

Pro-poor Poverty Reduction in Tanzania in the New Millennium?

Christian Oldiges (UN ESCWA)

Stephano Cosmas (National Bureau of Statistics, Tanzania)

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Christian Oldiges^{*} Stephano G.Cosmas[†]

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*christian.oldiges@un.org, UN ESCWA

 † stephano.cosmas@nbs.go.tz, National Bureau of Statistics, Tanzania

1 Introduction

During the last decade of action, the United Nations call for accelerated poverty reduction efforts to meet the Sustainable Development Goals (SDG) by 2030, and in particular Goal 1 of eradicating extreme poverty. While Target 1.1 of Goal 1 addresses monetary poverty, Target 1.2 addresses multidimensional poverty as defined by national definitions calling for a 50 percent reduction.

In this paper, we track extensively the progress made in poverty reduction for Tanzania between 2001 and 2018. According to the World Bank report "Tanzania - Mainland Poverty Assessment 2019" (World Bank, 2019), Tanzania Mainland has seen progress in reducing monetary poverty: a decline from 35.7 percent to 26.4 percent. Yet, the speed of poverty reduction has slowed over the years and with an annual reduction of less than 1 percentage point, Tanzania's progress has been slower than elsewhere. To investigate this further, we exploit the two major rounds of the Household Budget Survey (HBS) for the years 2001 and 2018 and conduct a region-level trend analysis. Following Ndulu and Mwase (2016), we estimate poverty trends for different political regimes, including the last few years of the Mkapa regime as well as the entirety of the Kikwete regime.

To the best of our knowledge, we are the first in estimating the national multidimensional poverty index (MPI), following as much as possible the design of the National Bureau of Statistics, spanning almost two decades. Doing so allows us to identify the drivers of poverty reduction as well as the sectors that need additional policy attention. Since the national MPI encompasses 13 indicators spanning three dimensions of health, education, and living standards, we draw a comprehensive picture of poverty. The idea of counting deprivations to capture achievements in functionings is built on Amartya Sen's capability approach (Sen, 1992) and recent advances in poverty measurement (see for example the global MPI developed by UNDP and OPHI (Alkire, Kanagaratnam et al., 2021), the World Bank's multidimensional poverty measure, and various national MPIs across Africa, Asia, and Latin America).

In particular, the HBS data allow us to build a unique regional pseudo panels that we study over time. These include a national panel, rural/urban panel as well as a panel of 20 regions that are comparable between 2001 and 2018.

We undertake extensive robustness and dominance analyses following Alkire, Oldiges and Kanagaratnam (2021) to ascertain which regions and subgroups have moved fastest and which have been left behind. These include cumulative distribution functions and quantile functions of all deprivation and achievement scores, as yielded by the Alkire-Foster method (Alkire and Foster, 2011a). We also report multidimensional poverty figures for the entire distribution and all cut-offs.

Our results in this current draft version suggest that progress has been heterogeneous across regions. For one, as World Bank (2019), we find a decline in the percentage of monetary poor people, yet a significant increase in the number of poor nationally, regionally and in urban areas. Furthermore, our trend analysis on multidimensional poverty reveals a similar pattern. While the MPI almost halved, and the headcount ratio declined by more than 30 percentage points, the number of MPI poor people reduced somewhat at the national level. Yet in many regions, in particular urban ones such as Dar Es Salaam and Mwanza and many Lake regions, the number of MPI poor increased significantly. Our estimations on the entire distribution of poverty thresholds underline the overall finding of a reduction in multidimensional poverty across all cut-offs, underscoring the robustness of the analysis.

This is in stark contrast to for example India's recent progress. In their trend analysis of multidimensional poverty, Alkire, Oldiges and Kanagaratnam (2021) report pro-poor poverty reduction, with the poorest states moving fastest in reducing the MPI and headcount ratio in absolute terms. In Tanzania Mainland, the significant and major leaps towards poverty reduction have not been pro-poor between 2001 and 2018. Some of Tanzania's poorest regions seem to have been left behind according to our trend analyses of multidimensional poverty.

