



**Devising Social Protection Strategies for Namibia: Multi-dimensional Wealth,
Jobs & Nutrition Index**

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Paper prepared for the IARIW-TNBS Conference on “Measuring Income, Wealth and Well-being in Africa”, Arusha, Tanzania November 11-13, 2022

Poster Session

Time: Friday, November 11, 2022 [6:00 PM -7:00 PM]

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The authors would like to thank the World Bank and the Namibia Statistical Agency for their support and funding. The authors sincerely thanks the Oxford Poverty and Human Development Initiative for the required training. The second author would like to thank the XIM University, National Council of Applied Economic Research, LEAD at KREA University for support during different stages of the work. The second author also thanks Prof. Wang Xiaolin, Dr. Suresh Babu, Dr. Shekhar Shah, and Dr. Kaushik Kumar Bhattacharjee for their support and encouragement.

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List of Acronyms and Abbreviations

AF	Alkire-Foster
BoN	Bank of Namibia
GDP	Gross Domestic Product
HDI	Human Development Index
MPI	Multidimensional Poverty Index
NHIES	National Household Income Expenditure Survey
NLS	National Labour Survey
NPC	National Planning Commission
NSA	Namibia Statistics Agency
OPHI	Oxford Poverty and Human Development Initiative
MSMEs	Micro, Small and Medium Scale Enterprises
UNDP	United Nations Development Programme

Abstract

About 18% of Namibians were living below the national poverty line of N\$520.8 in 2015/16 (NSA 2016). Unemployment, particularly amongst women and the youth, has been a serious challenge for the country. The 2016 Labour Force Survey estimated the country's unemployment rate at 34%. With a Gini coefficient of 0.57, Namibia is estimated to be among the highest income inequality countries. Despite large-scale social sector expenditure, usage of cash transfers much needs to be attained. In this paper, we explore the multi-dimensional nature of poverty focusing on select dimensions of education, living standards, health & sanitation, nutrition, employment, and financial inclusion. The Alkire-Foster (AF) methodology is widely used for measuring multidimensional poverty (Alkire et al., 2015). Based on the Foster-Greer-Thorbecke measures it involves counting the different types of deprivation that individuals at the same time witness and then used to construct a Multidimensional Wealth, Jobs & Nutrition Index (MWJNI). The major dimensions of education, health & nutrition, living standard, and economic activity receive a weight of 1/4. The dimension of economic activity, employment, and financial inclusion each with a weight of 1/8. The dimensions of health & nutrition have sub-dimensions on the intake of a diverse diet, status of chronic illness, type of toilet, and source of drinking water each with a weight of 1/16. The sub-dimensions for the living standards are flooring, cooking fuel, assets, and electricity again with a weight of 1/16 each. Education receives a weight of 1/4. Education, financial inclusion, the standard of living (electricity, cooking fuel, sanitation), and employment exhibited major deprivations overall and across regions. Rural multidimensional deprivation is more than urban deprivation across all regions using different poverty cut-offs as evident from MWJNI values and dominance analysis. Our robustness and consistency checks including the poverty cut-off analysis, dominance analysis, and spatial maps confirm the results of the analysis. Those who experience multidimensional poverty are deprived the most in the dimensions of electricity, cooking fuel, sanitation, and financial inclusion and the least for water and diet diversity. Kavango is the worst-performing of all regions, and ! Karas is the best. The average proportion of deprivations experienced by poor people and the corresponding dimensions are the highest in the following regions: Kunene (education), Oshana (nutrition), Kavango East and West (health), Omusati, Kavango East

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and West (sanitation), Kavango East and West (water), Kavango East and West (flooring), Omusati and Kavango East (cooking fuel), Omaheke (assets), Omusati and Kavango East (electricity), Omusati, Kavango East and West and Kunene (financial inclusion) and Kunene and Kavango East (unemployment). The most abundant factor of production that Namibia currently has is its land and labor assets. Any meaningful policy to reduce poverty on a sustainable basis and boost economic growth must begin to revolve around how to engage these two assets. The results from this analysis confront policymakers with clear options with regards to building human capital around her human and land resources and engaging financial inclusion that focuses on the excluded thereby encouraging the growth of MSMEs. Such policies will boost employment and output while reducing poverty and inequality.

1. Backdrop

Namibia is a mostly a desert land with a long coastline. Despite being land to a barren terrain the country houses mineral mines (almost 50 percent of foreign exchange earnings), and the low population (2.5 million, 2016) ranks it as an upper middle-income country as per the World Bank classifications¹. The Namibian economy grew by about 5.3 percent between 2010 and 2015. As a result of the incursion of a debilitating drought in the latter part of 2015, the economy is estimated to have shrunk by 0.6 percent in 2017, from a positive growth of 1.3 percent in 2016. The GDP of the country stood at \$10,360 in 2016 with a decadal growth rate of almost 4.5 percent. On average, the country has recorded positive economic growth averaging about 4.2 percent since independence, and has earned an upper-middle income country status. This growth supported notable progress in improving the country's human development record via improving citizens' access to basic public services. Notwithstanding quality issues, access to basic education, primary health care services, and safe water has grown since independence. These improvements have been supported in part by a comprehensive and entirely government-funded social protection system. The system targets vulnerable citizens, including the elderly, the disabled, orphans and war veterans, as well as national maternity and sick leave, and medical benefit programs to workers.

Despite the progress, however, daunting challenges for poverty reduction and shared prosperity remain. Much more still needs to be done in getting the country to its desired level of a developed nation in accordance with its Vision 2030. The relatively strong economic record that Namibia has been experiencing has not been sufficient to adequately deal with the challenge of poverty, inequality, and unemployment.

Going by the poverty estimates from the 2016 household income and expenditure surveys, poverty has declined considerably in Namibia in recent years. The poverty rates are however still relatively high for an upper middle income country. Benchmarked against its per capita income which is currently estimated at about \$6082, poverty remains high in the country. About 18 percent of Namibians were living below the national poverty line of N\$520.8 in 2015/16, following an 11.4 percentage point fall from 28.7 percent in 2009/10. Just like in previous years, the poor were predominantly women, subsistence farmers and pensioners, and Namibians living in rural areas (NSA, 2016). Regional variation is also revealed with the Kavango region recording the highest incidence of poverty. Households with children are more likely to be poor.

Unemployment, particularly amongst women and the youth, has been a serious challenge for the country. The 2016 Labour Force Survey estimated the country's unemployment rate at 34 percent (NSA, 2017). The high unemployment situation has been attributed

¹ Source: <http://www.worldbank.org/en/country/namibia/overview> (Accessed on Aug 30 2018)

to the inadequate and sometimes volatile economic growth, coupled with a shallow economic base (NDP4 - 2012/13-2016/17). With a Gini coefficient of 0.57 (NSA, 2016), Namibia is estimated to be among the highest income inequality countries of the world. Namibia has also lagged behind in its Human Development Index (HDI). In 2017, the country's HDI was estimated at 0.647 which is higher than the average of 0.475 for sub-Saharan Africa but below the World's average of 0.682. The country ranked 128 out of 187 economies in 2017(UNDP, 2016). Despite large scale social sector expenditure, usage of cash transfers for eliminating poverty, much needs to be attained (Levine et al., 2009).

2. From money-metric to Multidimensional Poverty Measurement

Despite the widespread research on poverty and its significance, there is little consensus about the best way to measure it. Poverty measures focused on income and expenditures are widely recognised as not fully considering the multiple aspects and sensitivity of poverty. Recent studies have demonstrated the inability of income poverty measures to track some obvious indicators of poverty, i.e. material deprivation. The emerging conclusion is that meeting the goal of income poverty reduction does not ensure reducing deprivations in non-income indicators. This conclusion has led to a rethinking on the non-monetary measures of poverty. While the narrow and conventional view of poverty is limited to shortfalls in income related to deficiency in food consumption, a broader view of poverty visualizes it as a multi-dimensional deprivation covering health, education, access to water supply and sanitation, security and other relevant services.

Namibia switched to a consumption-based measure of poverty in 2008 in a bid to overcome most of the shortcomings associated with income-based poverty measures. Alkire and Santos (2014) and Morrell (2011) both suggest that poverty is often a product of factors extending beyond income or consumption and that measuring it requires consideration of numerous elements and understanding how they interact over time. One major advantage of MPI over income and consumption measures is the flexibility of the former. Alkire *et al.* (2014) also noted that consumption- and income-based poverty data are usually available only at intervals of three to ten years, limiting the ability to regularly track progress and make time-sensitive policy recommendations. In contrast, using MDP allows for flexibility in deciding which dimensions and indicators to include, how to establish thresholds for these indicators, and how relatively to weigh each factor of input.

The price argument against the sole use of the consumption-measures of poverty revolves round the fact that not everything of value has a market price, or a price which reflects its value. In addition the adoption for instance of uniform calorie norms and fixed consumption basket may fail to take account of base year price differentials.

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Recent conclusions drawn from studies on poverty dynamics that focus on poverty measures based on income and consumption as against MPI show that the latter changes slowly responding more to long-term fundamental factors. Sudden increases in income or idiosyncratic shocks such as a sudden drought may cause households to move in or out of poverty giving misleading indicators of existence or severity of poverty with attendant implications for policy.

Finally, studies reveal that consumption based and MPI measures may not necessarily be correlated. Whether we use a consumption or nonmonetary measure of poverty makes a difference in who will be identified as poor. In a recent estimate for Ethiopia, Seff and Jolliffe (2017) estimated that 73 percent of individuals would be placed in a different quintile depending on whether or not wellbeing was being defined by consumption or by deprivations in nonmonetary dimensions. Their study confirmed other studies that show that changes in consumption are largely independent of changes in multidimensional wellbeing. This could pose a dilemma for policymakers where the accuracy of targeted policies is a necessity for fighting the scourge of poverty.

Multidimensional poverty measurements are gaining rapid traction though they remain a relatively new field of endeavor. In a post-2015 Sustainable Development Goals (SDGs) context, the United Nations General Assembly revised its goal on tackling poverty from money-metric oriented measures to dealing with the problem in all its forms. A multidimensional measure seeks to complement the traditional income/consumption based methods by incorporating a range of indicators to capture the complexity of poverty, and thus offers a robust tool to assist policies designed to fight it.

The Multidimensional Poverty Index (MPI), based on the Alkire-Foster (AF) methodology, measures poverty across three dimensions, namely health, education and living standards. This measure is conceptualized based upon the capabilities approach of Sen (1999). This approach contends that measures of poverty should focus on what people can do, or what they have capacity to do.

This assignment will build on this to reflect conditions and needs specific to Namibia. One such key modification which we consider relevant in the Namibian case is the incorporation of economic activity as an additional dimension. Economic activity is represented by employment status and is crucial because of the intrinsic importance of the issue in relation to the current priorities in Namibia.

