of apartheid on the poor, Wilson and Ramphele (1989) asserted that such system

of intentional destitution marked the experience and dynamics of poverty in South Africa. Contrary, the white minority had benefited from discriminatory public policies (Seekings, 2007). As a result, white localities owned a per capita income similar to that of an upper-middle-income country, while the majority of African people faced extreme poverty in terms of income and basic services, including health facilities, educational opportunities and the right to choose one type of life or another.

Since the genesis of the democratic dispensation, the South African government in its development plan has initiated a comprehensive anti-poverty policy, emphasising poverty alleviation and improvement of the quality of life for all South Africans. In general, it is argued that from 2001, there has been some improvement in the welfare where poverty levels and depth of poverty are declining, but that this does not seem to have attained the groups often termed "the poorest of the poor"

(Leibbrandt et al., 2010; Millennium Development Goals MDG, 2013). However, the way poverty is conceptualised influences considerably poverty profiling and policy guidance.

Anti-poverty programs often seek to improve their impact by targeting households for assistance according to one or more criteria. In South Africa, the criterion for identifying the poor has been the arbitrarily set poverty line (i.e., those who are not able to meet some basic needs, for both food and non-food consumption). Underlying this strategy is a strong emphasis on improving the financial capacity of the poor through government grants, and a social investment fund to facilitate access of the poor to some basic social services. Inherent in the use of such a single criterion for target selection is the likelihood of targeting errors in the drastic differentiation between the poor and the non-poor, in particular between those in similar circumstances but who just happen to lie on opposite sides of a poverty line. On the other hand, income based poverty indices from traditional analysis suggest policy recommendations that only plead for transfer policies to alleviate poverty in short term, whilst multidimensional indices can provide with information for implementing socioeconomic policies to break poverty reproduction in the long term. This lies in the fact that people, for instance in South Africa, may not only be relatively income poor but also relatively more deprived in other multidimensional characteristics of social welfare.

The main concern of this study is to identify an appropriate conceptual approach to the understanding of poverty in QwaQwa, South Africa. Poverty differs from one region to another, hence, it is crucial to adapt the concept of poverty to an appropriate framework, as there is no conventional concept that could accurately embrace all the countries at all times. The difference in conceptualising poverty impacts considerably on how poverty is defined and measured as well as the instruments that are utilized to operationalize these measurements. Economists, academics and financial institutions ought to be aware that merely determining poverty in terms of income is not adequate. A significant percentage of the population experiences deprivation and fail to meet basic needs such as, food, housing, education and health provision and are not able to maximise their capabilities. Keeping in mind the history of South Africa, this study aims to analyse the multidimensionality of poverty in different villages of the former South African homeland of QwaQwa. This paper begins with a review of the literature. The paper further discusses the data and methodology used in the identification of the poor and aggregation of poverty characteristics. Selected dimensions and deprivation cut-offs are discussed in section 5. Section 6 presents the results and discussion while 7 closes with some concluding remarks.

2. LITERATURE REVIEW

Poverty or economic well-being is now recognised as a multidimensional challenge. However, its traditional measures have been based on the net monetary income of a household unit or on their consumption (Weinberg, 1996; Iceland, 2003; Wagle, 2006; Alkire and Sarwar, 2009). Monetary measures identify poverty with a shortfall in consumption (or income) from some poverty line. Income or consumption of different components

is valued at market prices and this requires identification of the relevant market and the imputation of monetary values for those items that are not valued through the market (Laderchi et al., 2006). Income poverty measures have been commonly used to analyse poverty in developing countries, including those from Sub-Saharan Africa.

Nevertheless, some arguments suggest going beyond monetary measures and consider other poverty measurements (Hulme and Mckey, 2006). Significant advances in this regard have been made with regard to the contribution by the seminal works of Sen (1976; 1985; 1992; 1995; 2000) and others (Anand and Sen, 1997; Townsend, 1979; 1987; UN, 1995). The understanding of poverty has been reshaped as a problem which requires multi-pronged approaches. More advanced analyses of poverty reveal that money-metric measures have a limited ability to adequately identify, describe and analyse the nature of being poor, as well as the imperfection in the initial assumptions concerning human preferences and behaviour. The criticism which has pointedly marked the writings of Sen (2000) emphasised that, when doing poverty assessments, "we must look at impoverished lives and not just at depleted wallets." The suggested way of correcting all the aforementioned shortfalls is to develop a realistic way of understanding the concept of well-being.