To complete the picture of analysing both multidimensional and monetary poverty over time, we identify the joint distribution of monetary and multidimensional poverty and estimate the dynamics of moving in and out of either one, both, or none. We believe that this is the first study doing so for Tanzania and the first for this time period.

Our paper thus contributes to the growing literature on dominance analyses of multidimensional poverty, trends over time and the dynamic inter-linkages between monetary and multidimensional poverty.

The draft paper is starts out with a brief background on poverty in Tanzania in Section 2, followed by a description of the data, methodology and analyses of results in Sections 3, 4, and 5, respectively. Section 7 concludes.

2 Background

The history of poverty levels using money metric measures of poverty and social economic effects of poverty in Tanzania Mainland has been well documented (NBS, National Bureau of Statistics, 2002, 2007, 2014, 2019). The government of Tanzania is highly concerned with the high rate of poverty and, in response to the continued efforts to reduce poverty has formulated various policies and strategies for addressing the problem. These include: Poverty Reduction Strategy Paper (PRSP) 2000/01-2002/03; National Strategy for Growth and Reduction of Poverty - MKUKUTA I 2005/06 - 2009/10 and MKUKUTA II 2010/11 - 2015/16; and National Five-Year Development Plans (FYDPs) through the Long-Term Perspective Plan (LTPP) which is the Tanzania Vision 2025. The target of Vision 2025 is to achieve a high quality of livelihood for its citizens; peace, stability, and unity; good governance; a well-educated society; and a competitive economy capable of producing sustainable growth and shared benefits. All these plans and strategies were mainly committed to accelerating economic growth and eradicating poverty, particularly abject poverty. To track the implementation of these plans/strategies, several monitoring frameworks have been developed and implemented including Poverty Monitoring Master Plans, MKUKUTA Monitoring Master Plans (MMMP-I and MMMP-II), which were aimed at tracking progress on poverty reduction and measuring the achievements of MKUKUTA I and MKUKUTA II. On the other hand, in 2016-17, Poverty Monitoring System (PMS) 2016/17 - 2020/21 was developed to track poverty reduction progress as an integral part of the Monitoring and Evaluation Strategy (MES), which monitored implementation progress of the Second National Five-Year Development Plan 2016/17 – 2020/21(FYDP II). FYDP II M&E strategy did not merely focus on poverty but rather broadly on economic growth and human development. In the same line, the Government in the year 2000 established Tanzania Social Action Fund (TASAF) as an instrument towards advancing social protection agenda and poverty reduction through the Community-Driven Development (CDD) approach. This approach to poverty alleviation supports the decentralization policy by ensuring that citizens at the grassroots level have a voice and participate in the planning and implementation of local development initiatives. The Government has implemented three phases of TASAF and other related programs since 2000. Currently, the Government is implementing TASAF III (Productive Social Safety Net – PSSN) which has been under implementation since August 2012 and is operating within the context of National Poverty Reduction and Social Protection Instruments that are emphasized in the Second Five Year Development Plan 2016/17 - 2020/21.

There is evidence to show that these interventions are producing the desired positive effects, i.e. reducing the levels of poverty.

As shown by for example in World Bank (2019), in the first two decades of this millennium, Tanzania Mainland has seen a significant change in poverty levels among its population. The basic needs poverty rate has declined from 35.7 percent in 2001 to 26.4 percent 2018. World Bank (2019) report that the reduction of poverty was faster in the period between 2007 and 2012 than thereafter. Over this same period, poverty rates in rural areas, have decreased from 33.4 to 31.3 percent, while urban poverty remain unchanged close to 16 percent.

