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The evolution of inequality in Mozambique

1996/97–2019/20

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Abstract: After decades of war, ending in 1992, Mozambique embarked on a path of sustained economic growth and substantial poverty reduction. However, these positive dynamics started to revert from 2015, with per capita growth rates getting close to zero and household real consumption reducing in all areas of the country. Meanwhile, inequality stagnated in the period 1996/97–2008/09, before markedly increasing afterwards. In this study, we analyse some of the most relevant indicators of inequality for Mozambique and their trends over the last 25 years. Using real per capita consumption as the main welfare aggregate, we look at various indicators of inequality, including the consumption distribution, percentiles and percentile ratios, growth incidence curves, Lorenz curves, and Gini indices at the national and subnational levels. In addition, we discuss spatial inequality between urban and rural areas and between regions. Overall, we find that until 2014/15 consumption increased for the whole population, but it did so much more for richer households, leaving the worse-off behind; conversely, in the last few years consumption has reduced across the distribution, but the relative consumption gap between better- and the worse-off people has continued to increase.

Key words: inequality, consumption distribution, spatial inequality, Mozambique

JEL classification: D31, D63, O15

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1 Introduction

Until recently, the issue of inequality in Sub-Saharan Africa (SSA) received relatively limited attention in research and policy agendas. Indeed, the post-independence decades in the region were characterized by a strong focus on modernization, growth, and stabilization of the macroeconomy. The adoption of the Millennium Development Goals (MDGs) shifted the focus to poverty reduction in the early 2000s. Subsequently, the introduction of the UN Sustainable Development Goals (SGDs) in 2015 led to a more comprehensive approach to poverty, which posits that ending poverty and other deprivations must proceed together with reducing inequality. In fact, increasing academic interest in the interconnection of inequality and poverty has led to overarching consensus on the obstructive effect on poverty reduction of high inequality (Berardi and Marzo 2015; Ferreira 2010; Fosu 2016; Odusola et al. 2017). In addition, high levels of inequality are in many cases also associated with reduced social cohesion, economic stability, and long-term economic growth, as well as with conflict and violence (Gradín and Tarp 2019a; Ostry et al. 2014; Stewart 2011; Voitchovsky 2011).

At the same time, the relationship between growth and inequality remains unsettled. Authors such as Banerjee and Duflo (2003) and Cornia et al. (2003, 2004) argue that the relationship between growth and inequality is non-linear, so it changes with the level of inequality. Cornia et al. (2003, 2004) analyse inequality in the post-Second World War period in 73 countries and find that both very high and very low levels of inequality have a negative impact on growth. Bourguignon (2004) proposed a conceptualization that adds poverty to the complex growth–inequality nexus: the 'iron triangle' indicates that variations in the levels of absolute poverty in a country depend on changes in inequality and growth. Ferreira (2010) reviews the literature on this triangular relationship and proposes three 'stylized facts' that are broadly supported by empirical findings. A first, key result emerging from the literature is that contrary to what the Kuznets hypothesis proposed, there is, on average, no statistical correlation between inequality and growth.[1] That is not to say, however, that the role of inequality in the growth–poverty nexus is negligible. On the contrary, the second stylized fact that emerges from the literature is that the elasticity of poverty reduction to economic growth depends on the level of inequality. This means that even though, in general, poverty declines with economic growth, inequality is a mediating factor in the relationship, and the extent of poverty reduction that can be attained in times of economic growth depends on the level of inequality present (Fosu 2016, among others). In particular, the responsiveness of poverty reduction to economic growth is higher when inequality is lower, i.e. the absolute value of poverty–growth elasticity falls with inequality (see for example Fosu 2017). This means that, in general, in countries with lower levels of inequality, the poverty-reducing effect of economic growth is stronger. However, many other factors affect this relationship. Among them, the initial levels of poverty in a country can have a detrimental effect on poverty–growth elasticity (Ravallion 2012), meaning that the detrimental effect of high inequality on the transformation from economic growth to poverty reduction is heightened in countries where the initial poverty rate is higher (Breunig and Majeed 2016).

[1] The Kuznets hypothesis, named after its author, was developed in his 1955 article 'Economic Growth and Income Inequality' and influenced economic research on inequality and growth for decades to come. Kuznets (1955) argued that as economies grow, inequality will initially rise and subsequently fall after a turning point, in line with the progress achieved through the stages of economic development (Kuznets 1955). This inverted U-shape curve, with inequality plotted against income per capita, was reflected in the limited data available at that time. Subsequent studies have disputed Kuznets' empirical findings (see, among others, Deininger and Squire 1997; Ravallion 1995), casting doubt on the inevitability of the inverted U-shape relationship between income and inequality.

SSA is among the most unequal regions of the globe. Analysing the population-weighted Gini index for the years 1950–2019 taken from the WIID database (UNU-WIDER 2021), Gradín (2021) shows that inequality in the region was stable until the mid-1980s. It then increased until the early 1990s and subsequently decreased until the early 2000s, after which it stayed relatively stable until 2019, but still at very high levels (above 0.50).

At the same time, the number of people living below the poverty line is increasingly concentrated in SSA, so that extreme poverty is becoming an 'African' phenomenon (Roser 2021; Hasell et al. 2022). Indeed, while remarkable economic growth has taken place in the region in recent decades, and the poverty-reducing impact of growth has been perceptible, it has been heterogeneous. Moreover, while inequality in the region remained relatively stable on average until recent years (Alvaredo and Gasparini 2015; Gradín 2021; Niño-Zarazúa et al. 2017), the uneven growth of the past decades and recent crises such as COVID-19 could lead to increasing inequality in what is an already fragile context. This can cause poverty reduction rates below the potential and negative repercussions in terms of social and economic stability.