3. Data

The Namibia Household Income and Expenditure Survey (NHIES) conducted in 2015-16 is used for our analysis purposes. The main objective of the NHIES 2015/2016 is “to provide social economic indicators to support planning, policy formulation, decision making and research and development for a knowledge based economy in order to eradicate poverty and income inequalities in Namibia”(NHIES 2015/16). It provides information on income, consumption expenditure and other socio-economic and demographic indicators. Two-stage stratified sampling strategy was adopted for the survey. The total number of Primary Sampling Units (PSUs) was 864. The number of households surveyed in rural and urban areas was 10,368.

4. A brief overview of the MPI methodology²

As argued above, this approach is based on the understanding that neither the income or consumption measure of poverty can capture the multiple aspects that constitute poverty. Multidimensional poverty is made up of several factors that constitute poor people’s experience of deprivation-poor health, lack of education, inadequate living standard, lack of income (as one of several factors considered), disempowerment, poor quality of work and threat from violence. The Alkire-Foster (AF) methodology is used for measuring multidimensional poverty (Alkire et al., 2015). Based on the Foster-Greer-Thorbecke measures it involves counting the different types of deprivation that individuals at the same time witness, such as poor quality of education, unemployment, poor health and living standards. These deprivation profiles are analyzed to identify who is poor, and then used to construct a multidimensional index of poverty (MPI). To identify the poor, the AF Method counts the overlapping or simultaneous deprivations that a person or household experiences in different indicators of poverty. The indicators may be equally weighted or take different weights.

People are identified as multidimensionally poor if the weighted sum of their deprivations is greater than or equal to a poverty cut off – such as 20%, 30% or 50% of all deprivations. It is a flexible approach which can be tailored to a variety of situations by selecting different dimensions (e.g. education), indicators of poverty within each dimension (e.g. how many years of schooling a person has) and poverty cut offs (e.g. a person with fewer than five years of education is considered deprived). The most common way of measuring poverty is to calculate the percentage of the population who are poor, known as the headcount ratio (H). Having identified who is poor, the AF method generates a unique class of poverty measures (M_a) that goes beyond the simple headcount ratio. We compute the Adjusted headcount ratio (M_0), otherwise known as the MPI: This measure reflects both the incidence of poverty (the

² Source: <https://ophi.org.uk/research/multidimensional-poverty/alkire-foster-method/> (Accessed on Sep 30 2018)

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percentage of the population who are poor) and the intensity of poverty (the percentage of deprivations suffered by each person or household on average). M_0 is calculated by multiplying the incidence (H) by the intensity (A). $M_0 = H \times A$.

Summarily, the MPI construction process entails the following steps:

- Choose the purpose of the measure and identify the institutional framework
- Choose a unit of analysis (individual, household or community)
- Choose dimensions (education, health, living standards etc.)
- Choose indicators for each dimension (e.g. years of schooling, Body Mass Index etc.)
- Set deprivation cut-offs for each indicator
- Sum the sum of weighted deprivations for each person or household depending on the unit of measurement
- Set and apply the poverty cut-off (i.e. the percentage of weighted indicators a person must be deprived in order to be considered poor)
- Calculate the percentage of people identified as poor (the headcount ratio H) i.e. divide the number of poor people by the total number of people
- Calculate the intensity of poverty A (i.e. add up all poor peoples' share of weighted deprivations and divide by the number of poor people)
- Calculate the adjusted headcount ratio (M_0 or the MPI = H x A)
- Calculate the consistent indices: censored headcount ratio for each indicator, percentage contribution of each indicator to overall poverty, standard errors etc.

The AF Method is unique in that by measuring intensity it can distinguish between, for example, a group of poor people who suffer two deprivations on average and a group of poor people who suffer five deprivations on average at the same time. While the AF Method provides a single headline measure of poverty, it can also be broken down and analyzed in powerful ways to inform policy.

- **Decomposition by population group:** It can be broken down by geographic area, ethnicity, or other sub-groups of a population, to show the composition of poverty within and among these groups.
- **Breakdown by dimension or indicator:** It can be broken down to show which types of deprivation are contributing to poverty within groups.
- **Changes over time:** The AF Method can be used to monitor changes in poverty over time, using data collected at different periods. It reflects changes in dimensions and indicators of poverty directly and quickly, making it an effective monitoring tool.
- **Complements other metrics:** The AF Method can complement other measures, such as measures of income poverty.

5. Application of the AF methodology for the construction of Namibia's MPI

Table 1 provides a description of the different dimensions, corresponding indicators and the weighting matrix. We provide weights on the standard MPI computation for measuring global poverty. The major dimensions of education, health & nutrition, living standard and economic activity receive a weight of 0.25. The dimension of economic activity is accounted for by indicators of employment and financial inclusion each with a weight of 1/8. The dimension of health & nutrition has indicators on intake of a diverse diet, status of chronic illness, sanitation and water each with a weight of 1/16. The indicators for living standard are flooring, cooking fuel, assets and electricity again with weight of 1/16 each. Education as a dimension is gauged by the indicator on years of schooling with a weight of 1/4. We closely follow the weighting structure as the standard procedure for computing the Global MPI by the OPHI team which has three dimensions: education, health and standard of living.

Table 1 1: Dimensions, indicators, and Weighting matrix

Dimension		Indicator	Deprivation Cut-offs	Weight
Education	Years of schooling	Educational attainment	Below primary and not stated	0.25
Nutrition and Health	Diet diversity	Diet diversity score based on: wheat, cereals, potatoes, rice, veg, fruits, dairy poultry, ,eat, fish, oils/fats	Deprived if diet diversity has a score less than or equal to four	0.06
	Chronic Illness	Suffer from chronic illness	Suffer from any chronic illness(severe, mild, low), deprived if two levels of intensity are present	0.06
Standard of living	Sanitation	Type of toilet	Deprived if no facility/ open pit/bucket	0.06
	Water	Source of drinking water	If unprotected and related sources like rainwater, stream, stagnant water, etc.	0.06
	Floor	Main flooring material	If made of sand, clay or others	0.06
	Cooking fuel	Cooking fuel used	If using coal, dung, charcoal, firewood, paraffin, etc.	0.06
	Electricity	Access to electricity	If no connection	0.06
	Assets	Owns car, radios, television, refrigerator, bicycle, internet	If not possessing any three of the mentioned	0.06
Economic activity	Financial inclusion	Distance in kms to bank, Household income from interest on savings/investments	Total round trip walk is less than or equal to 45 mins, No	0.13
	Employment	Main source of income	Deprived if in-kind, subsistence farming, others	0.13

6. Justification for the selection of dimensions and indicators

The selection of dimensions and indicators follows closely from the discussions in the background paper where we identified Namibia's national priorities as the reduction of poverty and inequality, reduction of unemployment and stimulating economic growth. While the paper agreed that poverty has been significantly reduced in Namibia, it was pointed out that rural poverty remains high and multiple deprivations even in indicators of standards of living still exist. The paper also argued that a comprehensive approach to poverty reduction focusing on labour-intensive employment and reduction in inequality should at this stage occupy the attention of government.

The standard Global MPI has three **dimensions**: education, health and standard of living. It is easy to justify the inclusion of these dimensions in any discussions on poverty.

Education

Any successful poverty reduction effort must emphasize the primacy of human capital. Human capital consists of **education** (schooling and training), **health** and **other capacities** (skills, abilities, ideals) that can increase productivity when they are increased. Education plays a key role in economic growth and in cross-country income differences (Becker, 1964; Mincer, 1974) and is a key element for competitiveness and development. It plays a pivotal role in economic development as both input into production—enabling higher incomes—and output directly affecting human welfare. It yields individual or private benefits—such as well-being, higher incomes, empowerment, employment, societal or social benefits—improved productivity, innovation, institutional strengthening and social cohesion. Education is critical for long-term growth and economic development and its impact can be quite significant in a country like Namibia where shortage of critical skills has constrained growth for many years. Namibia spends close to 20 per cent of her budget on education. In 2009/10, spending on education amounted to 7.5 percent of GDP. The NHIES 2009/10 revealed that 11.6 percent of children between the age of 6 and 13 had never been to school. To deal with this challenge and promote primary school enrolment among poor children, Namibia introduced a Free Universal Primary Education programme in 2013. In a recent study of 195 countries measuring and ranking countries according to performance in human capital development, we observe that Namibia's ranking dropped by as much as 20 points in human capital development from 139 to 159 between 1990 and 2016 in spite of the huge expenditure on education and health. Notably, the drop in ranking was attributable mostly to her performance in education³.

³ For details see Stephen S Lim et al, Measuring human capital: a systematic analysis of 195 countries and territories, 1990–2016 (Lancet September 24, 2018 [http://dx.doi.org/10.1016/S0140-6736\(18\)31941-X](http://dx.doi.org/10.1016/S0140-6736(18)31941-X) (Accessed 28 September 2018)

Health and Nutrition

Public sector hospitals in Namibia are technically inefficient, and this acts as a hindrance to delivering quality health care (Zere et al. 2006). Forty-seven percent of the population die due to communicable, maternal, perinatal and nutritional conditions. The probability of those in the age group of 30-70 years dying due to four main non-communicable diseases cancer, diabetes, cardiovascular and chronic respiratory diseases is 20 per cent. Nutrition following from the standard OPHI classification is treated as part of health. Food poverty consists of three main ideas: food availability, food access and food utilization. While we do not underestimate the criticality of the first two dimensions, our main focus is on food utilization as this is more closely related to health and nutrition in this study. Thus our focus is on an indicator of food quality (diet diversity). Secondly, we attempted to link this with efforts that government has made in the past to address food poverty which in our view has yielded good results. The cost of basic needs approach (consumption based) which focuses on the cost for a food basket enabling a household to meet a minimum level of nutritional requirement which the NSA adopted since 2008 shows that Namibia has improved considerably with poverty eradication measured more along this dimension.

Economic activity

Most literature has confirmed that rapid and sustained growth is the single most important way to reduce poverty. A typical estimate from these cross-country studies is that a 10 per cent increase in a country's average income will reduce the poverty rate by between 20 and 30 per cent⁴. The extent to which growth reduces poverty depends on the degree to which the poor participate in the growth process and share in its proceeds. A successful strategy of poverty reduction must have at its core measures to promote rapid and sustained economic growth. The challenge for policy is to combine growth promoting policies with policies that allow the poor to participate fully in the opportunities unleashed and so contribute to that growth. This includes policies to make labour markets work better, remove gender inequalities and increase financial inclusion.

⁴See, for example, Adams, R (2002) Economic Growth, Inequality and Poverty: Findings from a New Data Set, Policy Research Working Paper 2972, World Bank, February 2002, and Ravallion, M and S Chen (1997) 'What Can New Survey Data Tell Us about Recent Changes in Distribution and Poverty?' World Bank Economic Review, 11(2): 357-82.