Multidimensional poverty in the region Sub-Saharan Africa has been the poorest region globally, with the highest number of multidimensionally poor people. Nevertheless, many sub-Saharan African countries have seen progress over time (Jennings and Oldiges, 2020). While progress was made in in several indicators of the global MPI, at the same time, clusters of high multidimensional poverty have emerged in sub-national regions. This is particularly so across the entire Sahel region, stretching all the way to the horn of Afria in the East. Moving further, the clusters of high poverty include some areas in the Victoria Lake region, including many parts of Tanzania (Jennings and Oldiges, 2020). Thus despitre reductions in the global MPI, Tanzanian regions are still among some of the poorest regions globally.

3 Data

We rely on data from Household Budget Surveys (HBSs) for 2000/01 and 2017/18 and for regional comparisons over time, we make careful adjustments.

3.1 Household Budget Surveys

The HBSs are intended to collect, compile and analyses numerical information on household income, consumption and expenditure. From this information it is possible to assess the impact of various policies on the people and consequently identify the most vulnerable groups of the population. It is worth noting that, between the 2001 and 2017/18 HBSs there were other two HBS surveys that were conducted in 2007 and 2011. The four HBS surveys vary in nature, scope, coverage, and purpose. They however, share a common design in the sense that all Household Budget Surveys use a two-stage probabilistic sampling technique. The first stage involves the selection of sample points (clusters), consisting of enumeration areas (EAs) delineated from the Tanzania Housing and Population Census (PHC). The second stage, involves a systematic selection of households selected from a complete list of households obtained after conducting household listing exercise in all selected clusters prior to the fieldwork. The motive behind of using the 2001 and 2017/18HBS datasets was due the fact that, these surveys were designed to give estimates at regional levels compared to the 2007 and 2011 HBSs which were designed to provide results at four domains (Dar es Salaam, Other Urban Areas, Rural Areas and Tanzania Mainland). The designs of the 2001 and 2018 HBS provide flexible in the analysis to track poverty trends over the past 17 years across the regions of Tanzania Mainland. Thus, the previous HBS datasets will not be used due to their incompatibility with the designs of the 2001 and 2018 HBS. However, it should be noted that the number of regions on Tanzania Mainland in 2017/18 HBS differ slightly from the number of regions that were there in 2000/01 HBS. For instance, in 2000/01 HBS the number of regions was 20. After the 2002 PHC, the number of regions was increased from 20 to 21. On the other hand, after the 2012 PHC, Tanzania Mainland's regional administrative units were reformed from 21 regions to 25 regions. Similarly, at the end of 2016, a new region—Songwe—was formed, increasing the total number of Tanzania Mainland regions to 26. Therefore, comparisons of estimates across the regions from the 2000/01 and 2017/18 HBS surveys should be made with caution.

3.2 New regions

In order to create a regional panel between 2000 and 2018, we take into account several changes in the regional formations as described in the appendix. As a result, we consider Manyara as a Arusha region; Geita as Mwanza; Katavi as Rukwa; Njombe as Iringa; Simiyu as Shinyanga; Songwe as Mbeya.

4 Measures of Poverty

4.1 Multidimensional poverty

Multidimensional poverty has become a standard measure of poverty in recent years. Building on extensive research in the field of poverty measurement and inequality (Sen, 1981; Atkinson, 2003; Bourguignon et al., 2010; Bourguignon and Chakravarty, 1999; Ferreira and Lugo, 2013; Alkire and Foster, 2011a) and much debate on how useful a counting approach of simultaneous deprivations may be (Alkire and Foster, 2011b; Ravallion, 2012; Silber, 2011), the first global multidimensional poverty index (MPI) was released in 2010, jointly by the UNDP and OPHI at the University of Oxford. This allowed for a world-wide ranking of acute poverty (Alkire and Santos, 2014), which has been updated and refined until today (UNDP and OPHI, 2022), with MPI figures published in the Human Development Reports of the United Nations Development Programme. The World Bank's Atkinson Commission (Atkinson, 2017) called for a review of how poverty is estimated at the Bank, and asked for the Alkire-Foster counting approach to become part of the poverty measurement tools. In addition, several countries in Latin America, Africa, and Asia have adopted the method and produced national MPIs to monitor trends and inform policy.