In this study, we analyse some of the most relevant indicators of inequality for Mozambique and their trends over the last 25 years. After decades of war, ending in 1992, Mozambique embarked on a path of strong economic growth that substantially reduced the initially towering poverty levels. However, an increase in inequality accompanied the reduction of poverty, especially after 2008/09. Indeed, the household budget surveys carried out in Mozambique from 1996/97 onwards reveal that inequality, as measured by taking consumption as the main welfare aggregate, increased only slightly in the early 2000s and remained almost constant until 2008/09. However, the 2014/15 data reveals a much higher increase in consumption inequality, which continued on an even steeper trend from 2014/15 to 2019/20.[2]

Simultaneously, after 2014/15 the country suffered a series of economic, natural, social, and political shocks. This translated into a sharp drop in GDP growth rates, as well as a steep increase in prices, especially those of food and basic products. A very large drop in household real consumption and a worsening of all of the main economic inequality indicators also appeared, the latter in line with what was observed in the 2008/09–2014/15 period.

As mentioned above, the main welfare aggregate used to assess inequality in the country is consumption. This is common in developing countries, where income estimates obtained from surveys present problems due to the limited extent of the formal sector and the constrained capacity to assess the incomes of people working in subsistence agriculture or self-employed people running micro-businesses, for example because of illiteracy leading to their estimates of their incomes being reported incorrectly.

Our data are in focus in Section 2, while Section 3, the core of the study, presents our results. We start by looking at the consumption distributions (Section 3.1); then we analyse the evolution of selected percentiles, percentile ratios, and shares of the consumption distribution and growth incidence curves relative to different time periods (Section 3.2); and Lorenz curves and (relative and absolute) Gini indices at national and subnational level and spatial inequality between urban and rural areas and between regions (Section 3.4). Finally, we present the conclusions in Section 4.

[2] All results relative to 2019/20 discussed in the present study are to be considered as preliminary, as of October 2022.

2 Data

The data employed in this study consist of the five household budget surveys conducted in Mozambique in 1996/97 and 2002/03 (Inquéritos aos Agregados Familiares, abbreviated as IAF96/97 and IAF02/03 respectively) and in 2008/09, 2014/15, and 2019/20 (Inquéritos aos Agregados Familiares sobre Orçamento Familiar, abbreviated as IOF08/09, IOF14/15, and IOF19/20 respectively). The Instituto Nacional de Estatística (INE) has collected the surveys. They contain detailed information on the consumption expenditure of nationally representative samples. IAF96/97, IAF02/03, IOF08/09, and IOF19/20 have a similar design, and collect consumption data for 8,250, 8,700, 10,832, and 13,343 households respectively, interviewed once over four quarters. In contrast, IOF14/15 has a slightly different design, in that it carries information for about 11,000 households interviewed three times between mid-2014 and mid-2015, but it maintains a high degree of comparability with the other surveys in terms of the measurement of consumption expenditure, households' access to services and durable goods, etc. In order to avoid seasonal bias, which does not occur in the other waves, for IOF14/15 we use the pool of households interviewed. All the surveys have the individual as a unit of analysis, but the income-sharing unit is the household. Therefore, each individual is attributed per capita consumption and the characteristics of their households. All the IAFs/IOFs were designed and implemented by INE, whereas the poverty analyses were performed by the Ministry of Economics and Finance with technical assistance from various partners including the International Food Policy Research Institute (IFPRI), UNU-WIDER, and University of Copenhagen, depending on the survey year. Further information can be found in DNEAP (2010), DNPO (1998, 2004), INE (2004, 2010, 2014, 2021), MEF-DEEF (2016), and MEF-DNPED (forthcoming).

In what follows, the main indicator employed is real per capita consumption, as constructed in the poverty assessments following each household budget survey round. As mentioned in the introduction, using consumption instead of income to analyse inequality is in line with the approach normally used in countries of the Global South, and especially in SSA. We briefly discuss in this section the construction of the real per capita consumption indicator; further details can be found in the Fourth National Poverty Assessment (MEF-DEEF 2016), which employs the PLEASe methodology as in Arndt et al. (2017).

First, we obtain nominal consumption by aggregating daily, monthly, and yearly consumption expenditures, estimates of consumption from own production, in-kind receipts, imputed and actual house rents, use value of durable goods, etc. Then, we obtain nominal consumption values in different areas of the country and at different times of the year and make them comparable through a process consisting of two normalizations. Finally, we use the consumption aggregate resulting from these two normalizations and calculate real consumption per capita. The two normalization processes undertaken in each survey include the following steps. First, we use the spatial price indices computed separately for 13 relatively homogeneous spatial domains in the country to correct for spatial variation; second, we use the temporal price indices computed for each of the three regions and urban and rural areas to correct for seasonal changes, and we calculate current real consumption.

In this way, and using the spatial price indices, we account for the fact that the cost of living differs between different areas of the country and between urban and rural areas (the 13 spatial domains largely correspond to a division of the country into provinces and into urban or rural areas).[3]

[3] The 13 spatial domains, identified as being relatively homogeneous, are: Niassa and Cabo Delgado (rural), Niassa and Cabo Delgado (urban), Nampula (rural), Nampula (urban), Sofala and Zambezia (rural), Sofala and Zambezia

Moreover, by using the temporal price indices we take into account that the cost of acquiring the same basic products differs from season to season. In sum, these two normalizations make consumption expenditure in different areas of the country and different seasons of the year comparable.