Employment⁵

- Unemployment, particularly amongst women and the youth, has been a serious challenge for the country. The 2016 Labour Force Survey estimated the country's unemployment rate at 34 percent. The high unemployment situation has been attributed to inadequate and volatile economic growth, coupled with a shallow economic base (NDP4 - 2012/13-2016/17). The type of growth that reduces poverty has unique features. Growth in Namibia is mainly driven by developments in the mining sector which due to its capital intensive nature contributes sparsely to job creation. With a low manufacturing base and an export sector which depends mostly on the export of primary commodities such as fish, beef and minerals, the economy's ability to boost employment has been highly compromised. The current economic structure has hence not been able to generate sufficient jobs. The government has always made clear its desire to diversify the economy through the promotion of value addition activities. We have identified two of such sectors in our background paper as small holder farming and the micro, small and medium scale enterprises sector. Small holder farming will utilise the country's abundant assets, land and labour especially in the rural areas which currently bears the brunt of unemployment and poverty. Employment also matters intrinsically and not just instrumentally. Particularly, employment can be considered to matter intrinsically because people get a sense of purpose and dignity from having a stable and rewarding job. There is some sense of satisfaction that comes from being employed.

Financial inclusion

Unlike most African nations, Namibia ranks higher when it comes to financial inclusion as compared to ranking for human development (Sarma and Pais, 2011). However, three groups of the financially excluded are worthy of attention in Namibia. The informal sector is densely populated by micro, small and medium scale enterprises (MSMEs) which given appropriate support could play a major role in employment creation. However, as of now, many of the MSMEs lack adequate funding to remain sustainable. MSMEs are critical to the growth process through employment generation and output creation. They are excluded from the formal credit market due to perceived high risks, transactional costs and difficulties in providing tradable collateral. Most MSMEs identify access to credit and power as the leading constraints to job and growth. Also excluded from the financial markets are small holder farmers. In many developing countries, small holder farming will continue to be the main source of employment creation, food

⁵ The variable pertaining to the employment dimension is "Main source of income." It is not on unemployment but on the source of income from different types of job profiles. There are no other variables which can give a better picture of employment status. It captures information on the following which spans across occupations of different age groups: Salaries & wages, Pension, Subsistence farming, Business income, Remittances/grants, Drought/in-kind receipts, Commercial farming, and others.

security and output growth for many years to come. Small holder farmers are risky borrowers due to seasonality and irregular cash flows. Agricultural finance involves higher transaction costs due to the greater distances, lower population densities and lower quality infrastructure encountered in serving rural areas. The third group excluded from the mainstream financial system are women. Many low-income women are excluded because of focus on credit only in the past. Women make up a large and growing segment of the informal-sector but they tend to be more credit constrained. Commercial banks focus on men because men form a larger portion of the formal sector. Given these considerations, it motivates us to include these dimensions in the computation of the multidimensional poverty index.

Our choice of **indicators** stemmed mostly from the various development plans and the available data provided by NHIES 2016. Table 2 provides detailed notes on the indicators and the corresponding cut-offs for identifying a household as deprived or not deprived.

Table 2 1: Definition of deprivation

- Deprivation in terms of educational attainment if age of the household head is more than 15 years and has no formal education or the level of education is not stated.
- Deprived in terms of diet diversity if count of the number of food groups consumed is less than or equal to four.
- Deprived in terms of toilet facility if pit latrine without slab or open pit, bucket, no facilities, bush/field, other are used.
- Deprived in terms of drinking water facility if water is consumed from Dug Well, Unprotected; Unprotected Spring; Rainwater Collection/ Rainwater Tank; Cart with Small Tank/ Drum, Tanker Truck; Flowing Surface Water/ Stream/ River/ Canal/ Irrigation Channel; Dam/Pool/Pond/Stagnant water.
- Deprived in terms of flooring if floor is made of Sand; Mud, clay and/or cow dung; Other.
- Deprived in terms of cooking fuel if using Paraffin, Firewood, Charcoal, Coal, Animal dung, Other.
- Deprived in terms of assets if count if number of assets possessed is less than five.
- Deprived in terms of financial inclusion if distance in kms to banks is more than 5 kms.
- Deprived in terms of main source of income if engaged in subsistence farming, receives drought/in-kind receipts, Others.

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- Deprived in terms of chronic illness if suffer from any chronic illness (severe, mild, low), deprived if two levels of intensity are present.

Missing values analysis

We conduct a missing values analysis for the variables considered for our analysis. Missing values refer to a variable that should have response but because of interview errors the question was not asked. Household with missing information in any of the missing indicators are dropped from the sample. This is the approach taken when the size of missing observations is small as in this study. At the national level 0.06 and 4.62 percent of the values are missing for the dimensions of cooking fuel and asset. For urban regions it is 0.05, 0.09 and 3.65 per cent for the dimensions of asset, electricity and financial inclusion. For these same dimensions at the rural level the percentage of missing values are 0.07, 0.03 and 5.3 percent respectively. These are strictly under 5% in all cases and conform to acceptable norms. Based on NHIES 2016 reports, these households are not systematically different from the ones not missing

Table 2.1 : Missing Values - National, Urban And Rural

Variable	National			Urban			Rural		
	Missing values	Total	Percent Missing	Missing values	Total	Percent Missing	Missing values	Total	Percent Missing
Education	0	41581	0	0	17073	0	0	24508	0
Nutrition	0	41581	0	0	17073	0	0	24508	0
Health	0	41581	0	0	17073	0	0	24508	0
Sanitation	0	41581	0	0	17073	0	0	24508	0
Water	0	41581	0	0	17073	0	0	24508	0

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Flooring	0	41581	0	0	17073	0	0	24508	0
Cooking Fuel	26	41581	0.06	0	17073	0	0	24508	0
Asset	1922	41581	4.62	9	17073	0.05	17	24508	0.07
Electricity	0	41581	0	15	17073	0.09	7	24508	0.03
Financial Inclusion	0	41581	0	624	17073	3.65	298	24508	5.3
Employment	22	41581	0.05	0	17073	0	0	24508	0

7. Key Findings

Some of our key findings are as follows:

National, Urban, Rural Deprivations

Comparison of performance on raw and censored headcount ratios: One major advantage of the MPI computed using the AF methodology is that it permits dimensional breakdown. This property makes it possible to compute the percentage of the population who are multidimensionally poor and simultaneously deprived in each indicator. This is known as the censored headcount ratio of an indicator. The Censored head count ratio allows us to analyze the composition of multidimensional poverty as the proportion of people who are poor and deprived in each of the indicators. These censored headcount ratios differ from the raw headcount ratios (uncensored) in that they only consider the deprivations of those that are poor, ignoring the deprivations of the non-poor. Generally, Raw headcount ratios may not indicate deprivation accurately due to poor data quality or incomplete indicators. People with multiple deprivations are more likely to be poor and are more likely to be poorer than those experiencing only a single deprivation. The focus is on the acutely poor. Censored head count ratios provide a more accurate idea of the magnitude of the deprivation in a specific indicator when associated with poverty. Finally, raw headcount ratios may include people that “choose” to be deprived in that

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indicator. A simple illustration will do here. In Table 3 where we present the results of deprivations at the national level, we observe that 66.14 per cent of people are deprived in cooking fuel; this is the raw headcount ratio. However, 29.40 per cent are poor and deprived in cooking fuel; this is the censored headcount ratio.

At the national level households performed poorly on the dimensions of education, standard of living (electricity, cooking fuel), health (sanitation) and financial inclusion as per the **raw headcount** figures. The **censored headcount** ratios are highest in the dimensions of electricity, cooking fuel, financial inclusion and sanitation⁶. Households perform the best on diet diversity.

At the urban level maximum deprivation is observed in the dimensions of education attainment, electricity, assets and sanitation, and lowest for water. The censored figures are significantly different from the raw headcount. It is instructive to note that the only dimension for which the recorded figure is high is in education attainment. It is minimum for nutrition and water. For rural Namibia, overall, households perform poorly in the dimensions of electricity, cooking fuel, sanitation and financial inclusion and the best for water and diet diversity using the raw headcount. Those who are multidimensionally poor are deprived the most in the dimensions of cooking fuel, sanitation, assets, education, employment and financial inclusion and the least for water and diet diversity (Tables 3.1 to 3.3.1).

⁶ Censored: exclusion of deprivations experienced by people who have not been identified as poor

Table 3 1: Raw and Censored headcount Ratios: National, Urban and Rural

Dimension	Indicator	Major wt.	Subgroup wt.	NATIONAL		URBAN		RURAL	
				Headcount	Raw Censored	Headcount	Raw Censored	Headcount	Raw Censored
Education	Educational attainment	1/4	1/4	24.92	23.49	15.13	9.167	31.85	33.35
Nutrition	Diet diversity score based on: wheat, cereals, potatoes, rice, veg, fruits, dairy poultry, egg, fish, oils/fats	1/4	1/16	2.63	0.07	5.69	0.084	0.46	0.05
Health	Suffer from chronic illness		1/16	12.8	5.25	12.76	2.002	12.84	7.48
Sanitation	Type of toilet		1/16	57.63	33.7	27.3	7.138	79.11	51.99

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Water	Source of drinking water		1/16	10.89	10.35	0.97	0.192	17.92	1.9
Floor	Main flooring material	1/4	1/16	45.97	29.4	20.27	6.03	64.18	17.35
Cooking fuel	Cooking fuel used		1/16	66.14	36.31	30.38	7.439	91.48	45.49
Assets	Owns car, radios, television, refrigerator, bicycle, bakky, cell phone		1/16	24.17	3.1	43.29	2.167	10.62	56.19
Electricity	Has electric connection		1/16	91.84	37.58	84.33	9.733	97.17	3.74
Financial inclusion	Distance in kms to bank	1/4	1/8	59.57	34.11	13.48	3.121	92.23	56.75
Employment	Main source of income		1/8	19.72	18.47			29.61	55.45