In its report, StatsSA (2000. p. 54) noted that poverty needs to be analysed broadly beyond income: "It is seen as the denial of opportunities and choices most basic to human development to lead a long, healthy, creative life and to enjoy a decent standard of living, freedom, dignity, self-esteem and respect from others. However, many of the previous research in South Africa has focused on income or expenditure poverty (May et al., 1998; Carter and May, 1999; Leibbrandt et al., 2000; Armstrong et al., 2008,) and few studies have been conducted in former homelands. Apart from the United Nations Development Programme and human development index, some attempts at going beyond the conventional unidimensional monetary approach to poverty measurement have been made in order to construct indices of multiple deprivations in South Africa (Klasen, 1997; 2000; Hirschowitz et al., 2000; McIntyre et al., 2000; 2002; Mattes et al., 2002; Vichi, 1997). These indices tend to be empirically driven and lack a strong theoretical underpinning relating to multiple deprivations and coherent methodological approaches (Noble et al., 2006; Alkire and Sarwar, 2009; Noble and Wright, 2012). In recent years there have been the Provincial Indices of Multiple Deprivation for South Africa (PIMD) and the South African Index of Multiple Deprivation (SAIMD) which have entered the national debate (Noble et al., 2006; Noble et al., 2010). PIMD provided information about relative levels of deprivation within the provinces but did not allow comparison between provinces. SAIMD followed PIMD to produce a more fine-grained profile of deprivation in South African which allows comparisons.

The multidimensional poverty measure which is used in this study (Alkire and Foster methodology) goes beyond the identification of geographical deprivation (as in PIMD and SAIMD) by setting a threshold level in order to define who the multidimensional poor are, the degree of the deprivations and the nature of their

challenges. There are several advantages in using this methodology as identified by Alkire and Seth (2009) as it can be justified at both theoretical level, ethical soundness and can be easily understood by the general public and policymakers. Moreover, they identify the intensity, depth and severity of poverty and satisfy a number of preferable properties of a poverty measurement.

The methodology treats the dimensions of poverty and deprivation independent of other dimensions without assuming substitutability across dimensions; and is flexible in terms of assigning equal or different weights to other dimensions according to their relative importance. The Alkire and Foster methodology, by increasing the aggregate cut-off point, becomes a strong tool in isolating the poorest of the poor from just the poor. The methodology is also highly useful for policy orientation as it provides more information on the dimensions which are behind the multidimensional poverty when comparing certain regions or group of households. It can provide a basis for proper social protection mechanisms for households. This study fills the gap left by aforementioned measures and the traditional unidimensional measures of poverty used in South Africa.

3. POVERTY IN FORMER SOUTH AFRICAN HOMELANDS

As a matter of background, 'homelands' were established in 1951 under the Bantu Authorities Act and was established for black African groups. There were approximately 20 million African South Africans, which represented almost 50% of the African population, that were affected by this Act (Mariotti, 2012. p. 4). There were ten homelands that were established, namely: Transkei, Bophuthatswana, Ciskei, Venda, Gazankulu, KaNgwane, KwaNdebele, KwaZulu, Lebowa, and QwaQwa. In terms of land area, homelands occupied approximately 122.1 million hectares which represented 13.96% of the total South African land (Pienaar and Von Fintel, 2013).

In terms of land quality, most homelands were not only geographically fragmented with poor infrastructure between them, but had poor land quality not suitable for agriculture due to its mountainous nature (Horrell, 1973). More than 70% of black households practiced crop farming on plots smaller than 2 hectares, with the majority (56.8%) farming on less than half a hectare in former homeland, most of which was classified as backyard farmers. Furthermore, most homelands experienced poor rainfall, aggravating the problem of depending on agriculture in the homelands, and most farmers had no personal ownership of the land that was communally or tribally owned (Lahiff, 1997; Mariotti, 2012). There was also the problem of asset ownership, which is a critical coping mechanism in most poor communities. This implies that household farmers would have limited economies of scale in the homelands, hence they could not penetrate the conventional markets (Pienaar and Fintel, 2013).