After undertaking these two normalizations for all surveys rounds, we need to make the real consumption data comparable over time. Analysts sometimes do this by using a price index such as the consumer price index (CPI) as deflator. However, this choice has disadvantages—namely that the CPI is generally not representative of the expenditure patterns of the poorest part of the population and that the CPI in Mozambique is estimated using prices obtained from only a limited number of urban areas. Hence, we prefer to use as deflator the corresponding official poverty line for real consumption obtained in each survey round.

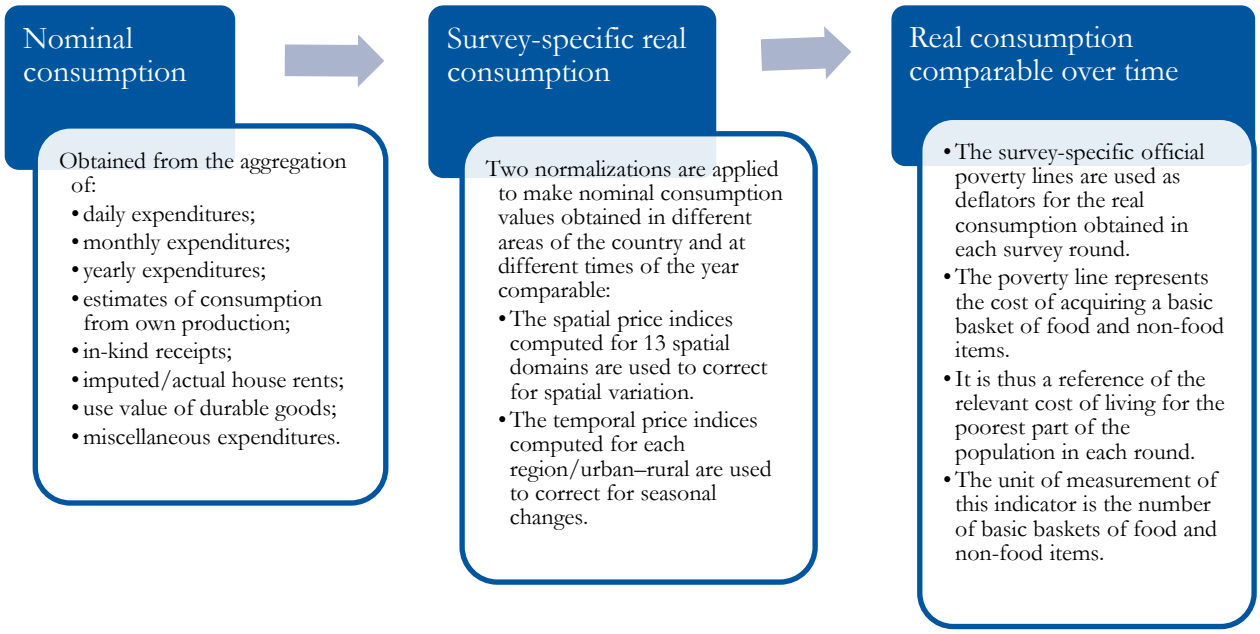
The poverty line represents, in each survey round, the cost of acquiring a basic basket of food and non-food items, and is thus a reference for the relevant cost of living for the poorest part of the population in each round. Therefore, to obtain real consumption in constant terms over time, we proceed by dividing the real consumption obtained for each survey round by the corresponding official poverty line. Given that the poverty line is the same for all individuals within a survey wave, dividing real consumption by the poverty line of the same survey does not affect the calculation of relative inequality. The indicator thus obtained describes the change over time in the household purchasing power of a flexible basket of basic food and non-food items.[4] The unit of measurement of this indicator, given that it is computed by dividing the real consumption obtained for each survey round by the corresponding official poverty line, is the number of basic baskets of food and non-food items. A summary of the steps followed is included in Figure 1.

While the household budget surveys employed in this analysis are the main source of data on consumption and wellbeing in Mozambique, one limitation that comes with the IAFs and IOFs is that of the under-reporting of food consumption. This limitation is caused partly by rare but important purchases, such as flour and grains. The issue was not as prevalent in the earlier waves as it is in the more recent IOF14/15 and IOF19/20; additional information on the possible reasons for this can be found in MEF-DEEF (2016). In addition, while under-reporting of food consumption was limited to urban areas in the south of the country, in the two latest surveys the problem appears in rural areas as well.

(urban), Manica and Tete (rural), Manica and Tete (urban), Gaza and Inhambane (rural), Gaza and Inhambane (urban), Maputo Province (rural), Maputo Province (urban), Maputo City.

[4] The CPI in Mozambique is estimated using prices in a limited number of urban areas. The poverty lines for each household budget survey in contemporary currency are 5,502 meticais (MZM) in 1996/97, MZM8,307 in 2002/03, MZN17.93 in 2008/09, MZN29.19 in 2014/15, and MZN58.39 in 2019/20.

Figure 1: From nominal to real consumption, Mozambican case



Source: authors' illustration based on DNEAP (2010), DNPO (1998, 2004); MEF-DEEF (2016), and MEF-DNPED (forthcoming).