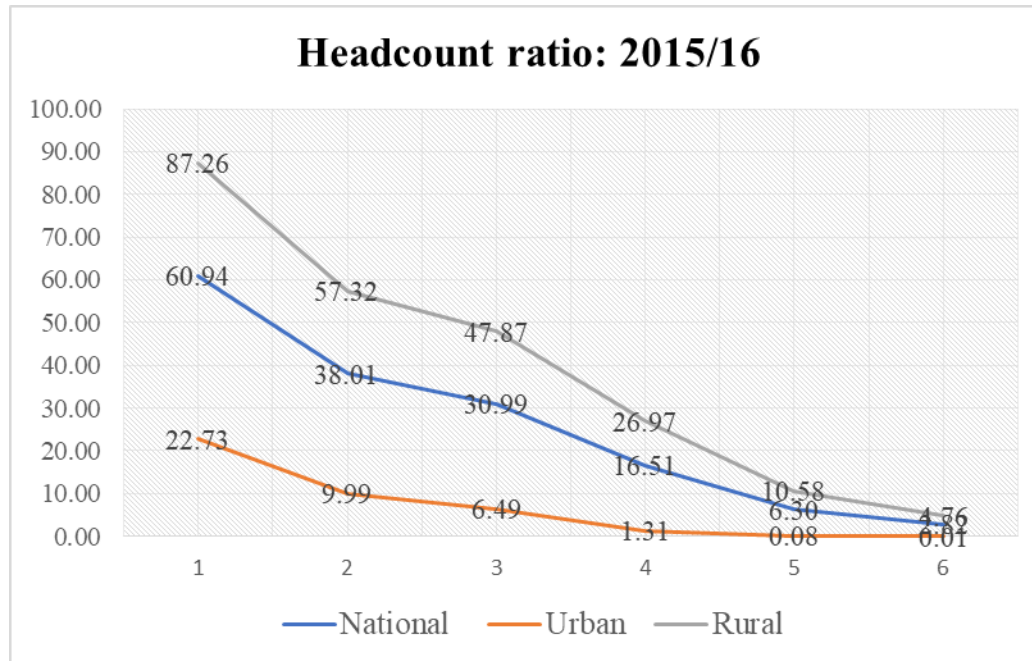
Discussion on aggregated measures: A comparison of the key aggregated measures across regions and values of ‘ k ’, the cut-off is important. The headcount ratio (H) or the incidence of those who experience multidimensional poverty decreases in value as the poverty or deprivation cut-off ‘ k ’ is increased from 30 to 80. We observe a reverse pattern for the intensity of deprivation denoted by A, where A is the average proportion of deprivations experienced by poor people. Thus, at $k=40$, poor people are deprived in 58.34 per cent of the weighted indicators in all-Namibia, 50.56 and 59.28 in urban and rural Namibia respectively. As expected poor people in urban Namibia are deprived in lesser proportion of weighted indicators as compared to rural Namibia. Our main variable of interest, which is the adjusted headcount ratio denoted by M_0 shows a similar pattern as that of H. At the all-Namibia level the value stands at 0.2218, and 0.0505 and 0.3398 for urban and rural Namibia respectively. This implies that the proportion of deprivations that poor people in a society experience, as a share of the deprivations that would be experienced if all persons were poor and deprived in all dimensions of poverty is higher for rural Namibia than urban Namibia. Thus, as expected urban Namibia fares better than rural Namibia (Table 4)).

Table 4 1: Aggregated measures at different cut-offs (k): National, Urban and Rural 2015/16

Poverty Cut-off (k)	National			Urban			Rural		
	Headcount (H)	Intensity (A)	Adjusted Headcount (M_0)	H	A	M_0	H	A	M_0
30	60.94	49.49	0.3016	22.73	41.2	0.0937	22.73	41.2	0.0937
40	38.01	58.34	0.2218	9.99	50.56	0.0505	9.99	50.56	0.0505
50	30.99	61.65	0.1911	6.49	54.23	0.0352	6.49	54.23	0.0352
60	16.51	69.6	0.1149	1.31	64.67	0.0085	1.31	64.67	0.0085
70	6.3	69.6	0.0491	0.08	75.56	0.0006	0.08	75.56	0.0006
80	2.82	81.72	0.023	0.01	81.25	0.0001	0.01	81.25	0.0001

Comparative analysis of headcount ratios: Figure 1 provides a combined overview of the incidence of multidimensional poverty at the all Namibia, urban and rural levels. As discussed above we see a declining pattern with an increase in the value of the deprivation cut-off. The proportion of people who experience multidimensional poverty is almost quadruple for rural Namibia as compared to that of urban Namibia.

Figure 1.1 1: Incidence of multidimensional poverty



Decomposition by population sub-groups: Performance across regions

We have seen earlier that one key feature of MPI is that it can be decomposed by population sub-groups. One such decomposition we attempted earlier is sub-groups based on urban vs. rural and geographic regions. Since these show aspects in which the poor are deprived and helps to reveal the interconnections among those deprivations, it identifies the joint or simultaneous deprivations poor people experience. This enables policymakers to target resources and design policies more effectively. This is especially useful where the MPI reveals areas or groups characterized by high intensities of deprivation.

Application of the AF methodology

Using first the uncensored head count ratio (H) the summary of the incidence of poverty across regions is shown in Table 5.1.1- to 5.3.1 in the appendix. We will focus our discussion on Tables 5.4.1 which summarizes Tables 5.1.1.-5.3.1. At the national level the incidence of poverty is highest in the following regions: Kunene East and West, Kunene, Omusati, Oshana and to a lesser extent, Zambezi. (A common current in these regions is that they suffer from broadly similar deprivations (education, sanitation, financial inclusion, and employment). One puzzling result is the occurrence of high deprivations in assets in Erongo, !Karas and Hardap. Given that our measure of deprivation in asset is that a household is counted as deprived in this category if not possessing any three of car, radios, television, refrigerator, bicycle, internet etc. It is suggested that the survey results should be revisited.

At the urban level, most regions performed very well with the exception of Kavango East and West and Omusati where deprivations in flooring, electricity, sanitation and cooking fuel and employment persist.

By far the most interesting results derive from the rural headcount results. All the regions suffer deprivations in electricity, financial inclusion, cooking fuel, sanitation and employment. The rural population in the worst performing regions suffers multiple deprivations. One clear conclusion from this result is the sharp disparity between the urban and rural areas even in regions that have reported low poverty rates using the income measure of poverty over the years.

Table 5.1 1 Performance across regions (Incidence of poverty): Uncensored (Raw) Headcount Ratio

Region	National Dimension	Urban Dimension	Rural Dimension
!Karas	Assets,		Financial Inclusion, Electricity, Cooking Fuel, Sanitation
Erongo	Assets		Financial Inclusion, Electricity, Cooking Fuel, Sanitation
Hardap	Assets		Financial Inclusion, sanitation, Electricity, Assets, Cooking Fuel,
Kavango East	Education, Sanitation, Cooking fuel, Employment, Financial	Cooking Fuel, Electricity,	Financial Inclusion, Electricity, Education, Employment, cooking

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	Inclusion,	Sanitation, Flooring	fuel, Flooring, Water, Sanitation
Kavango West	Sanitation, Water, Cooking, Fuel, Financial Inclusion, Employment,	Education, Sanitation, Water, Flooring, cooking, fuel	Financial Inclusion, Electricity, Cooking Fuel, Flooring, Sanitation
Khomas	Nutrition, Assets	Nutrition, Assets	Financial Inclusion, Electricity, Employment, Cooking Fuel, Flooring, Sanitation
Kunene	Education, Electricity, Employment, Sanitation, Financial Inclusion,	Health, Electricity	Financial Inclusion, electricity, Sanitation, Water, Flooring, Cooking Fuel, Assets, Electricity, Financial inclusion, Education, Employment, Sanitation
Ohangwena	Cooking fuel, Electricity, Financial inclusion, Sanitation, Employment		Financial Inclusion, Electricity, Employment, Cooking Fuel, Flooring, Sanitation, Education
Omaheke	Sanitation, Cooking fuel	Cooking fuel	Financial Inclusion, Electricity, Education, Sanitation
Omusati	Electricity, sanitation, Employment, Financial Inclusion	Financial inclusion, Electricity	Financial Inclusion, Electricity, Employment, Cooking Fuel, Flooring, Sanitation
Oshana	Sanitation, Cooking fuel,	Nutrition	Financial Inclusion,

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	Financial Inclusion,		Electricity, Cooking Fuel, Flooring, Sanitation
Oshikoto	Sanitation , Financial inclusion, Cooking fuel,		Financial Inclusion, Electricity, Cooking Fuel, Flooring, Sanitation
Otjozondjupa	Sanitation, Cooking fuel,		Financial Inclusion, Electricity, Cooking Fuel, Flooring, Sanitation
Zambezi	Sanitation, cooking fuel, Financial Inclusion	Assets, Electricity	Financial Inclusion, Electricity, Cooking Fuel, Flooring, Sanitation

Performance across regions (Censored deprivation score among the poor): These results are broadly similar to our analysis for uncensored head count ratio. The results are presented in Tables 6(a-c) in the appendix. The average proportion of deprivations experienced by poor people and the corresponding dimensions are the highest in the following regions: Kunene (education), Oshana (nutrition), Kavango East and West (health), Omusati, Kavango East and West (sanitation), Kavango East and West (water), Kavango East and West (flooring), Omusati and Kavango East (cooking fuel), Omaheke (assets), Omusati and Kavango East (electricity), Omusati, Kavango East and West and Kunene (financial inclusion) and Kunene and Kavango East (unemployment). At the urban level the deprivation profile is as follows: Kunene (education), Oshana (nutrition), Kavango East and West (health), Omusati, Kavango East and West (sanitation), Kavango East and West (water), Kavango East and West (flooring), Omusati and Kavango East (cooking fuel), Omaheke (assets), Omusati and Kavango East (electricity), Omusati, Kavango East and West and Kunene (financial inclusion), and Kunene and Kavango East (employment). At the rural level the deprivation profile is as follows: Kunene (education), Oshana (nutrition), Khomas (health), Kavango East and Kunene (sanitation), Kavango East and Kunene (water), Kavango East (flooring), Kunene and Kavango East (cooking fuel), Hardap and Omaheke (assets), Kunene (electricity), Kunene and Kavango East (financial inclusion) and Kunene and Kavango East (unemployment). As in the previous case Kavango East and West have the highest average deprivation score among most dimensions

Robustness Checks

A number of robustness checks can be performed on our computed MPI. One of such checks is robustness to deprivation cut-offs. The question we seek to answer here is whether the rankings between regions within a country are robust to changes in the deprivation cut-off. In a basic way, this requires computing the MPI for the set of regions slightly different deprivation cut-offs, or maybe different indicators altogether. In our case our test is conducted with different deprivation cut-offs. What is considered normal in the literature which we have used up till now is when $k = 30$. What happens when we impose a slightly more demanding criterion say $k=40$.

Performance of regions on aggregated measures at a deprivation cut-off of 40: At the national level the incidence of poverty is highest in Omusati, Oshikoto and Kavango East and West. It is lowest in !Karas and Erongo. The average deprivation score among the poor is highest in Kunene, Ohangwena and Omusati. It is lowest in Khomas and Hardap. The adjusted headcount ratio (M_0) is highest in Kunene, Kavango East and West and Omusati. It is lowest in !Karas and Erongo.

Table 7.1 1: National: by region when $k=40$

Region	Headcount Ratio (H)	Intensity of Deprivation (A)	Adjusted Headcount Ratio (M_0)	Region	Headcount Ratio (H)	Intensity of Deprivation (A)	Adjusted Headcount Ratio (M_0)
!Karas	3.76	53.52	2.01	Ohangwena	56.11	59.83	33.57
Erongo	4.43	52.41	2.32	Omaheke	40.4	54.96	22.2
Hardap	9.77	49.92	4.88	Omusati	62.83	57.95	36.41
Kavango East	61.73	59.45	36.7	Oshana	25.11	55.68	13.98
Kavango West	56.38	56.46	31.83	Oshikoto	50.09	59.83	29.97
Khomas	10.19	49.46	5.04	Otjondjupa	25.14	55.56	13.97
Kunene	59.16	67.32	39.83	Zambezi	31.17	55.02	17.15
				Total	38.01	58.34	22.18

At the urban level incidence is highest in Kavango East and West, Kavango West and Omusati. On the intensity (A) and M_0 attains the maximum at Kavango West and East which are at much higher levels as compared to the other regions. It is lowest in Erongo and !Karas; Erongo; Erongo and !Karas on the incidence, intensity and adjusted headcount ratio.