The social and economic conditions within the black homelands were exceptionally harsh, by any standards. In general, there were poor infrastructure development and welfare services coupled with high levels of poverty which made homelands to have very low standards of living, as compared to most parts of South Africa (Lahiff, 1997). This was also confirmed, based on SAIMD 2001, and PIMD 2001 and 2011, where deprivation rates for the rest of South Africa were found significantly lower than the average for the former homelands (Noble et al., 2006, Noble and Wright, 2012; Noble et al., 2014).

4. DATA AND METHODOLOGY

A sample of 404 households was randomly selected in eight villages of QwaQwa to meet the analytical needs of this study. These are Kudumane village, with a sample of 46 households, 42 households for Boitekong village, 43 households for Mphatlalatsane village, 42 households for Mabolela village, 44 households for Ntshehele village, 42 households for Qholaqhoe village, 99 households for Bochabela village and 46 households for Matsikeng village. This study followed the multidimensional poverty measurement model proposed by Alkire and Foster (2011). In view of Sen (1976), poverty measurement has to address two important steps: Identification of who is poor in the population and aggregation of information about poverty across society.

4.1. Identification

Alkire and Foster (2011) devised what they call a "dual cut-off" method of identification of the poor. This method follows two stages as indicated by its name. Firstly, given a population of n individuals, a set of d dimensions, and a cut-off value for each dimension z_j (j=1,..d), identify, those dimensions in which each individual is deprived. Secondly, suppose that k=1,..d considered dimensions (e.g., education, health, income, etc.), and that c_i stands for the number of dimensions in which person i=1,..n is deprived, then person i is regarded as multidimensionally poor if $c \geq k$. The number is then counted of the deprivations for each individual and categorised as multidimensionally poor for those whose number of deprivations equals or exceeds a defined threshold value (k) (k would represent that number of dimensions for cut-off, above which a household would regarded a poor: These would be beyond income).

Yet, there is another decision to make in multidimensional context: Among those who fall below the threshold in some dimension(s), who should be regarded as multidimensionally poor? To define the aforementioned second cut-off k, the Alkire and Foster method of identification is based on two fundamental approaches to the identification of the poor. Firstly, there is a union approach which considers a person as multidimensionally poor if that person falls short in only one dimension (k=1) (Atkinson, 2003). This method may be too inclusive and may overestimate poverty if the number of dimension (d) is large (Alkire and Foster, 2011). As a result, a union method may not be useful to discern and target the most highly deprived. The second is the intersection approach which considers an individual as poor if they are poor in all dimensions (k=d) (Atkinson, 2003). Inversely, this identification method is too strict and it generally generates low estimates of poverty but is expected to detect the most indigent people. It certainly fails to notice individuals who are facing extensive, but not universal

deprivation (e.g.: A healthy, homeless person). This may classify, by considering a person who plainly suffers extensive multiple deprivations, as non-poor. Bresson (2009) and Lugo and Maasoumi (2009) claimed that the union and intersection criteria for the identification of poverty appears to be too rigid for most cases. This shows a need of determining a different number of dimensions k (cut-off) in which someone is deprived to be regarded as multidimensionally poor.

The Alkire and Foster's measure involves selecting the second cut-off k to be any value between one (the union approach k=1) and the maximum number of dimensions d (the intersection approach k=d). Therefore, individual i suffering c_i number of deprivations is considered as multidimensionally poor if $c_i \geq k$. The Alkire and Foster measure is flexible to assign equal or various weights to different dimensions depending upon their relative importance.

4.2. Aggregation

In the aggregation stage, Alkire and Foster (2011) extended the contemporary unidimensional methodology of measuring well-being and poverty proposed by Foster et al. (1984) sometimes referred to as the FGT measure. Similar to the FGT measures, the Alkire and Foster measure is a family of three key measures appropriately adjusted to account for the multidimensionality of poverty (Alkire and Foster, 2011). An appropriate measure of poverty has to comply with some valuable properties. Alkire and Foster's measures satisfies a range of desirable properties including decomposability, symmetry, weak transfer, monotonicity, weak monotonicity, poverty focus, deprivation focus and replication invariance (Alkire and Foster, 2011). The three members of the Alkire and Foster family of measures (M_α) are: Adjusted head count M_0, adjusted poverty gap M_1, and adjusted squared poverty gap M_2.