3 Results

In this section, we start by looking at the consumption distributions. Then, we analyse the evolution of selected percentiles, percentile ratios, and shares of the consumption distribution, before moving on to growth incidence curves relative to different time periods, Lorenz curves, and (relative and absolute) Gini indices at national and subnational levels. Finally, we include a discussion on spatial inequality between urban and rural areas and between provinces/regions.

3.1 Consumption distributions

We start by discussing real consumption distributions. Figure 2, panel a, shows real consumption distributions for each household budget survey conducted from 1996/97 to 2019/20. Panel b shows real consumption distributions from 1996/97 to 2014/15 and panel c shows real consumption distributions from 2014/15 to 2019/20. The accumulated average annual growth rate of real per capita consumption over the entire period is 1.6 per cent. However, there is considerable variation in the rate across the different subperiods. From 1996/97 to 2002/03, the average annual growth rate was at its highest, standing at 5.2 per cent. However, in the subsequent period, i.e. until 2008/09, consumption almost stagnated, while it increased again at an annual rate of 3.3 per cent between 2008/09 and 2014/15. Between 2014/2015 and 2019/20, consumption decreased at an annual average rate of 5.7 per cent. This contributes to lowering the overall average annual growth rate over the 1996/97–2019/20 period to only 1.6 per cent, while if we only consider the 1996/97–2014/15 period the accumulated average annual growth rate is almost double, at 2.9 per cent.

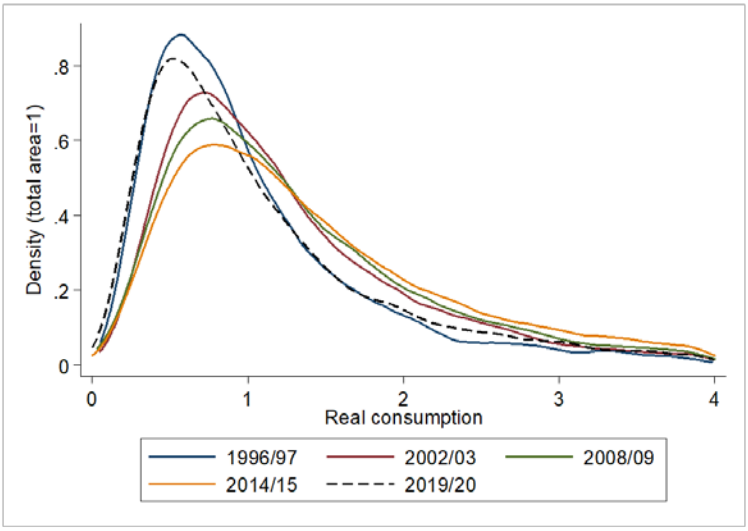
Until 2014/15, real per capita consumption increases occurred across the distribution, and the densities in focus here all shifted to the right (respectively, the blue, red, green, and yellow lines in

Figure 2, panel b). This corresponded to a steep reduction in poverty incidence from about 70 per cent in 1996/97 to 46 per cent in 2014/15, though again the rate of decline was heterogeneous in the different subperiods. In particular, poverty incidence dropped steeply from almost 70 per cent to about 53 per cent in the first subperiod (1996/97–2002/03), then declined only slightly from 53 per cent to close to 52 per cent in 2008/09. The decline was again more significant from 2008/09 to 2014/15, to an incidence of 46 per cent.

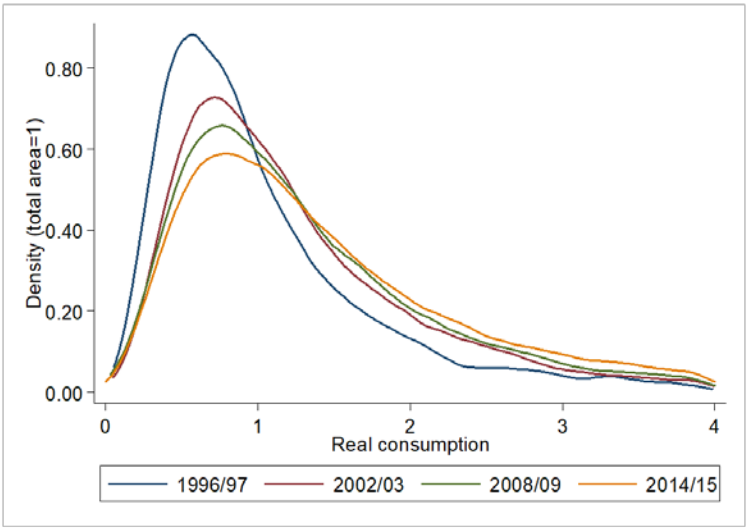
Conversely, during the 2014/15–2019/20 subperiod, decreases in real per capita consumption took place across the entire distribution, and the density shifted significantly to the left (Figure 2, panel c). This is consistent with the drop in expenditures also reported by INE in its survey report (INE 2021).