To measure multidimensional poverty for Tanzania, we follow recent advances made by the Tanzania Mainland National Bureau of Statistics in designing an index. We adopt most indicators that were agreed upon and refer the reader to the upcoming release of the official report for a justification of indicators and cut-offs. To a large extent the indicators chosen are similar (if not identical) to the global MPI indicators, as shown in Table 1. Furthermore, the Tanzania MPI includes three dimensions covering health, education, and living standards, each weighted by 1/3. Indicators within dimensions are weighted equally, resulting in the six indicators of living standards to received the lowest weights of 1/18, whereas health and education indicators are assigned a weight of 1/9 and 1/6, respectively.

Dimensio	nIndicator	Household is deprived if	Weight		
		A child under 18 has died in the			
Health	Food Security	household in the five-year period	1/9		
		preceding the survey.			
	Safe Drinking Water	The household's source of drink-	1/9		
	0	ing water is not safe.	7		
Sanitation		Household does not use SDG	1/9		
		Standard tollet facilities			
	School Attendance	Not all school-aged children are	1/6		
Education	1	Na aligible haugehold member hag	,		
	Very of Schooling	accompleted seven years of school	1/6		
	rears of Schooling	ing	1/0		
		Household doos not have clean			
	Cooking fuel	cooking fuel	1/18		
		Household does not have electric-			
Living	Electricity	ity	1/18		
Standards	8	The household has inadequate			
	Housing Conditions	housing materials in any of the	1 /10		
		three components: floor, roof, or			
		walls			
	Odi	Household has more than 3 mem-	1 /10		
	Overcrowding	bers per sleeping room	1/18		
	Financial Accord	Household does not have a bank	1 /10		
	Financial Access	account	1/10		
		The household does not own more			
		than one of these assets: radio,			
	Assets	TV, telephone, computer, animal	1/18		
	110000	cart, bicycle, motorbike, or refrig-	1/10		
		erator, and does not own a car or			
		truck, land or livestock			

Table 1: Tanzania MPI Dimensions, Indicators, Cut-offs, and Indicator Weights

Source: Building on the structure and definitions of the global MPI Alkire, Kanagaratnam and Suppa (2021), the majority of indicators build on the still embargoed national MPI that is being developed by the National Bureau of Statistics (NBS), Tanzania Mainland. For comparison over time some indicators had to be dropped and/or adjusted. Figures shown in this paper are thus different from future official figures.

In a nutshell, the MPI is computed by multiplying its two components: the incidence and the intensity of poverty. The incidence or the proportion of the multidimensionally poor people is referred to as the headcount ratio (H) of multidimensional poverty. As applied in this paper for the main results, with a poverty cut-off of 1/2, any person that is deprived in at least 1/2 of the weighted indicators is identified as MPI poor. In other words, if a person's counting vector, which sums up all weighted deprivations, is greater than 1/2, a person is multidimensionally poor. In the robustness and dominance analyses, we make use of the counting vector and

implicitly apply all possible poverty cut-offs to test for dominance in poverty trends.

The average intensity (A) of multidimensional poverty reflects the average deprivation share among the poor. The MPI is thus the product of H and A:

$$MPI = H \times A \tag{8.2}$$

Since for each indicator an indicator-specific cut-off is applied, the global MPI relies on a dual cut-off approach – the poverty cut-off and the indicator cut-offs (Alkire and Foster, 2011a).

4.2 Monetary poverty

For the measurement of monetary poverty, we use the Foster Greer Thorbecke (FGT)–class of indexes of poverty and the 'basic needs' poverty line estimated by the Tanzania Mainland NBS as discussed in for example World Bank (2019).

While for the main results we rely only on the headcount ratio (P_0) , additional analyses will also take into account the poverty gap (P_1) , squared poverty gap (P_2) , as part of the decomposable FGT-class of poverty measures Foster et al. (1984), and the general formula to compute them is as follows.

$$P_{\alpha} = FGT(\alpha) = \frac{1}{N} (\sum_{i=1}^{N} I(x_i < z) [1 - \frac{x_i}{z}]^{\alpha}, \alpha > 0$$
(8.1)

where α is a "poverty aversion" parameter (larger α gives greater weight to larger poverty gaps, i.e., poorer people), and z is the poverty line. For the purpose of this paper, z is set to Tshs. 5,295 in 2000 and 49,320 in 2018.