The adjusted head count M_0 indicates not only the incidence (headcount ratio) but also intensity of poverty (breadth of poverty) (Alkire and Seth, 2009; Alkire and Foster, 2011; Alkire and Santos, 2013). The headcount ratio of multidimensional poverty H is defined as the percentage of population who have been identified as multidimensionally poor, while the intensity of poverty is defined as the average deprivation share A across the poor. The intensity of poverty reflects the fraction of the dimensions in which the average multidimensionally poor person is deprived. Therefore $M_0 = H*A$.

The adjusted poverty gap M_1 indicates the incidence, breadth and depth of poverty (Alkire and Seth, 2009; Alkire and Foster, 2011; Alkire and Santos, 2013). The depth of poverty is defined as the weighted average of dimension-specific poverty gaps. Simply, it is the gap G between poverty and the poverty line. It is the product of H, A, and the average poverty gap among the poor G: $M_1 = H*A*G$.

The adjusted squared poverty gap M_2 reflects the severity of poverty by emphasizing on people or households that are severely deprived (Alkire and Seth, 2009; Alkire and Foster, 2011; Alkire and Santos, 2013). It is expressed by the product of the percentage of multidimensional poor H, the average deprivation across the poor A and average squared poverty gap among the poor S (average severity of the poor): $M_0 = H*A*S$. Adjusted squared poverty gap

M_2 measure is sensitive to the number of deprivations the poor suffer, the depth of the deprivations as well as to the inequality of deprivations among the poor.

5. SELECTED DIMENSIONS AND DEPRIVATION CUT-OFFS

In the applied work, there is no common list of dimensions to include in a study, as there are none in the fundamental theoretical framework of Sen's capability approach. This therefore gives an advantage of selecting specific dimensions to each case study. However, it has been understood as a disadvantage due to the idea that it renders the comparisons less meaningful. Seven dimensions of deprivation that could be constructed based on 18 indicators were identified. These dimensions include education, housing and clothing, water and sanitation, assets, air quality, income and health. All the dimensions are weighted equally. Following the similar framework of the Alkire and Foster method of dual cut-offs there will be two thresholds, both within and between indicators. By using indicator particular cut-offs, households are categorised as either deprived or non-deprived in that indicator.

5.1. Education

The purpose of this dimension is to capture the extent of deprivation in educational achievement in Qwaqwa, where the individual's own level of education is considered. The first indicator within this dimension (Educational achievement) has been created by considering the mean of the years of education of the household members over 16 years (included). The cut-off was Grade 7/standard 5, representing the completion of primary school. This indicator is vulnerable to the case where a student repeats a year of primary education. The current study therefore took into account households members over 16 years instead of 13 years, which is the commonly completion age of primary education. In terms of the threshold utilised, a household is judged deprived when the average years of schooling of its members aged 16 and above is below seven years of schooling. The second indicator (Literacy) is defined as the percentage of people aged 16 or above in the household that know how to read and write. A household is considered deprived if at least one of the household members aged 16 or older does not know how to read or write (i.e., <100% of its members 16 years old and over are able to read and write).

5.2. Housing and Clothing

"Don't ask me what poverty is because you have met it outside my house. Look at the house and count the number of holes. Look at my utensils and the clothes that I am wearing. Look at everything and write what you see. What you see is poverty." This is a definition provided by a poor man in Kenya, in the World Bank's report entitled "voices of the poor: Can Anyone Hear Us?" (Narayan et al., 1999).

Details of the dwelling quality was taken into account and in order to avoid some discussion as to whether individual residing in a traditional dwelling should be categorised as deprived as well as individual residing in shacks. Indicators of dwelling quality are informative for both housing deprivation and vulnerability

to shocks including weather conditions (Bhorat et al., 2004). A household will be identified as deprived in terms of the main material used for the floor of the dwelling is bricks, mud/dirt or dung. It is deprived if household dwelling house main materials used for the walls are corrugated iron/zinc, wood/plastic, stone with mud, unbaked bricks with mud, straw with mud, cardboard, reused wood. In terms of the material and condition of the roof of the dwelling, households with plastic/thatch/woods and leaking roof are also considered deprived.

Gray (2001) argued that crowding has effects on physical and mental health. There is no specific standard set for identifying crowding dwellings; however, this study follows StatsSA (2004) which fixed the number at three or more people per room in the South African context. The choice of this standard is supported by the fact that the calculation of the number of persons per room is not based on bedrooms only but also living rooms. It excludes however, the storage rooms, garages, bathrooms, toilets, kitchen and rooms for business.