Figure 2: Real consumption distributions, 1996/97–2019/20

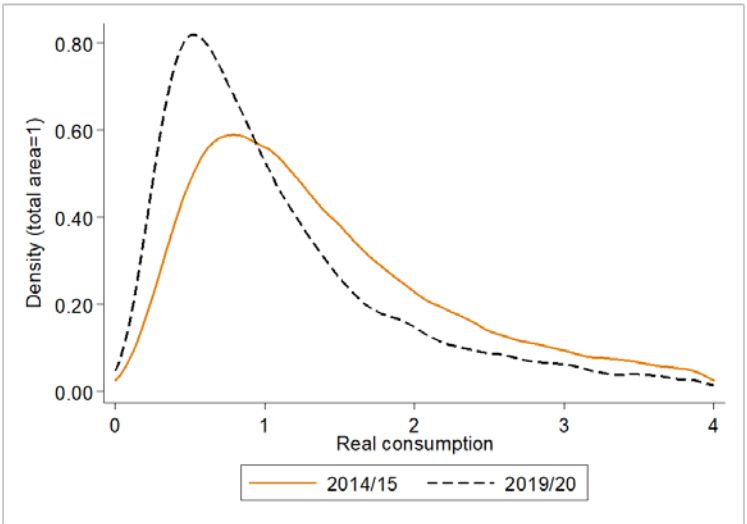
2a: 1996/97–2019/20



2b: 1996/97–2014/15



2c: 2014/15–2019/20



Note: densities are drawn so that the total area below each line equals 1. In each survey, nominal consumption is transformed into real consumption by applying a spatial and a temporal deflator to make nominal consumption values obtained in different areas of the country and at different times of the year comparable. To make real consumption values obtained in different survey rounds comparable, we divide survey-specific real consumption values by corresponding official poverty lines. Given that the poverty line represents the cost of acquiring a basic basket of food and non-food items, it is a reference of the relevant cost of living for the poorest part of the population in each round. The unit of measurement of this indicator is thus the number of basic baskets of food and non-food items.

Source: authors' illustration based on IAF96/97, IAF02/03, IOF08/09, IOF14/15, and IOF19/20.

3.2 Distribution percentiles, percentile ratios, consumption shares, Palma ratio, and growth incidence curves

For the analysis of how growth impacted different percentiles of the populations, shown in Figures 3, 4, and 5, it is useful to divide the 1996/97–2019/20 period into two subperiods, 1996/97–2014/15 and 2014/15–2019/20. However, we begin by introducing the concepts used in the figures before moving to the discussion of the results.

We start with the concepts of percentiles and percentile ratios. The percentiles of a distribution are identified by dividing the distribution into a hundred equally sized groups; in terms of the real consumption distribution analysed, percentile 1, or p1, includes the poorest 1 per cent of the population in each year. Similarly, percentile 5 in a certain year, p5, includes all individuals in the population who belong to the fifth percentile of the real consumption distribution in that year. While they are not the most extremely poor individuals in the country, they are very close to the bottom of the distribution. Conversely, percentile 95, p95, includes all individuals in the population who belong to the 95th percentile of the real consumption distribution in that year, i.e. individuals who are very close to the top of the distribution. Showing the average real per capita consumption for specific percentiles and for different years provides a good measure of inequality, in that it shows if specific percentiles located at the bottom, at the top, or at the median of the distribution gained in terms of welfare levels over time.

Another widely used measure of inequality is the ratio between specific percentiles for different years. Differently from the percentiles, the percentile ratios show the amount by which the consumption of a certain group of individuals in a certain percentile of the distribution is bigger or smaller than that of another group of individuals in another percentile of the distribution. For example, we indicate the ratio between p95 and p5 as p95/p5, and it shows how many times bigger

the consumption levels of individuals in the 95th percentile are compared with that of individuals in the 5th percentile, over time. If the gap widens, it may mean that either the individuals towards the bottom of the distribution are not gaining in terms of consumption levels or individuals towards the top of the distribution are gaining more than their counterparts, or that some combination of these two processes is occurring.

Another set of measures of inequality commonly reported includes consumption shares and the Palma ratio (or index). A consumption share is the share of total consumption captured by a specific group in the consumption distribution. As an example, if total daily consumption in a certain country is equal to Y dollars and the poorest (bottom) 40 per cent of the distribution has a total daily consumption of Y/5 dollars, this entails that the share of total consumption of the bottom 40 per cent is equal to 20 per cent. Instead, if the top 10 per cent of the distribution has a (total) daily consumption of $Y \times 0.6$ dollars, this means that the share of total consumption of the top 10 per cent is equal to 60 per cent.

The Palma ratio measures the ratio between the shares of the top 10 per cent and the bottom 40 per cent of the distribution. In the example above, it would be equal to 60 per cent/20 per cent = 3. This would indicate that the top 10 per cent of the distribution has a share of consumption which is three times that of the bottom 40 per cent.

In what follows (especially in Figures 4 and 5), we also compute and usea series of growth incidence curves (GICs). The GIC is a useful tool that permits us to analyse easily the impact of aggregate economic growth over a wide range of the distribution (Ravallion and Chen 2003). Given that our reference welfare aggregate is real consumption, the GICs discussed in what follows show the (annual) growth rate in real consumption that occurred between two different survey rounds, at each percentile of the distribution. The use of these tools allows us to understand, for example, if the consumption of poorer percentiles grew more or less than that of richer percentiles in each period.