5 Results

We present our main results in Table 2, which shows MPI estimates for the years 2000 and 2018 in separate columns. These include the incidence or percentage of MPI poor people (H), the average intensity of multidimensional poverty among the MPI-poor population (A), and the MPI as the product of the two. Furthermore, in Table 2 we report the number MPI-poor populations in 2000 and 2018. This is complemented by the headcount ratio of monetary poverty (P0) in 2000 and 2018 and its corresponding figure for the number of poor people. We report these results are the national, rural, urban level as well as for 20 regions that can be compared over time.

At the national level, we find that the MPI almost halved from 0.507 in 2000 to 0.268. Similar poverty reduction trends have been reported for other major countries, such as India, which reduced the global MPI by more than half and moved more than 270 million people out of multidimensional poverty within a decade (Alkire, Oldiges and Kanagaratnam, 2021). For India, one major driver was the reduction in intensity. In the case of Tanzania, however, we find that the A reduced only by 5 percentage points between 2000 and 2018, whereas the incidence of poverty (H) reduced by almost half. The latter declined from 76.5 percent in 2000 to 43.7 percent, rivalling other countries and indicating remarkable progress.

				2000						2018		
Region	MPI	Η	А	No. poor	P0	Nr. P0	MPI	Η	А	No. poor	P0	Nr. P0
National	0.507	76.5	66.3	24009	35.8	11233	0.268	43.7	61.2	23585	26.3	14187
Rural	0.585	87.4	66.9	22118	38.8	9829	0.342	55.5	61.7	20414	31.3	11521
Urban	0.186	31.0	59.9	1891	23.0	1405	0.107	18.5	57.9	3171	15.5	2666
Arusha	0.545	78.7	69.2	1593	38.9	786	0.277	44.5	62.3	1468	27.2	898
Dar Es Salaam	0.106	18.3	58.2	332	17.3	315	0.060	10.7	56.4	563	7.9	419
Dodoma	0.543	84.7	64.1	1499	34.3	607	0.323	52.0	62.0	1254	23.1	556
Iringa	0.378	63.4	59.6	843	28.8	383	0.163	27.6	59.2	596	19.4	420
Kagera	0.586	86.4	67.8	1929	29.0	647	0.419	65.5	63.9	1776	32.0	869
Kigoma	0.524	78.1	67.2	861	39.5	436	0.359	58.2	61.7	1541	33.8	894
Kilimanjaro	0.374	64.3	58.2	744	30.6	354	0.128	22.4	57.1	379	10.6	180
Lindi	0.641	91.1	70.3	755	53.0	439	0.317	52.0	61.0	615	38.0	449
Mara	0.581	86.8	67.0	1251	45.9	661	0.343	58.1	58.9	1417	23.2	566
Mbeya	0.390	63.8	61.1	1426	20.6	460	0.212	34.9	60.6	1368	20.8	817
Morogoro	0.463	70.3	65.8	1144	29.1	473	0.193	31.4	61.7	962	18.5	567
Mtwara	0.493	78.3	63.0	821	38.1	400	0.279	44.3	63.1	771	29.0	506
Mwanza	0.530	78.2	67.8	2213	47.7	1350	0.319	52.8	60.3	2958	35.8	2003
Pwani	0.598	86.7	68.9	656	46.2	349	0.240	40.2	59.6	593	27.9	411
Rukwa	0.531	82.2	64.6	854	31.0	322	0.327	51.6	63.5	1032	40.9	818
Ruvuma	0.455	72.6	62.6	749	41.3	425	0.118	20.6	57.3	347	30.6	516
Shinyanga	0.642	91.8	69.9	2452	42.8	1141	0.393	63.6	61.8	2269	36.2	1290
Singida	0.592	87.7	67.5	1075	54.9	673	0.306	51.0	60.0	958	34.0	639
Tabora	0.562	85.3	65.9	1365	25.9	414	0.366	58.4	62.7	1194	34.5	705
Tanga	0.628	88.5	70.9	1450	36.5	598	0.297	48.2	61.5	1525	21.1	666

Table 2: MPI results for 2000 and 2018

Note:

Authors' calculations based on HBS 2000 and HBS 2017/18.