Access to decent clothing as one of general protection item was included. In the Free State Province where QwaQwa is located, after food; the item that income is spent second most on per month is clothes taking a share of 27.9% of the monthly expenditure (Meyer, 2013). For measuring this indicator, participants were asked "over the last year, how often, if ever, have you or your family gone without enough decent clothing"? The answer options were ranged from 1 (=never) to 5 (=always) and the high value indicates the great level of lack of access to what the participant believes to be decent clothing. They are deprived households if they respond that at least one member has gone several, many times or always without decent clothing over the 12 months prior to the survey.

5.3. Assets
Cell phone/landline telephone ownership is an indicator that portrays the essential communication needs of the household. A household is deprived if it does not own either a cellphone or a landline as means of communication and have access to media. The ownership of radio/television was also considered. Possessing at least one of these items ensure that the household has access to recent news and information via at least one source.

Other types of assets are taken to be one indicator since the main emphasis of the study is the capability. These include a refrigerator, microwave, dishwasher, washing machine, computer (laptop/desk top), car in working condition, motorcycle/scooter, bicycle, house, and at least livestock. As some of items included are luxurious, it is unlikely that poor households would have them. Therefore, a household possessing at least 1 item of included assets would be categorised as non-deprived in this indicator.

5.4. Water and Sanitation
The source of drinking water is vital for health and its locality may shape the duty distribution of the household members. The inclusion of locality aspect in this case does not only represent the hygienic perspective when transporting water but also it denotes empowerment as one of elements of capability. In deriving the

deprivation cut-off, deprived will be those households which have no piped water in the dwelling or on the stand.

The type of toilet facility available to the household is a very important indicator for the sanitation. The type of toilet facility in the South African context has been a great deal of debate. Originally, the indicator was the number of individuals staying in households without a flush toilet. However, it was indicated that a number of Reconstruction and Development Programme houses are built with pit latrines with ventilation. It was concluded that pit latrines with ventilation would be considered as improved toilet facilities (Noble et al., 2006). Therefore, households with pit latrines with ventilation would be categorised as non-deprived in this study.

5.5. Air Quality
Electrification is another important indicator of air quality in the household. Electricity indicator cut-off is a straightforward procedure since the data is implicitly dichotomised. The household is either connected to the main source of electricity or not. Cooking and heating fuel are also considered indicator of air quality in multidimensional framework as a tool value towards health. The kind of fuel utilised for cooking or heating is consequential for the household health, especially for females who are almost absolutely concerned with cooking. If woods/straws, coal/charcoal or paraffin are used for cooking or heating, the health of household members who regularly breathe in that kind of environment could be harmful.

5.6. Health
Health dimension is an essential dimension and it is captured by the proximity of the house to the nearest clinic or hospital and the food security of the household. The proximity of the house to the nearest clinic or hospital does not ensure that in case of emergency the households will use the facility but at least it is known that they have it. The households that do not have access to the nearest hospital or clinic by the usual means of transport within 30 minutes, are considered as deprived.

The second indicator of health dimension is concerned with food security. In order to identify households that are not food secured, a Household Food Insecurity Access Scale (HFIAS) developed by the USAID was used. The HFIAS consists of two sub questionnaire including nine occurrence questions which considers two response choices, "yes" or "no," and nine frequency-of-occurrence questions. The former are used in order to make a follow-up to the occurrence question and determines if the situation (food insecurity) ever occurred. Following a "no" answer option there is a skip code where the interviewer skips the corresponding frequency-of-occurrence follow up question (Coates et al., 2007). The HFIAS score is computed, utilising the responses on the basis of the nine frequency-of-occurrence questions. Participants utilise an ordinal level response scale with the following options: "Never," "sometimes," and "often," receiving a score of 1, 2, and 3 respectively. The higher the score the higher, the likelihood of being food insecure (Coates et al., 2007).

5.7. Income
Incorporating income in the multidimensional poverty measure has been suggested by several researchers (Basarir, 2009; Naveed and

Tanweer-ul-Islam, 2010) as a way to incorporate material hardship and the ability to attain a minimum basket of goods and services. Following StatsSA (2012), a lower-bound and upper-bound poverty line of R416 and R577 respectively, were selected as a basis of computing the income poverty line of the study. Adjusted to the inflation rate of 6.2% (2010), 3.8% (2011), 5.8% (2012), 4.5% (2013), 4.8% (2014) and 4.9% (2015), the poverty lines of R557 and R773 for lower-bound and upper-bound respectively are computed. The use of a household poverty line in the study entails, first, its calculation per household, and then household income is compared to the corresponding individual household poverty line. The individual household poverty line provides an objective comparison as household's sizes and compilation differs from one household to another.