Table 7.2 1: Urban: by Region when k=40

Region	Headcount Ratio (H)	Intensity of Deprivation (A)	Adjusted Headcount Ratio (M ₀)	Region	Headcount Ratio (H)	Intensity of Deprivation (A)	Adjusted Headcount Ratio (M ₀)
!Karas	3.06	53.85	1.65	Ohangwena	10.47	51.25	5.37
Erongo	1.19	47.1	0.56	Omaheke	26.93	52.7	14.19
Hardap	6.12	48	2.94	Omusati	15.02	55.94	8.4
Kavango East	31.82	53.74	17.1	Oshana	7.01	48.05	3.37
Kavango West	41.37	56.82	23.51	Oshikoto	7.62	47.25	3.6
Khomas	8.25	48.76	4.02	Otjozondjupa	9.61	47.2	4.54
Kunene	19.59	50.34	9.86	Zambezi	6.28	52.95	3.33
				Total	9.99	50.56	5.05

For rural Namibia, Karas performs the best and Kunene the worst on the incidence of poverty, Khomas the best on intensity and Kavango East the worst on the intensity and! Kara's the best and Kunene the worst on the adjusted headcount ratio. Overall, again Kavango is the worst performing and !Karas the best performing of all regions. These results broadly agree with our findings for k=30.

Table 7.3 1: Rural: by Region when k=40

Region	Headcount Ratio (H)	Intensity of Deprivation (A)	Adjusted Headcount Ratio (M ₀)	Region	Headcount Ratio (H)	Intensity of Deprivation (A)	Adjusted Headcount Ratio (M ₀)
!Karas	0.06	0.53	0.032	Ohangwena	0.589	0.599	0.353
Erongo	0.29	0.541	0.157	Omaheke	0.521	0.56	0.292
Hardap	0.293	0.521	0.152	Omusati	0.64	0.58	0.371
Kavango East	0.826	0.61	0.504	Oshana	0.351	0.565	0.198
Kavango West	0.57	0.564	0.322	Oshikoto	0.544	0.6	0.326

Khomas	0.499	0.518	0.259	Otjozondjupa	0.538	0.583	0.314
Kunene	0.867	0.7	0.607	Zambezi	0.414	0.552	0.228
				Total	0.573	0.593	0.34

Contribution of dimensions to M_0

Whenever the contribution to poverty of a certain indicator widely exceeds its weight, this suggests that there is a relative high deprivation in this indicator in the country. The poor are more deprived in this indicator than in others. Clearly, the sum of the contributions of all indicators needs to be 100 %.

Looking at the censored headcount ratios (M_0) we can see that the poor in this society exhibit the highest deprivation levels in education attainment (26.4%), financial inclusion (19.22%), electricity (10.59%), employment (10.41%), cooking fuel (10.23%) and flooring (8.23%) in that order. It is possible that Education contributes the maximum to MPI weight of 0.25 attributed to the same. However, the consistency of the other indicators across decompositions (national, urban and rural) lends some credence to the results.

Table 8.1 1 : Contribution to M_0 when $k=40$

Indicator	Raw Headcount Ratio	Censored Headcount Ratio	Contribution to M_0
Education	24.92	23.49	26.47
Nutrition	2.63	0.07	0.02
Health	12.8	5.25	1.48
Sanitation	57.63	33.7	9.5
Water	10.89		2.92
Floor	45.97	10.35	8.28
Cooking fuel	66.14	29.4	10.23
Assets	24.17	36.31	0.87
Electricity	91.84	3.1	10.59
Financial inclusion	59.57	37.58	19.22
Unemployment	19.72	34.11	10.41

Contribution to M_0 (National) when $k=40$

The ordering slightly changes when the analysis changes to urban. Education (45.39), Electricity (12.05), Sanitation (8.83), Financial Inclusion (7.73) and Flooring (7.46) are now the leading contributors to poverty (M_0). The role of deprivation in education in contributing to urban poverty is prominent and instructive. The preponderance of financial institutions in urban areas may have contributed to the decline in the role of financial inclusion in urban poverty.

Table 8.2 1: Contribution to M_0 (Urban) when $k=40$

Indicator	Raw Headcount Ratio	Censored Headcount Ratio	Contribution to M_0
Education	15.13	9.167	45.39
Nutrition	5.69	0.084	0.1
Health	12.76	2.002	2.48
Sanitation	27.3	7.138	8.83
Water	0.97	0.192	0.24
Floor	20.27	6.03	7.46
Cooking fuel	30.38	7.439	9.21
Assets	43.29	2.167	2.68
Electricity	84.33	9.733	12.05
Financial inclusion	13.48	3.121	7.73
Unemployment	5.77	1.55	3.84

The remarkable change in the ordering is instructive given our discussions around rural poverty in Namibia. Education (24.54), Financial Inclusion (20.42), Employment (11.08), Cooking fuel (10.44), Sanitation (9.56), and Flooring (8.37) are the main contributors to poverty. The relative contributions of education, financial inclusion and employment to poverty in the rural areas deserve some policy attention.

Table 8.3 1: Contribution to M_0 (Rural) when $k=40$

Indicator	Raw Headcount Ratio	Censored Headcount Ratio	Contribution to M_0
Education	31.85	33.35	24.54
Nutrition	0.46	0.05	0.01
Health	12.84	7.48	1.38
Sanitation	79.11	51.99	9.56
Water	17.92		3.19
Floor	64.18	17.35	8.37
Cooking fuel	91.48	45.49	10.34
Assets	10.62	56.19	0.69
Electricity	97.17	3.74	10.44
Financial inclusion	92.23	56.75	20.4
Unemployment	29.61	55.45	11.08

Dominance Analysis

As part of robustness analysis, we apply a stochastic dominance approach to changes in the poverty cutoff, which is applied to the weighted deprivation scores constructed in this study. Our findings are similar to that discussed earlier. Performance of Erongo and ! Karas dominate that of Kunene and Kavango East and West at the all, urban and rural Namibia level (Figures 2.1, 3.1 and 4.1. The same is evident from the spatial maps⁷. Northern Namibia suffers from a greater extent of deprivation as compared to the southern parts.

⁷ Kavango East and West is clubbed as one region. Zambezi is also known as Caprivi as it is located in the Caprivi strip.

Figure 2.1: Dominance Analysis (multidimensional)