 1 Number of poor is in thousand.

Comparing the decline in the headcount ratio of multidimensional poverty (H) with the trend in headcount ratio of monetary poverty (P0, we find that the decline in H was much faster than in P0. As reported by World Bank (2019), monetary poverty reduction has been laudable. Therefore, the even stronger reduction in multidimensional poverty seems exceptional.

Both strong declines in the percentage of multidimensional and monetary poor people, however, are not accompanied with equally strong declines in the absolute number of populations that are poor. In the case of multidimensional poverty, the absolute number of MPI-poor people remained almost constant at around 24 million people. Mirroring earlier observations by World Bank (2019), the number of people living below the monetary poverty line increased within the two decades. Therefore, reiterating World Bank (2019), population growth among the poorest population sub-groups was higher than the poverty reduction rate.

We observe this pattern of stark reductions in MPI, H and P0, which is accompanied by an increase in the number of poor, across regions of Tanzania and particularly so in urban settings. For urban areas as a whole, both MPI and H almost halved, yet the number of poor increase from about 1.9 million people in 2000 to 3.2 million in 2018. Similarly to the national trend, the reduction in the percentage of people living below the monetary poverty line in urban areas was lower, a reduction from 23 percent to 18.5 percent, which was accompanied by an almost two-fold increase in the number of poor people from 1.4 million to 2.7 million.

In largely urban regions, this pattern becomes obvious as well, such as for example in Dar Es Salaam and Mwanza. An exception is the Kilimanjaro region, which saw a reduction in both the MPI and H to almost a third of their level in 2000, and a reduction in the number of MPI-poor people from 744,000 to 379,000. The trend in monetary poverty was similar, with P0 declining from 31 percent to 11 percent, nearly halving the number of people below the poverty line to 180,000 in 2018. Interestingly, another exception is Ruvuma, which similar to the Kilimanjaro region, reduced the number of MPI-poor people by almost one half, along with even greater relative reductions in MPI and H.

For a regional comparison, in Figure 1 we plot the regional levels of the multidimensional headcount ratio in 2000 and 2018 on two maps of Tanzania, applying the borders of 2000.

The regional variation in the headcount ratio shown in Figure 1 highlights that in 2000, the highest rates of multidimensional poverty were in the Western Lake region and in Lindi. In these and many central regions, more than 80 percent of the population was MPI poor. While still the poorest in 2018 with H up to 65.5 percent in Kagera, rates overall have reduced considerably by 2018.





Figure 2: Regional Changes in number of MPI poor population (k=50%)



To highlight the contrast, we show the change in the number of MPI-poor people in Figure 2. The positive (and exceptional) trends in reducing the number of MPI poor people within two decades are obvious for the Kilimanjaro and Ruvuma regions, both with the lowest values in 2018. In contrast, all regions bordering Lake Victoria and further situation to the West saw in increase in the number of MPI-poor people. The same also holds for regions in the Eastern part, including Tanga and Dar Es Salaam.

In Figure 3, we show that the increase in the number monetary poor populations is even starker than recorded for multidimensional poverty. This finding extends the analysis of World Bank (2019) by highlighting the regional variation.

Figure 3: Regional Changes in number of monetary poor population



5.1 Overlaps over time

In the analysis so far, we have analysed the experience of being MPI-poor or monetary poor separately. A unique feature of the HBS rounds applied for this paper, is that the joint experience of multidimensional and monetary poverty can be analysed.