6. RESULTS AND DISCUSSION

The next subsections are covering the analysis of multidimensional poverty among 8 villages of QwaQwa.

6.1. Multidimensional Poverty Analysis at the Village Level

In analysing the village level poverty, Table 1 presents estimates for each village of QwaQwa, based on 18 indicators, with k=6. It also displays the income headcount ratio in each village. The analysis of estimates of income and multidimensional estimates is important in each village. In the Table 1, columns (1) and (2) represent the estimates for income head count ratio H while (3), (4) and (5) shows multidimensional H, and (6) shows M_0. Each village has corresponding estimates in every measure, which is given in descending order that are shown in brackets of every estimate so that the ranking can be analysed. Villages are also ranked correspondingly to their contribution to each of the aggregate measures and are in brackets of each estimate so that they can be compared.

The first interesting point to record is that the village having the highest estimates of income H was not necessarily the one having the highest estimates of multidimensional H and M_0. Similarly, the village with the lowest estimates of Income H was not necessarily the one having the lowest estimates of multidimensional H and M_0. Even though the change in the rank order of the villages, when moving from income H to M_0, is not too noticeable, there are some interesting cases, such as the case of Mphatlalatsane, Ntshehele,

Qholaqhoe and Matsikeng. Note that when ranked in descending order by Income H, the village of Mphatlalatsane ranks in the third place, the village of Ntshehele ranks in the fifth, the village of Qholaqhoe ranks in the sixth place while Matsikeng ranks the eighth. However, when ranked by M_0, Mphatlalatsane is ranked in the fifth place with M_0 estimate being 0.25, and Ntshehele ranks in the 7th place, with an M_0 estimate of 0.23 and both villages descent two places in the ranking. Qholaqhoe ranks the fourth with M_0 being 0.27 and Matsikeng ranks the eighth with M_0 being 0.23, both climbing two places in the ranking.

The explanation for this sort of change in the relative positions of these villages can be found in Figure 1, where the 8 villages have been ranked from highest to lowest by the M_0 estimates. The bar for each village also depicts the composition of multidimensional poverty by each of the dimensions. In the case of Qholaqhoe, income is the fourth contributor and explain only 15.33% to the overall deprivation. In this village however, there are other considered dimensions that highly influence poverty more than income does. Deprivation in education accounts for 21.08% of the overall multidimensional poverty estimate, deprivation in health accounts for 17.25% and deprivation in water and sanitation accounts for 16.61% of M_0. These acute deprivations in the mentioned dimensions appears to be associated with the fact that Qholaqhoe village moved from the 6th place in income H to 4th place in multidimensional H and M_0. Using the cut-off k=6, the Boitekong village records the highest incidence and breadth of poverty with as many as 98% of households live in poverty with M_0=0.69, followed by Kudumane, where 93% fall below the poverty line, with M_0 being 0.55. In Boitekong, deprivation in education and water and sanitation each account as much as 18.06%, health, housing and clothing, income, air quality and assets deprivation records 17.81%, 15.32%, 13.67%, 12.85% and 4.23% respectively. It is clear that in this case of Boitekong, policy makers would not prioritise income, while deprivation in water and sanitation, health and housing and clothing are more acute. Similar conditions occur within other villages, where income is neither among the highest nor the lowest contributors to the M_0 estimates.

However, mphatlalatsane village is worthy of being mentioned as the sole village where income deprivation accounts for a very significant part of overall multidimensional poverty and is the highest portion of M_0 estimates (22.84%). However, this does not mean that deprivation in income would suffice for a comprehensive poverty analysis since the villages in question are

Table 1: Income and multidimensional headcount ratio H and multidimensional adjusted headcount ratio (M_0) composed by villages