Returning to the analysis of how growth impacted different percentiles of the population, shown in Figures 3, 4, and 5, we mentioned above that it is also useful to divide the entire 1996/97–2019/20 period into two subperiods, 1996/97–2014/15 and 2014/15–2019/20. Concerning the first subperiod, Figures 3 and 4 (panels a, b, and c) show that the richest percentiles of the distribution experienced increases in real per capita consumption that are significantly larger than those experienced by poorer percentiles. Moreover, this is so even at the median of the distribution. Earlier studies conducted on the first two household budget surveys confirm these results, finding higher growth in consumption for richer households, which leads to an increase in inequality (Arndt et al. 2006). This pattern is very pronounced in the years between 2008/09 and 2014/15 (Figure 4 panel a, bottom left). In particular, between 1996/97 and 2002/03, the consumption of all percentiles analysed grew positively, being slightly higher for higher percentiles (Figure 4, panel a, top left). In the period 2002/03–2008/09, consumption growth was low—slightly above zero—for most percentiles, but it was actually negative for those in the bottom 10 per cent of the real consumption distribution (Figure 4, panel a, top right). Between 2008/09 and 2014/15, people at the very bottom and people in the top 10–20 per cent of the consumption distribution had the highest growth rates; the p99 showed growth rates of about 6 percentage points above the median (i.e., about 7.5 per cent compared with about 1.5 per cent at p50; Figure 4, panel a, bottom left). During the 2014/15–2019/20 period, growth continued to disproportionally benefit the relatively better off, even though the real consumption growth rates were negative for the whole distribution: the contraction in consumption was smaller for higher percentiles than it was for lower ones (Figures 3, 4, and 5). In particular, the poorest 10 percentiles experienced a contraction in real consumption, with negative growth rates below −8 per cent,

whereas real consumption contracted for the richest percentiles by only about 5 per cent or less (Figure 4, panel a, bottom right).

Comparing all survey years to the latest year (Figure 5) reveals a bleak picture for the bottom of the distribution. While the annual growth rate of real consumption is positive or only mildly negative in each comparison for top of the distribution (except for the GIC 2014/15–2019/20, where, as discussed above, the richest percentiles also experienced strongly negative growth rates), the poorest 10 percentiles in all cases seem to have suffered a sharp contraction in real consumption (Figure 5, panel b). In particular, the GIC 1996/97–2019/20 (Figure 5, panel a, top right) reveals that the real consumption of the bottom 10 percentiles had declined by 2019/20 even in comparison with 1996/97, with negative annual growth rates ranging from about −1 per cent to −2 per cent. On the contrary, the richest percentiles saw a positive growth rate, with the top of the consumption distribution attaining annual growth rates of 1–2 per cent. The scenario is similar for the GIC comparing the 2002/03 and 2008/09 surveys with that of 2019/20 (Figure 5, panel a, top left and bottom right), though the decline in real consumption for the bottom 10 percentiles of the distribution is even sharper, up to about −4 per cent.

Inequality analysis in terms of percentile ratios (Figure 3, panel b) helps to deepen the understanding of Mozambique's evolution and of the long-term trends for the different consumption groups. The 1996/97 estimates show that relatively small consumption gaps existed among different percentiles of the consumption distribution, i.e. society was relatively more equal, but it was also characterized by very high level of overall deprivation. Until 2014/15, the p50/p10 ratio increased from 2.2 to 2.4, while the p90/p50 ratio increased from 2.4. to 2.6. As shown in Figure 3, panel b, a large part of the increase in the ratios selected occurred between 2008/09 and 2014/15. Estimates based on the latest household budget survey (IOF19/20) indicate that price increases that occurred after 2014/15 hit everyone in the consumption distribution, significantly lowering real consumption compared with previous years. However, even though people in both high percentiles and in lower percentiles were affected, the percentile ratios between high percentiles, like p95 or p90, and low ones, like p5 or p10, continued to grow. The p95/p5 percentile ratio reached a level of about 16 in 2019/20, indicating that people in the 95th percentile of the consumption distribution consumed about 16 times more than individuals in the 5th percentile (Figure 3, panel b). To compare, the ratio between the 95th and the 5th percentile of the consumption distribution in 1996/97 was lower than 10; it remained almost constant until 2008/09 and then started increasing sharply in the following years. Summarizing, across the two latest survey rounds, the p90/p50, p90/p10, and p95/p5 ratios continued to grow (to a level of 3.0, 7.5, and 16.0 respectively), whereas the p10/p50 reduced even further, even if only slightly.

With respect to the trend for people at the median (p50), individuals at this percentile saw an increase in real consumption between 1996/97 and 2002/03 (Figure 3, panel a). Subsequently, it remained around a level of 1. Given that real consumption comparable over time is computed here as survey-specific real consumption divided by the corresponding survey-specific poverty line, this entails that the level of consumption for people at the median was sufficient to buy only one basic basket of food and non-food items—that is, the level of the poverty line (see Figure 1).

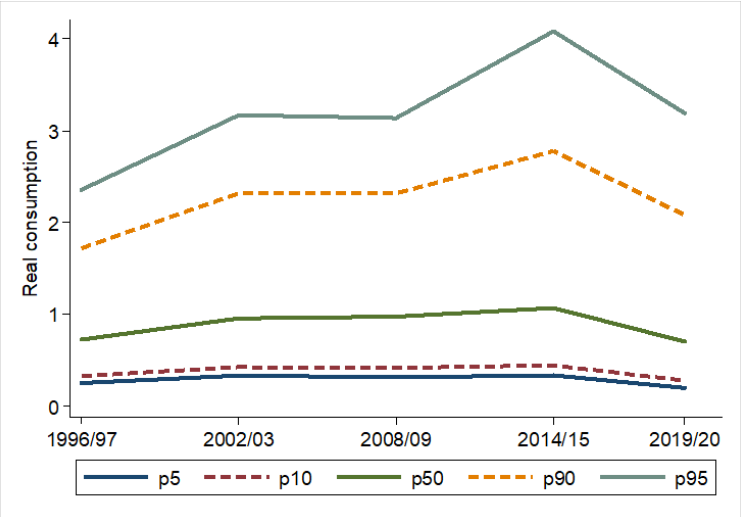
We provide further details by adding consumption shares and the Palma index to the picture (Figure 3, panel c). They reinforce the finding that inequality increased and that the economic growth experienced by the country benefited better-off people relatively more than it did the poorer part of the population. The Palma index, equal to top 10 per cent's share divided by bottom 40 per cent's share of total consumption, increased, from a value of about 2 to about 3.5. This is also confirmed by the analysis of the trends of the shares of selected groups in total consumption (Figure 4, panel c): at national level (and also at urban level, not shown), from 2008/09 on, the

share of the richest 10 per cent and of the richest 1 per cent went up considerably, while the share of the bottom 50 per cent reduced.