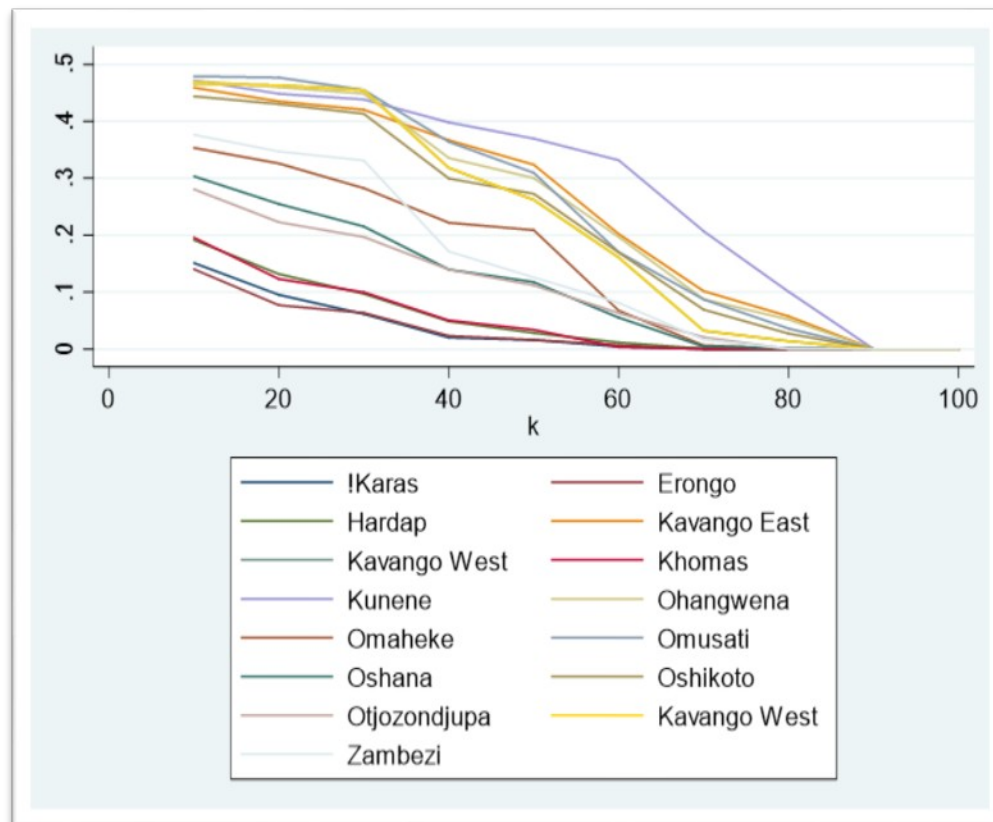


Figure 3.1: MPI Dominance Analysis-Urban

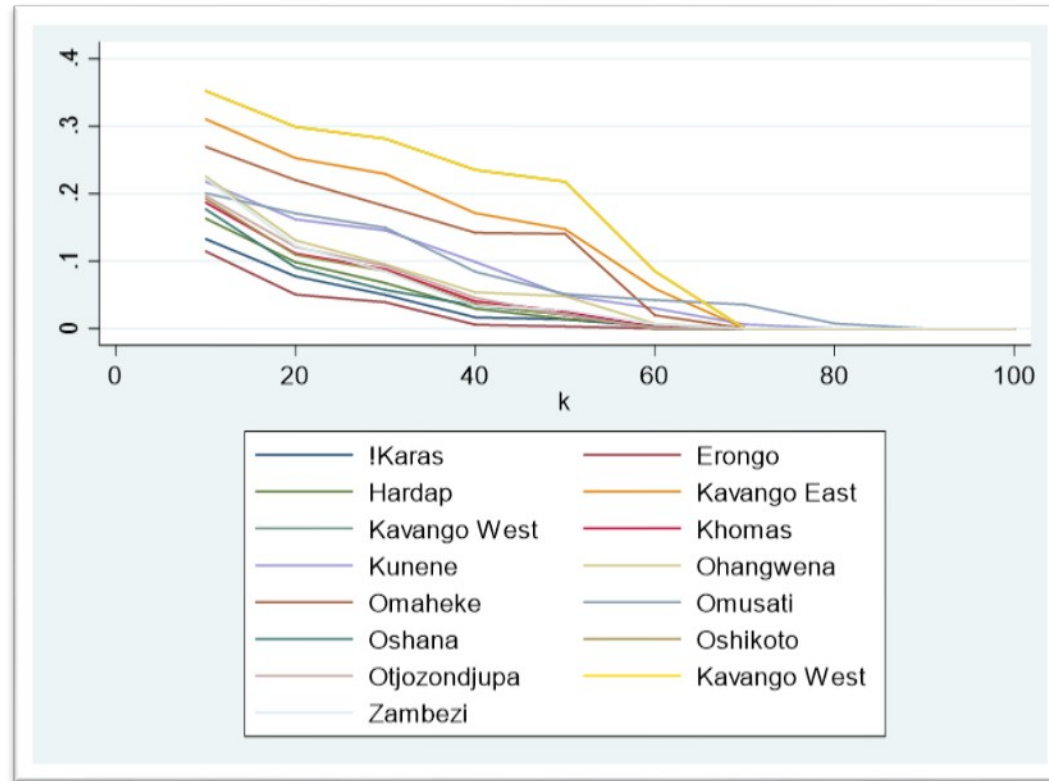
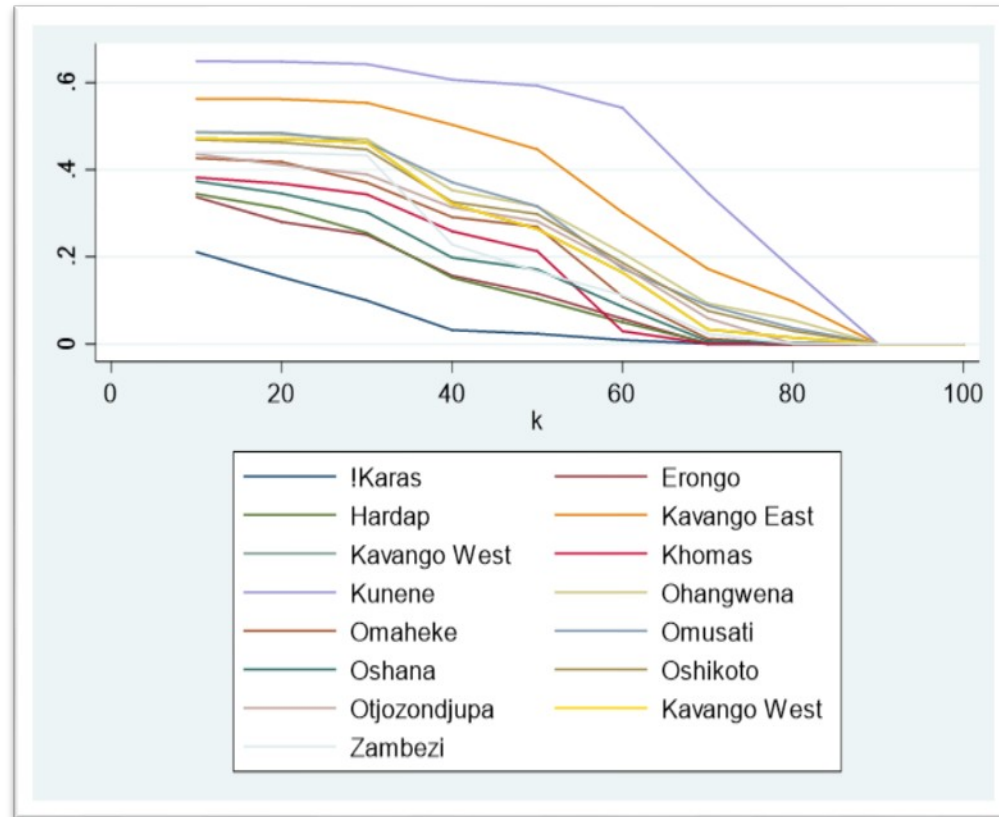


Figure 4.1: MPI Dominance Analysis Rural



Spatial Mapping

MPI maps produce visual impressions of poverty endemic areas in countries where they are used. Such a novel map will display the spatial dimensions of poverty and identify the poverty pockets across Namibia so as to channel resources to alleviate poverty in particularly affected enclaves. The map will also give a broader framework to municipalities and other development actors to assess conditions of the population at the community level and provide a solid basis for recommendations about how best to reduce poverty.

Application of the AF methodology

This maps can be drawn to show poverty conditions across regions in a country and this can be extended to communities within a region. To reiterate, the MPI is the product of two components: the headcount or the proportion of the population who are MPI-poor (incidence) and the average proportion of weighted indicators in which the MPI-poor persons are deprived (intensity).

Figure 6.1 1 presents the estimate of the MPI for the whole country based on the regional data. The results broadly replicate the MPI distribution we reported earlier.

Figure 6.1 1: Spatial map (National)

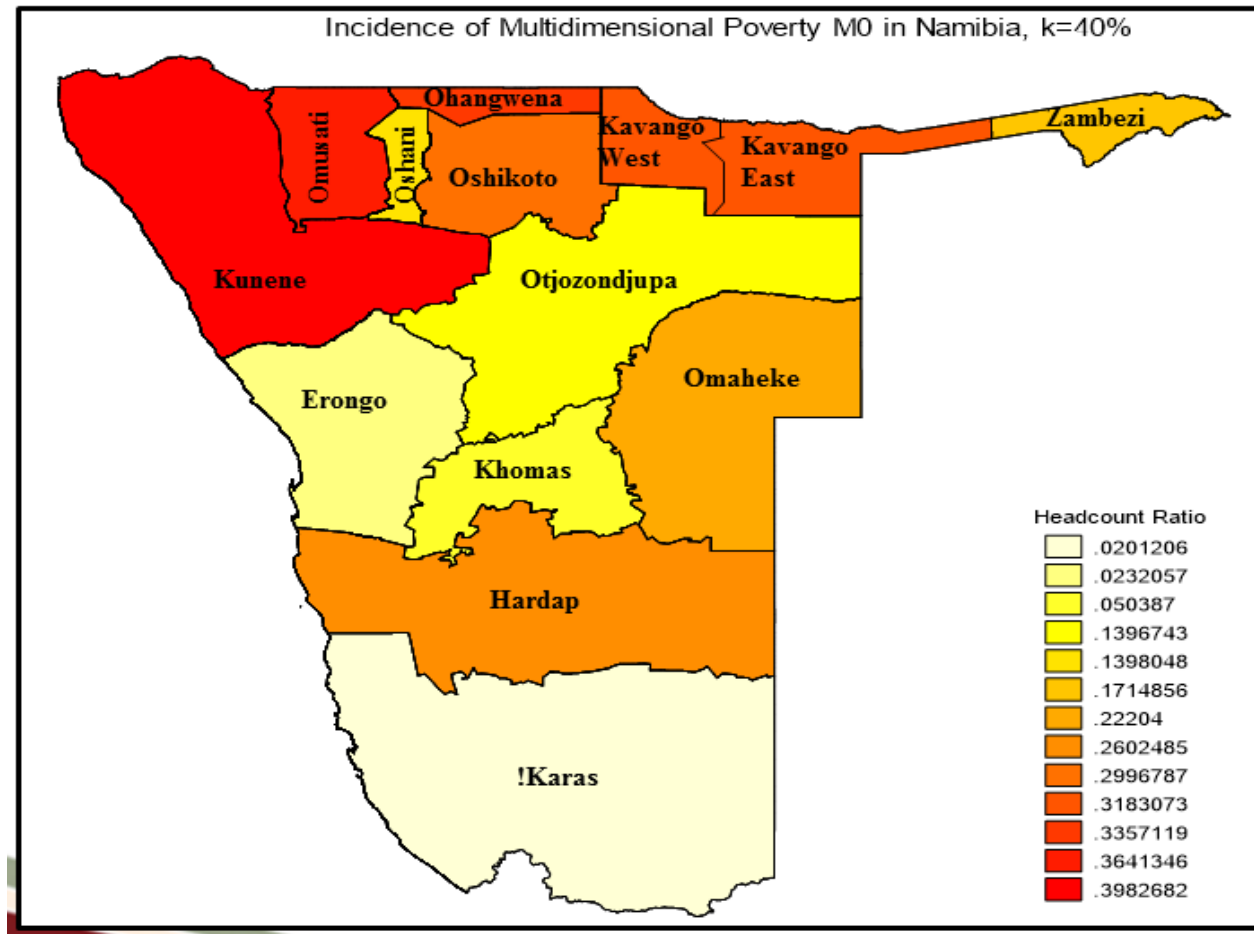
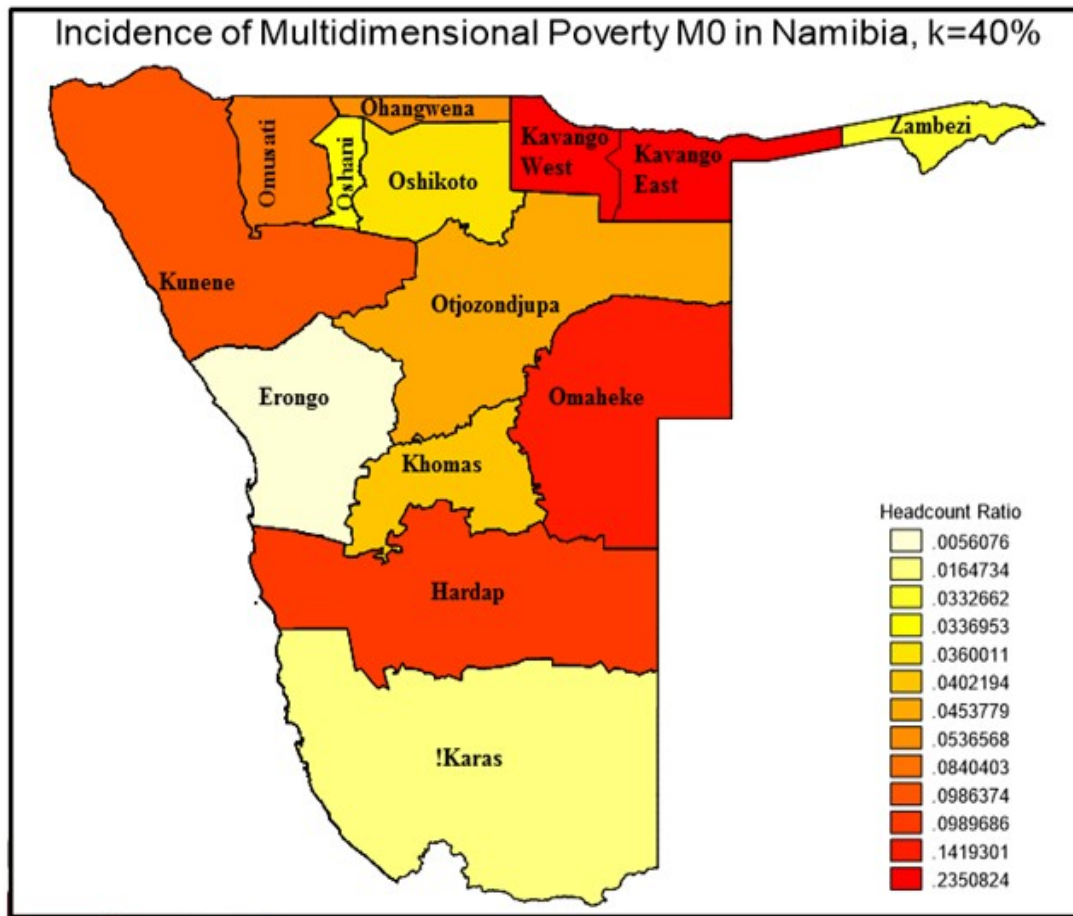


Figure 6.2 1: Spatial Map (Urban)



Kunene, Omusati, and Ohangwena reported the highest Mo (0.318-.3980) closely followed by Kavango and Oshikoto. Among the regions in the north, Oshana, Zambezi and Omaheke report median figures for MPI. In Figure 6.2-6.3.1, we report the mapping of M₀ for the regions. The results here are more revealing. For instance, Hardap, Omaheke, Kunene and Kavango report the poorest figures for urban poverty contrasted with Oshona and Zambezi. Finally, for rural poverty, Ohangwena, Otjozondjupa and Khomas has a high

Concluding remarks

Poverty reduction in terms of household consumption has fallen considerably since the implementation of the first Poverty reduction Strategy programmers in the 1990s. However, the persistence of absolute poverty especially in the rural areas remain a challenge to policymakers. A more encompassing approach to fighting poverty is called for. In this paper we explored the multi-dimensional nature of poverty in the context of Namibia focusing on select dimensions of education, living standards, health & nutrition, and economic activities-employment and financial inclusion.