Village	Income H	Overall contribution of income H (%)	Multi. H k=6	Contrib. overall multi H (k=6)	M_0 (K=6)	Overall contribution M_0 (k=6)
Kudumane	0.76 (1)	21.60 (1)	0.93 (2)	17.41 (1)	0.55 (2)	19.21 (2)
Boitekong	0.67 (2)	17.28 (2)	0.98 (1)	16.60 (2)	0.69 (1)	22.00 (1)
Mphatlalatsane	0.58 (3)	15.43 (3)	0.51 (5)	8.91 (7)	0.25 (5)	8.06 (6)
Mabolela	0.40 (4)	10.49 (5)	0.74 (3)	12.55 (4)	0.38 (3)	12.20 (4)
Ntshehele	0.34 (5)	9.26 (6)	0.50 (7)	8.91 (8)	0.23 (7)	7.55 (8)
Qholaqhoe	0.31 (6)	8.02 (7)	0.60 (4)	10.12 (5)	0.27 (4)	8.48 (5)
Bochabela	0.24 (7)	14.81 (4)	0.40 (8)	16.19 (3)	0.19 (8)	14.59 (3)
Matsikeng	0.11 (8)	3.09 (8)	0.50 (6)	9.31 (6)	0.23 (6)	7.91 (7)

Source: Survey data (2015)

Figure 1: Composition of the adjusted headcount ratio M_0 in each village of qwaqwa
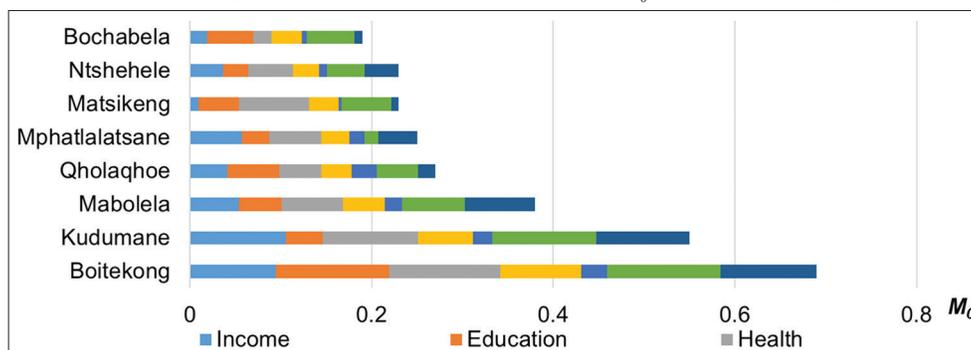
Source: Survey data (2015)

also highly deprived in the other considered dimensions (health for example also accounts 22.84 %), suggesting that there are coupled disadvantages, which makes them particularly vulnerable.

Contrarily, in matsikeng village, income deprivation is one of the lowest and accounts only 4.22% of M_0 estimates. This explains in both cases (Mphatlalatsane and Matsikeng) the reason why there was some striking changes in the rank order when moving from Income H to M_0 (Table 1). The lowest poverty is observed in Bochabela, where at least 40% of households are found to be in poverty with M_0 being 0.19. The high levels of deprivation in the other dimensions compared to the income deprivation explicate the considerable variation between the ranking by the adjusted headcount ratio M_0 and income H (Figure 1).

The eminent emphasis on income poverty alleviation is constructed on the absolute assumption that monetary poverty measures effectively detect who is poor. The initial foundation to concentrate poverty inquiry completely on income is that income is greatly correlated with attainments in other dimensions, such as health. If this was the case, by targeting the income-poor, one would be also targeting the deprived in other dimensions. However, this does not seem to be the case of the villages within QwaQwa. This puts an emphasis on the arguments this study is built upon that deprivation in one dimension does not satisfactorily justify the deprivation in any other dimension. Therefore, poverty needs to be analysed according to the multidimensional approach for meaningful contributions to policies aiming at the alleviation of poverty. This proposes that a multidimensional analysis of poverty is definitely crucial as a policy aimed at income poor could not benefit other portions of the population deprived in other dimensions.

6.2. Inequalities Among the Poor
The adjusted headcount ratio M_0, that has been the centre of the discussion, captures two very indispensable aspects of poverty namely: Incidence and intensity. This is due to the fact that the M_0 is the product incidence of poverty (H) and the breadth of poverty (A) among the poor. The adjusted headcount ratio, however, does not take into account the third crucial aspect which is the inequality among the poor(Alkire et al., 2015). Although the ultimate aim is to eliminate poverty, not just to decrease inequality across the poor, the consideration of inequality is eminent since the very same average intensity is not able to show how wide different levels of inequality across the poor can be.