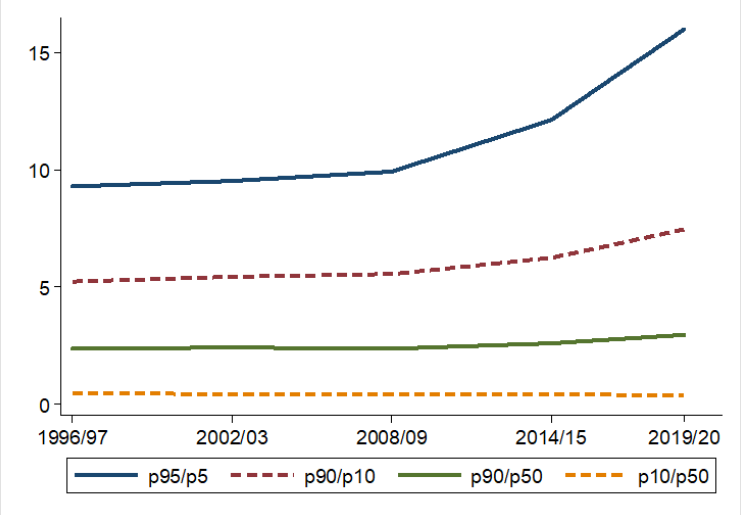
Correspondingly, looking at the share of consumption by deciles from 1996/97 to 2019/20, Figure 3, panel d, shows that the consumption shares for all of the first nine deciles of the real consumption distribution went down over time, whereas only the consumption share for the richest decile went up, especially during the last 10–15 years. That is, the richest consumption decile is the only one that has increased its proportion of consumption out of the total in the last two decades, especially after 2008/09.

Figure 3: Percentiles of the consumption distribution, percentile ratios, consumption shares, and Palma ratio, 1996/97–2019/20

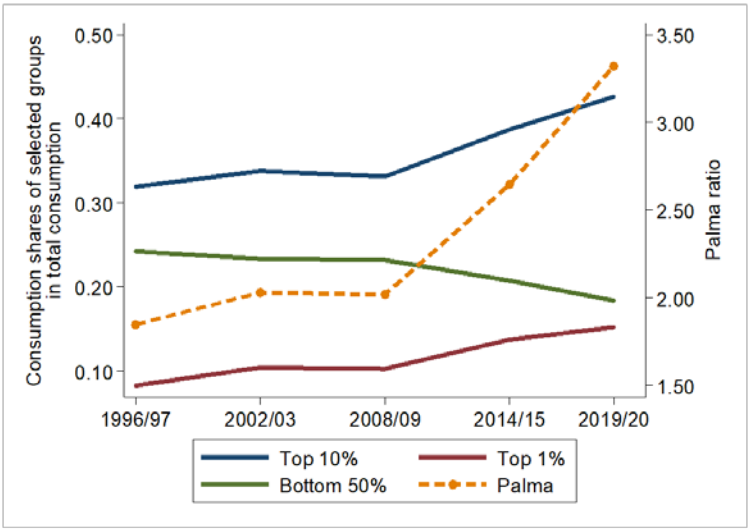
3a: Percentiles of the consumption distribution, p5, p10, p50, p90, p95



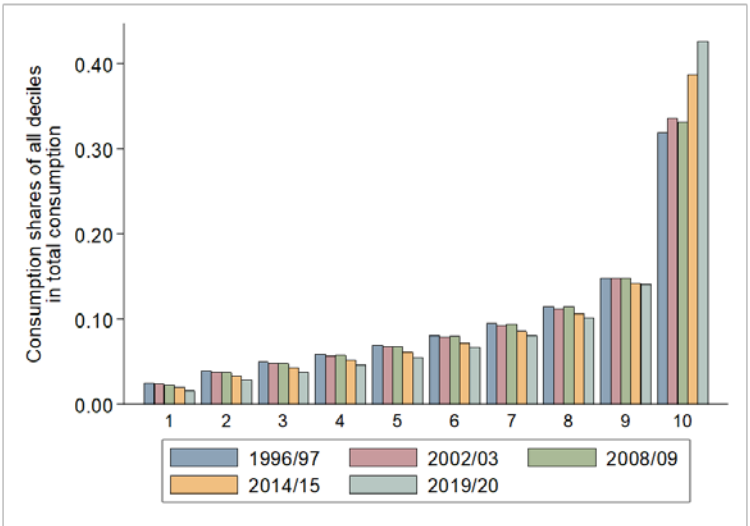
3b: Percentile ratios, p95/p5, p90/p10, p90/p50, p10/p50



3c: Top 1 per cent, top 10 per cent, and bottom 50 per cent shares of total consumption, and Palma index