The remarkable performance of Namibia in poverty reduction efforts in the past two decades is reflected in the positive results in the form of low deprivations in indicators of nutrition (diet diversity score) and health (chronic illness and water) and in most cases, living standards. The one indicator of health that contributes significantly to rural poverty is sanitation and policy should also be directed towards this end. The need to focus on certain elements of living standards such as electricity and cooking fuel should agitate policy makers.

Rural multidimensional poverty is more than urban poverty across all regions using different poverty cut-offs as evident from MPI values and dominance analysis. Those who experience multidimensional poverty are deprived the most in the dimensions of education, electricity, cooking fuel, sanitation, employment and financial inclusion and the least for water and diet diversity. Kavango is the worst performing of all regions and !Karas is the best. Northern Namibia suffers to a greater extent from multiple deprivations as compared to the southern parts. Significantly, the interplay of access to electricity, access to finance, educational attainment, and unemployment in the determination of MPI in our analysis calls for closer policy focus. Notably, the four indicators shape the outcomes in rural poverty.

Poverty reduction strategies are often formulated along two approaches. There are those that focus on the redistribution or effective use of income generating assets and others that emphasise the flow of income or consumption to different units. Since its independence in 1990, Namibia has mostly adopted the second approach to fighting poverty⁸. The country has placed a high priority on using public resources to address poverty, inequality, and other social policy objectives. Education, health, social security, housing,

⁸ See for instance “BLUE PRINT ON WEALTH REDISTRIBUTION AND POVERTY ERADICATION”, Ministry of Poverty Eradication and Social Welfare 2016.

and other social programs routinely receive more than half of government spending. While this approach has substantially reduced the level of poverty, it may not be sustainable. Moreover, it is doubtful if this has helped to dent the number of extremely poor. Perhaps, the most serious consequence of this approach to poverty reduction is its inability to reduce unemployment or sustain economic growth.

Ownership of assets in themselves do not generate income. The link between assets ownership and income is employment. Assets only generate income when they are used as means of production. Employment is the key link in the process of income generation through production. Hence, a labour-intensive growth framework will generate income, reduce poverty and boost economic growth⁹. A redistribution of income generating assets would raise the level of productivity if meaningfully utilised. The most abundant factor of production that Namibia currently has are its land and labour assets. Any meaningful policy to reduce poverty on a sustainable basis and boost economic growth must begin to revolve around how to engage these two assets.

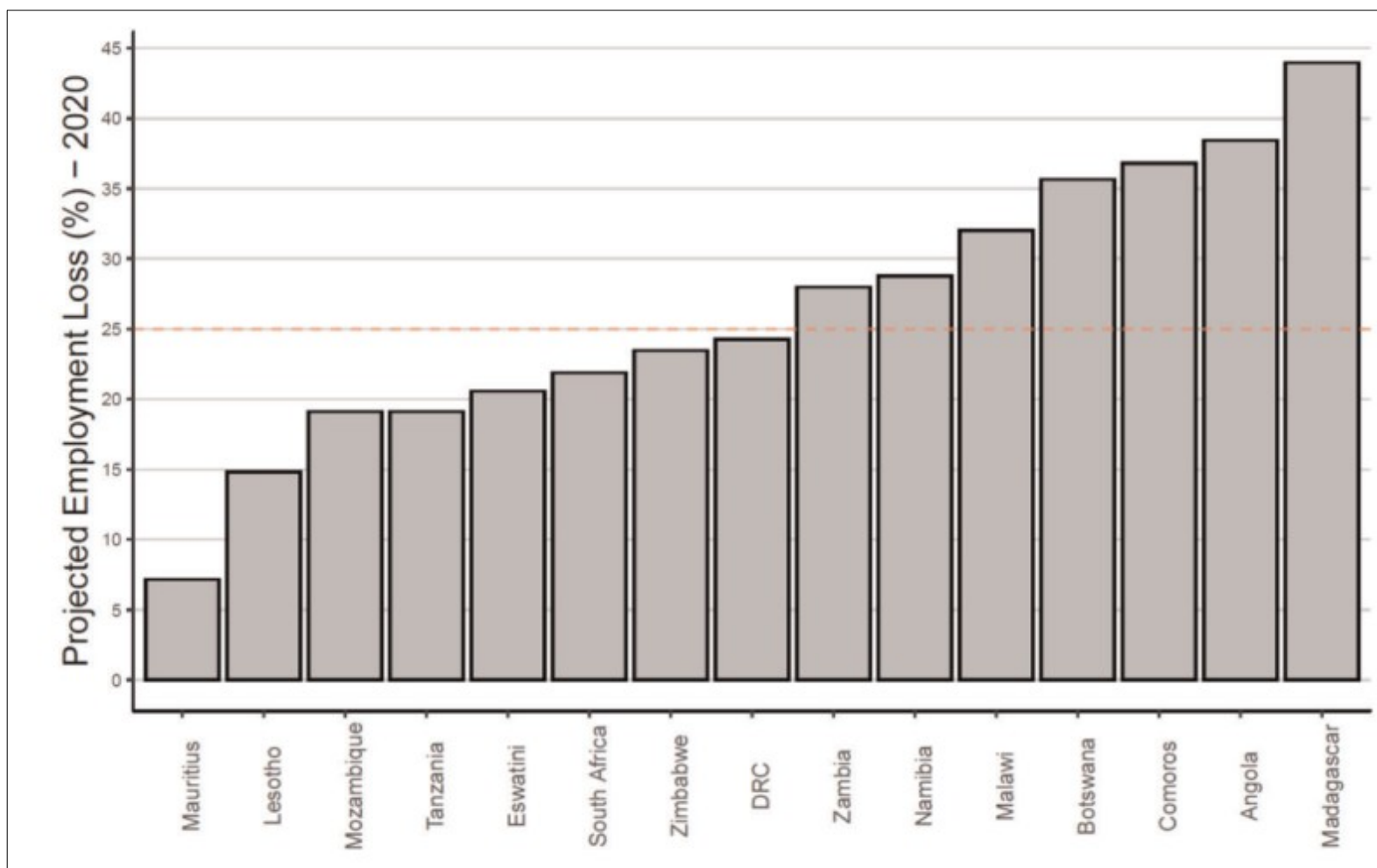
In a number of countries, focus is shifting to how to increase the employment content of their growth paths while mitigating the vulnerability of the poor. The kind of economic growth that can support employment challenge must be accompanied by increasing productive employment and productivity growth. The demand for labour for employment is a derived demand which is closely linked to output. The ratio of employment growth rate to the GDP growth rate over a specified period of time is measured by the output-employment elasticity. It is required that this should be greater than one. This means that employment must be growing faster than GDP growth rate. In the case of Namibia, this is strictly less than one for the period 1995-2016. What is needed is economic growth which creates jobs and income for individuals. The results from this analysis confronts policy makers with clear options with regards to building human capital around her human and land resources and engaging financial inclusion that focuses on the excluded thereby encouraging the growth of MSMEs. Such policies will boost employment and output while reducing poverty and inequality.

The COVID-19 pandemic has hit hard the SADC countries, including Namibia. Job losses were to the extent of 25 percent. One-third of all female jobs were at risk of depletion in Madagascar, Comoros, Angola, Botswana, Namibia, and South Africa (Strauss et al. 2021). No latest household-level data for Namibia can help analyze the post-pandemic situation. However, using data from previous years, substantial economic losses are computed (Evelina et al. 2020). The loss is estimated to be around 5-7.5 billion Namibian dollars. Fiscal stimulus may not be enough to revive the economy and the labor-intensive informal sector. All studies recommend post-pandemic recovery measures to uplift the economies. Our study supplements these findings even though we do not consider

⁹ The growth acceleration literature earmarks a growth acceleration period of at least 8 years where per capita income growth is at least 3.5 percent and growth is at least 2 percentage points higher than it was in the previous two years (Hausmann, Pritchett and Rodrick, 2005).

pandemic-related disruptions. For example, if people are multidimensionally poor and on the dimension of financial inclusion, it is evident that such households will face a greater brunt of the pandemic.

Figure 7: Model's projected total employment losses from COVID-19 GDP shock, 2020 (%).



Source: Strauss et al. (2021)

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APPENDIX

Table 5.1 1 Performance across regions (Uncensored headcount ratios, H): National 2015/16

region	Educati on	Nutritio n	Healt h	Sanitati on	Water	Floori ng	Cookin g fuel	Educati on	Nutritio n	Healt h	Sanitati on	Wate r	Floorin g	Cookin g fuel
!Karas	7.59	3.69	12.29	13.63	2.31	9.59	20.16	7.59	3.69	12.29	13.63	2.31	9.59	20.16
Erongo	10.85	7.08	12.71	12.51	0.05	7.53	10.24	10.85	7.08	12.71	12.51	0.05	7.53	10.24
Hardap	7.4	1.9	15.69	27.37	1.05	17.07	32.57	7.4	1.9	15.69	27.37	1.05	17.07	32.57
Kavango East	38.62	2.27	10.73	75.98	22.53	72.29	90.4	38.62	2.27	10.73	75.98	22.53	72.29	90.4
Kavango West	26.7	0.18	10.83	86.56	30.52	76.45	97.62	26.7	0.18	10.83	86.56	30.52	76.45	97.62
Khomas	15.02	9.09	12.76	19.48	0	18.42	18.96	15.02	9.09	12.76	19.48	0	18.42	18.96
Kunene	56.97	0.91	11.01	59.58	21.54	53.75	77.08	56.97	0.91	11.01	59.58	21.54	53.75	77.08
Ohangwen a	33.26	0.25	8.23	82.12	21.73	62.25	97.24	33.26	0.25	8.23	82.12	21.73	62.25	97.24
Omaheke	35.98	1.37	13.38	52.4	3.1	27.15	69.81	35.98	1.37	13.38	52.4	3.1	27.15	69.81
Omusati	29.86	0.45	10.27	89.8	22.32	60.96	97.21	29.86	0.45	10.27	89.8	22.32	60.96	97.21
Oshana	19.94	3.52	9.27	40.69	1.35	41.28	68.04	19.94	3.52	9.27	40.69	1.35	41.28	68.04
Oshikoto	32.24	0.27	9.92	75.57	9.03	63.07	88.07	32.24	0.27	9.92	75.57	9.03	63.07	88.07
Otjozondju pa	26.01	1.72	12.84	48.03	0.79	25.17	54.18	26.01	1.72	12.84	48.03	0.79	25.17	54.18
Zambezi	17.71	1.72	10.15	79.19	8.16	61.72	89.17	17.71	1.72	10.15	79.19	8.16	61.72	89.17
Total	26.08	2.72	11	57.6	11.27	45.16	67.75	26.08	2.72	11	57.6	11.27	45.16	67.75