We do so by reporting overlaps in the joint experience of multidimensional and monetary poverty at the national level as well as for all regions in Table 3. We believe that the overlap in both types of poverty is an important statistic which needs to be taken into account. After all, as shown in Table 3, not all MPI poor households are monetary poor and vice versa. In fact, nationally and across most regions, the percentage of population that is poor only according to the MPI is larger than the percentage of people poor in both measures. Exceptions are Dar Es Salaam and Singida and Lindi in 2000, and Ruvuma in 2018. Thus being multidimensionally poor does not imply being monetary poor, and neither vice versa.

Interestingly, the trend within almost two decades is such that the percentage of population experiencing both types of poverty has declined by almost 50 percent.

	2000			2018			
Region	Both	MPI only	P0 only	Both	MPI only	P0 only	
National	31.6	44.9	4.2	16.7	27.0	9.6	
Rural	36.1	51.3	2.7	21.4	34.0	9.9	
Urban	13.0	18.0	10.1	6.6	11.9	9.0	
Arusha	36.7	42.1	2.2	17.8	26.7	9.4	
Dar Es Salaam	9.5	8.8	7.9	2.5	8.2	5.5	
Dodoma	32.5	52.1	1.8	16.3	35.7	6.8	
Iringa	24.4	39.0	4.4	9.3	18.3	10.1	
Kagera	27.9	58.5	1.1	28.8	36.7	3.2	
Kigoma	36.6	41.4	2.9	24.4	33.7	9.3	
Kilimanjaro	22.9	41.4	7.6	6.0	16.4	4.6	
Lindi	51.4	39.7	1.6	26.3	25.7	11.7	
Mara	40.9	45.8	4.9	15.0	43.1	8.2	
Mbeya	16.0	47.9	4.6	10.4	24.6	10.5	
Morogoro	21.4	48.9	7.7	9.2	22.2	9.3	
Mtwara	32.2	46.1	5.9	18.6	25.7	10.4	
Mwanza	41.1	37.1	6.6	25.5	27.3	10.2	
Pwani	42.8	44.0	3.4	16.2	24.1	11.7	
Rukwa	27.7	54.6	3.3	21.4	30.2	19.5	
Ruvuma	34.3	38.3	7.0	11.0	9.6	19.7	
Shinyanga	40.4	51.4	2.4	27.1	36.5	9.0	
Singida	53.7	34.0	1.3	19.5	31.6	14.6	
Tabora	21.8	63.5	4.1	22.6	35.8	11.9	
Tanga	33.4	55.1	3.1	13.2	35.0	7.9	

 Table 3: Overlaps in multidimensional and monetary poverty: 2000 and 2018

Note:

Authors' calculations based on HBS 2000/01 and 2017/18.

We show the variation in this change across regions in Figure 4. The huge reduction in this headcount ratio is visible across all regions, with the exception being Tabora.





Furthermore, it is interesting to note that while the percentage of population poor only according the MPI has declined substantially, the population poor only according to monetary poverty line has increased nationally and across most regions. In urban areas, this percentage has reduced somewhat, visibly so in Dar Es Salaam and Kilimanjaro. Thus, despite a reduction in multidimensional poverty and thus an improvement in living standards, many people increasingly face monetary poverty alone.

5.2 Robustness

In this section, we undertake a few robustness checks with regards to the MPI. After all, the cut-offs chosen and in particular the poverty cut-off may be arbitrary and are in the end chosen based on normative decisions.

As shown in Figure 5, it is clear that irrespective of the poverty cut-off k, multidimensional poverty reduced. We plot headcount ratios over all values of k for 2000 and 2018. Indeed, the highest gap between the two years can be found the cut-off of 50 percent, while the difference in the gap is declining around the cut-off but only marginally so.

Another way of ascertaining the trends established in this paper, is to look at the distribution of weighted deprivations. Since the underlying Alkire-Foster method of the MPI is essentially a counting approach of weighted deprivations, in Figure 6 we show the cumulative distribution function (CDF) of deprivation scores (attainment scores) for the entire sample in 2000 and 2018. A clear shift towards the left (right) in deprivation (attainment) scores is visible, indicating that by 2018 higher population shares experienced less deprivations.