The development of a society stays incomplete if the situations of those tormented by poverty are not improved. According to Jenkins and Lambert (1997), three I's of poverty namely, Incidence, Intensity and Inequality should practically be taken into account in poverty analysis. Any policy strategy for reducing poverty follows the result which may be shaped by the method utilised in evaluating the improvement of the poor, which is generally a poverty measure. The poverty measure, whether assessing incidence, intensity or inequality, has strong effects for the motivations of a policy maker (Seth and Alkire, 2014). A measure that merely detect the incidence of poverty without the breadth or inequality of poor would generate motivations for a policy maker who just want to display a big decrease in overall poverty, to improve the lifestyle of the least poor but it will lead to policies that would intentionally disregard the acutest poor. Alkire and Foster's family of measures M_0 and M_1 captures both incidence and breadth of poverty that can assist in targeting the poorest as well as the least poor. Poverty can be alleviated by decreasing its incidence or by decreasing its breadth, but none of them guarantees that the decrease would be gained by those poor with the highest poverty. Thus, over-riding motivations to the policy maker to prioritize the situations of the most poor is not provided.

The inequalities among the poor in the villages studied are presented in Table 2 for comparison purposes. The inequality-adjusted poverty indices are advantageous when comparing poverty across time and space (Seth and Alkire, 2014). In the table, the average poverty gap G and M_0, that were used to compute M_1, as well as the average severity of the poverty S used in calculating M_2, are displayed.

As indicated in Table 2, the villages with the highest M_0 and M_1 have the highest estimates of M_2 as well. This implies that in those villages the multidimensionally poor households are far from ceasing to be so (shown by M_1) and they are accompanied by high inequality. Boitekong village has the highest estimates of the adjusted multidimensional measures (M_0=0.69, M_1=0.377, M_2=0.273) followed by Kudumane (0.551, 0.292, 0.2 respectively) and Mabolela (0.383, 0.146, 0.104). Bochabela has the lowest M_0 (0.194), M_1 (0.102) and M_2 (0.077).

7. CONCLUDING REMARKS

Within QwaQwa, eight villages were analysed individually based on the decomposability property of Alkire and Foster poverty

Table 2: Decomposition of poverty measures by village

Village	G	M0	M1	S	M2
Boitekong	0.546	0.691	0.377	0.395	0.273
Kudumane	0.530	0.551	0.292	0.363	0.200
Mabolela	0.541	0.383	0.207	0.368	0.141
Qholaqho	0.548	0.266	0.146	0.389	0.104
Matsikeng	0.632	0.227	0.143	0.510	0.116
Mphatlalatsane	0.552	0.247	0.136	0.386	0.095
Ntshehele	0.550	0.226	0.125	0.391	0.088
Bochabela	0.525	0.194	0.102	0.397	0.077

Source: Survey data (2015)

measures. It is then forthright to apply better poverty-decreasing policies by focusing on the types of deprivations shaping every single subgroup. The villages were ranked according to income headcount ratio H and multidimensional H and M_0. The village having the highest estimates of income H was not the one having the highest estimates of multidimensional H and M_0. Similarly, the village with the lowest estimates of income H was not the one having the lowest estimates of multidimensional H and M_0. This was due to the presence of high levels of deprivation in the other dimensions compared to the income deprivation. At k=33%, the composition of the adjusted headcount ratio or simply intensity of poverty showed that Kudumane and Boitekong are the most deprived villages while Bochabela was found to be the least deprived village.

The study has provided an analysis and insights basing on the broader perspective of multidimensional poverty as a necessary shift from the traditional unidimensional perspective of poverty, which basically centres on income. The study has further provided a methodology which does not only bring out meaningful results but also can potentially provide useful tools for budget allocation among the villages of QwaQwa and within themselves, by applying among other things, the use of different dimensions. It should also be noted that the dimensions used in the study are not exhaustive hence, other dimensions could also be incorporated and subsequently leading to alternative deprivation cut-off values for respective analysis. The study has identified from the area of study that the order of priority of dimensional deprivation are health, water and sanitation, education, income, and housing and clothing. In other words, implementation of programmes towards poverty alleviation can be structured on priority basis as based on the priority structure. In terms of programs that address multiple needs, the program design is still informed by the priority structure in terms of resource allocation.

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