Table 5.2 1: Performance across regions (Uncensored headcount ratios, H): Urban 2015/16

region	Education	Nutrition	Health	Sanitation	Water	Flooring	Cooking fuel	Asset	Electricity	Financial Inclusion	Employment
!Karas	8.72	4.18	13.23	1.71	0.22	3.59	15.52	45.08	83.67	20.16	0.85
Erongo	9.84	8	11.35	8.15	0	6.83	4.24	51.1	67.86	5.13	2.81
Hardap	6.6	2.24	14.59	22.74	0.07	15.07	26.97	46.28	89.92	14.22	6.31
Kavango East	32.1	5.51	11.11	55.19	0	40.94	76.98	26.2	86.29	24.14	10.82
Kavango West	32.38	4.45	21.11	61.85	32.95	43.54	85.85	12.63	97.04	25.69	12.6
Khomas	14.93	9.53	12.37	17.54	0	16.74	16.89	54.13	84.66	19.31	3.32
Kunene	22.58	2.07	14.54	20.1	0	23.28	47.86	32.03	97.97	10.47	10.35
Ohangwena	12.46	3.98	7.99	51.87	0	18.48	71.27	21.94	92.22	17.87	7.21
Omaheke	26.24	1.85	15.07	56.46	0.26	44.72	56.13	36.22	88.32	15.8	3.5
Omusati	13.68	3.66	6.45	33.25	0	6.45	39.03	46.4	58.3	33.57	19.32
Oshana	10.34	8.21	8.02	34.69	0.68	14.78	30.65	43.18	90.38	7.62	5.1
Oshikoto	11.14	0.91	10.03	37.97	0	24.93	38.89	39.03	96	0.34	13.76
Otjozondjupa	20.01	2.02	13.13	38.14	0.03	12.86	41.93	39.33	91.83	4.36	1.84
Zambezi	7.99	5.88	8.97	46.53	2.07	26.9	68.98	52.17	98.83	6.22	3.11
Total	15.29	6.23	12.11	25.75	0.31	17.56	30.26	45.44	85.64	13.94	4.55

Table 5.3 1: Performance across regions (Uncensored headcount ratios, H): Rural 2015/16

region	Education	Nutrition	Health	Sanitation	Water	Flooring	Cooking fuel	Asset	Electricity	Financial Inclusion	Employment
!Karas	3.97	2.11	9.27	51.98	9.04	28.9	35.11	27.37	94.25	36.84	2.15
Erongo	18.53	0.11	23.07	45.58	0.47	12.84	55.83	16.37	98.51	99.4	7.3
Hardap	11.64	0.1	21.58	52.07	6.3	27.73	62.43	45.63	87.91	97.27	3.49
Kavango East	43.16	0.01	10.46	90.47	38.24	94.13	99.76	2.71	99.98	97.98	48.24
Kavango West	26.45	0	10.39	87.62	30.42	77.86	98.12	8.02	88.41	98.79	24.96
Khomas	16.86	0.11	20.85	59.27	0	52.98	61.31	11.85	90.45	92.72	34.64
Kunene	80.91	0.11	8.55	87.07	36.54	74.97	97.43	2.03	99.99	99.76	54.69
Ohangwena	34.55	0.02	8.25	83.99	23.08	64.95	98.84	10.29	99.19	89.13	36.81
Omaheke	44.43	0.96	11.9	48.87	5.56	11.9	81.69	16.72	97.46	98.98	15.94
Omusati	30.27	0.37	10.37	91.24	22.89	62.34	98.69	8.87	99.63	83.2	48.18
Oshana	25.23	0.93	9.95	44	1.72	55.91	88.69	19	99.2	75.03	13.66
Oshikoto	34.37	0.2	9.91	79.36	9.94	66.92	93.04	13.52	98.52	93.09	28.23
Otjozondjupa	37.1	1.18	12.3	66.3	2.19	47.91	76.8	12.47	95.36	94.42	23.57

Application of the AF methodology

Zambezi	21.72	0	10.64	92.66	10.67	76.08	97.49	18	96.46	99.37	8.31
Total	33.52	0.3	10.24	79.54	18.82	64.17	93.57	11.4	97.77	89.6	32.95

Table 6.1 1: Performance across regions (Censored headcount ratios, M_0): National 2015/16

region	Education	Nutrition	Health	Sanitation	Water	Flooring	Cooking fuel	Asset	Electricity	Financial Inclusion	Employment
!Karas	3.04	0.04	1.27	1.52	0.34	0.78	3.25	1.59	3.76	3.28	0.46
Erongo	3.21	0.01	1.67	3.65	0.05	1.55	3.97	0.56	4.27	3.44	0.83
Hardap	5	0	3.11	8.56	0.83	5.47	7.83	4.85	9.77	6.36	2.46
Kavango East	36.76	0.18	8.07	57.91	22.39	58.74	61.3	1.86	60.73	52.53	31.97
Kavango West	26.61	0	8.94	54.08	25.49	47.79	56.24	1.1	51.45	54.61	24.27
Khomas	8.4	0.01	2.42	6.4	0	5.76	5.57	1.36	10.18	5.85	1.81
Kunene	55.65	0	5.91	49.58	21.46	48.38	58.62	0.87	59.15	52.69	32.62
Ohangwena	32.89	0	5.99	53.34	19.41	46	55.93	2.69	55.93	52.31	30.85
Omaheke	35.78	0	6.7	25.72	1.89	16.64	37.16	6.82	40.38	29.36	9.05
Omusati	29.72	0.09	7.4	59.54	21.53	42.76	62.74	3.62	62.64	59.91	41.79
Oshana	18.41	0.34	4.01	14.5	1.27	20.99	21.27	4.62	24.94	22.15	6.9
Oshikoto	31.24	0.01	6.91	46.4	8.4	43.06	48.96	4.96	50.01	48.75	24.17
Otjozondjupa	19.06	0.13	3.28	21.93	0.54	15.48	20.75	5.63	24.87	18.63	8.68

Application of the AF methodology

Zambezi	17.08	0	7.04	27.1	6.94	26.68	30.81	4.8	30.77	30.08	5.89
Total	23.49	0.07	5.25	33.7	10.35	29.4	36.31	3.1	37.58	34.11	18.47

Table 6.2 1: Performance across regions (Censored headcount ratios, M0): Urban 2015/16

region	Education	Nutrition	Health	Sanitation	Water	Flooring	Cooking fuel	Asset	Electricity	Financial Inclusion	Employment
!Karas	2.83	0.05	0.97	0.22	0	0.18	2.83	2.03	3.06	2.59	0.26
Erongo	1.19	0	0.42	0.65	0	0.63	0.88	0.27	1.19	0.07	0.01
Hardap	3.75	0	1.53	4.93	0.07	2.83	3.82	2.82	6.12	2.24	2.69
Kavango East	27.57	0.43	5.98	28.99	0	26.34	30.77	1.35	29.38	11.22	8.83
Kavango West	30.33	0	8.84	41.17	28.63	31.32	41.17	0.2	41.37	22.85	8.22
Khomas	7.99	0.01	1.79	4.82	0	3.89	4.15	1.42	8.24	3.7	0.34
Kunene	19.49	0	3.63	6.65	0	13.11	18.33	1.56	19.59	4.02	4.47
Ohangwena	10.19	0	1.29	4.8	0	3.52	7.91	5.71	7.27	3.08	4.21
Omaheke	25.92	0	5.19	26.43	0	25.47	26.39	0.57	26.93	4	2.23
Omusati	8.31	0	2.68	14.85	0	5.95	14.85	0	15.02	12.58	11.36
Oshana	6.35	0.42	1.16	6.18	0.56	3.59	6	1.59	7.01	0.77	0.23

Application of the AF methodology

Oshikoto	7.07	0	1.04	5.58	0	4.79	7.12	1.96	7.62	0.06	0.55
Otjozondjupa	9.31	0.15	1.65	6.84	0	3.34	3.96	7.41	9.39	0.46	0.84
Zambezi	5.81	0	1.6	3.72	0	4.85	5.06	1.57	6.28	3.04	0.41
Total	9.167	0.084	2.002	7.138	0.192	6.03	7.439	2.167	9.733	3.121	1.55

Table 6.3 2: Performance across regions (Censored headcount ratios, M₀): Rural 2015/16

region	Education	Nutrition	Health	Sanitation	Water	Flooring	Cooking fuel	Asset	Electricity	Financial Inclusion	Employment
!Karas	3.72	0	2.23	5.71	1.43	2.72	4.57	0.19	6.01	5.49	1.12
Erongo	18.53	0.11	11.17	26.45	0.47	8.59	27.44	2.78	27.7	29.02	7.08
Hardap	11.64	0	11.5	27.96	4.89	19.58	29.21	15.67	29.28	28.37	1.2
Kavango East	43.16	0	9.53	78.07	37.99	81.32	82.57	2.21	82.58	81.31	48.09
Kavango West	26.45	0	8.95	54.63	25.36	48.5	56.88	1.14	51.88	55.97	24.96
Khomas	16.86	0	15.29	38.82	0	44.14	34.65	0	49.94	49.94	32.01
Kunene	80.84	0	7.5	79.48	36.41	72.95	86.69	0.4	86.71	86.58	52.23
Ohangwena	34.29	0	6.28	56.34	20.6	48.62	58.9	2.51	58.93	55.34	32.49
Omaheke	44.35	0	8.01	25.1	3.53	8.98	46.5	12.25	52.06	51.37	14.98
Omusati	30.27	0.09	7.52	60.68	22.07	43.7	63.96	3.71	63.85	61.12	42.56

Application of the AF methodology

Oshana	25.07	0.29	5.58	19.1	1.66	30.6	29.7	6.3	34.84	33.95	10.59
Oshikoto	33.68	0.01	7.5	50.52	9.25	46.93	53.19	5.26	54.29	53.66	26.55
Otjozondjupa	37.07	0.09	6.29	49.79	1.55	37.89	51.74	2.34	53.44	52.18	23.16
Zambezi	21.72	0	9.29	36.74	9.8	35.68	41.42	6.13	40.86	41.23	8.15
Total	33.35	0.05	7.48	51.99		17.35	45.49	56.19	3.74	56.75	55.45