We compute the same CDF for rural and urban areas show these in Figure 7. The overall shift from right to left is visible here as well, indicating the the distribution of deprivation scores experienced in rural areas in 2018 is similar to the one experienced in urban areas in 2000. In other words, there is a catching up by rural areas to urban areas in reducing deprivations.





Based on authors' calculations with data from HBS 2000/01 and 2017/18. 95% confidence intervals (CI) overlay the lines of point estimates.



Figure 6: Cumulative distributions of attainments and deprivations in 2000 and 2018, national

Figure 7: Cumulative distributions of deprivations in 2000 and 2018, rural and urban areas



CDF of Deprivation Scores

6 Pro-poor poverty reduction?

With the idea of "Leaving no one behind" it is of interest to study which regions and subgroups moved fastest in reducing the MPI. Ideally, as in the case of India (Alkire, Oldiges and Kanagaratnam, 2021), one would like to see the poorest regions to move fastest, i.e., via the highest absolute reductions.

In Figure 8, we show that in the case of Tanzania, this is only partially the case. Plotting the absolute change in MPI (negative values) over the starting value of MPI in 2000 for all regions, we find that indeed the least poor region (Dar Es Salaam) accounts for the least absolute reduction. However, among the remaining regions the pattern is mixed and no clear pro-poor poverty reduction can be determined.



Figure 8: MPI Regional Changes (k=50%): Are the poorest moving fastest?

7 Concluding remarks

Poverty reduction in African countries looked promising in the first decades of this millennium – before the COVID-19 pandemic halted this trend (World Bank, 2020). In our paper, we focus on poverty reduction in Tanzania, using two data from two household budget surveys that were almost two decades apart. Motivated by earlier reports on huge progress in reducing the percentage of people living below the national poverty line in combination with an increase in the number of poor people (World Bank, 2019), we provide a reginal trend analysis. We contribute by not only analysing monetary poverty but also multidimensional poverty over time. With national multidimensional poverty indices (MPIs) gaining traction across the continent and global South and multidimensional anchored in SDG 1.2, we believe this makes for a pertinent research question. How did multidimensional poverty fare in Tanzania and are the MPI-poor also monetary poor? Descriptive in nature, we underpin our study with several robustness checks which verify that the trend in multidimensional poverty has indeed been encouraging. Similar to the trend in monetary poverty, however, we find that the number MPI-poor populations did increase in some regions and was almost stagnant nationally. Thus, high population growth amongst the poorest populations has off-set the gains made by others. Our results contribute to the growing literature on multidimensional poverty. We also provide for innovative analyses on the joint experience of multidimensional and monetary poverty. Our results show, that indeed not the same populations are covered by either one measure alone, and that in fact trends in being poor according to one measure differs from the other. Importantly, we find that the population poor according in only monetary poverty increased, while the one poor only according to multidimensional poverty reduced. Thus, despite progress made in many dimensions of poverty, including health, education, and living standards, the same population fell into monetary poverty.

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Appendix

New regions: 2002-05: Manyara region

• Manyara region split from **Arusha**

2012-03-02: Government Notice No. 72 took effect.

- Geita region (capital Geita) formed by taking Bukombe district from Shinyanga region, Chato from Kagera, and Geita from Mwanza;
- Katavi region (capital Mpanda) formed by taking Mpanda district from Rukwa region;
- Njombe region (capital Njombe) formed by taking Ludewa, Makete, and Njombe districts from Iringa region;
- Simiyu region (capital Bariadi) formed by taking Bariadi, Meatu, and Maswa districts from Shinyanga region, and the newly created Busega district from Mwanza.

Songwe

- from Mbeya region
- districts are: Songwe, Mbozi, Ileje and Momba

A Tables

B Figures

Figure B.1: Regional Changes in Headcount ratio (k=33%)