3d: Consumption shares by decile

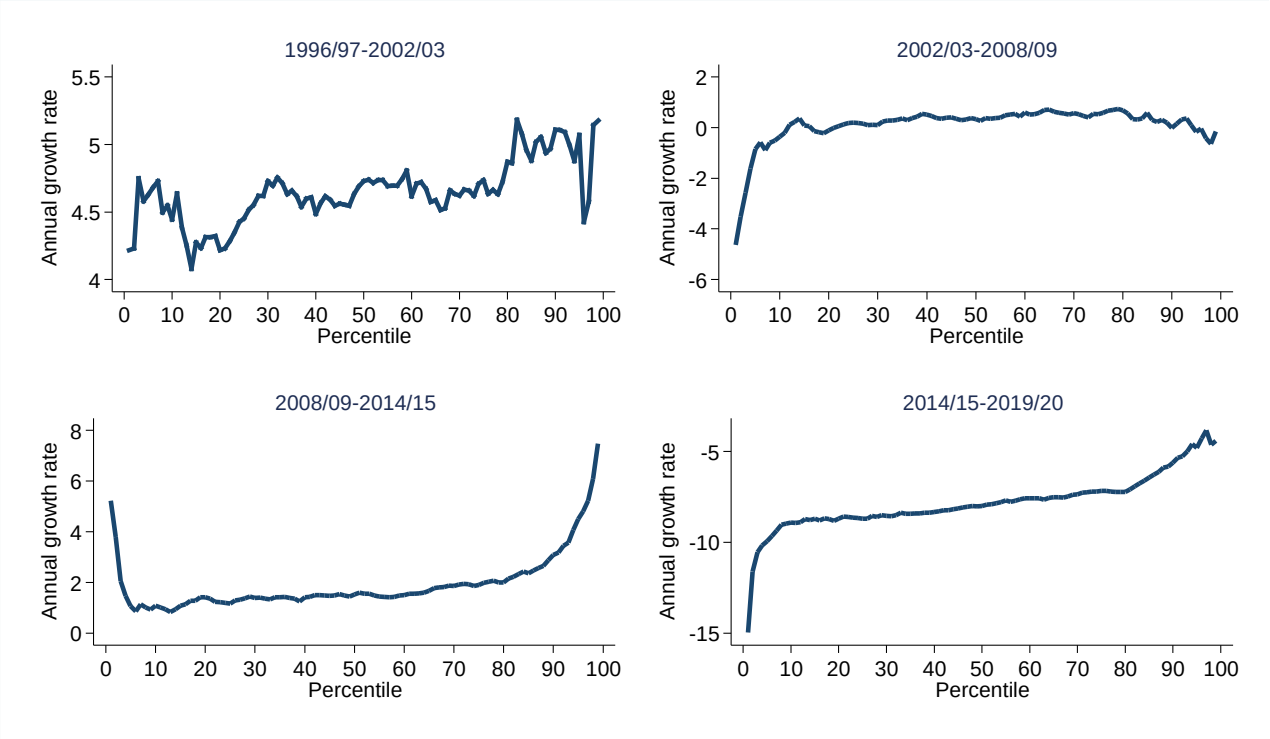


Note: to compute real consumption, in each survey, nominal consumption is transformed into real consumption by applying a spatial and a temporal deflator to make nominal consumption values obtained in different areas of the country and at different times of the year comparable. To make real consumption values obtained in different survey rounds comparable, we divide survey-specific real consumption values by corresponding official poverty lines. Given that the poverty line represents the cost of a basic basket of food and non-food items, it is a reference of the relevant cost of living for the poorest part of the population in each round. The unit of measurement of this indicator is thus the number of basic baskets of food and non-food items. The percentiles used in panels a and b are obtained from the survey-specific real consumption distributions. The consumption shares shown in panels c and d are the shares of consumption, in total consumption, captured by specific groups of the distribution. The Palma ratio measures the ratio between the shares of the top 10 per cent and the bottom 40 per cent of the distribution.

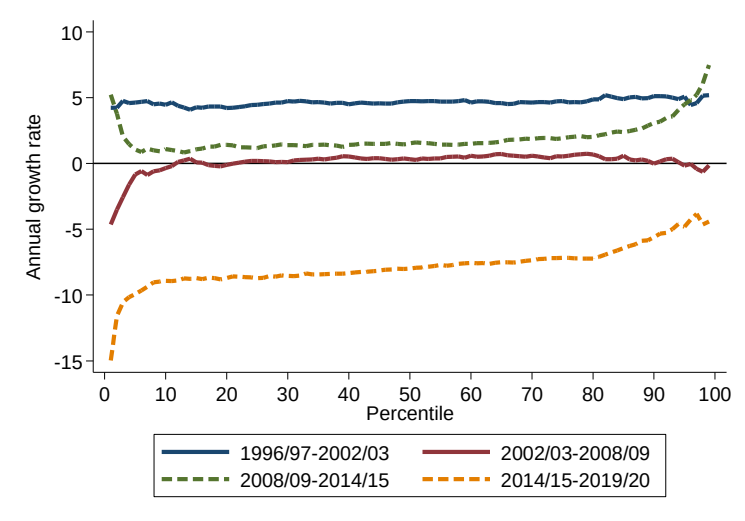
Source: authors' illustration based on IAF96/97, IAF02/03, IOF08/09, IOF14/15, and IOF19/20.

Figure 4: Growth incidence curves, 1996/97–2019/20, each survey compared with the subsequent one

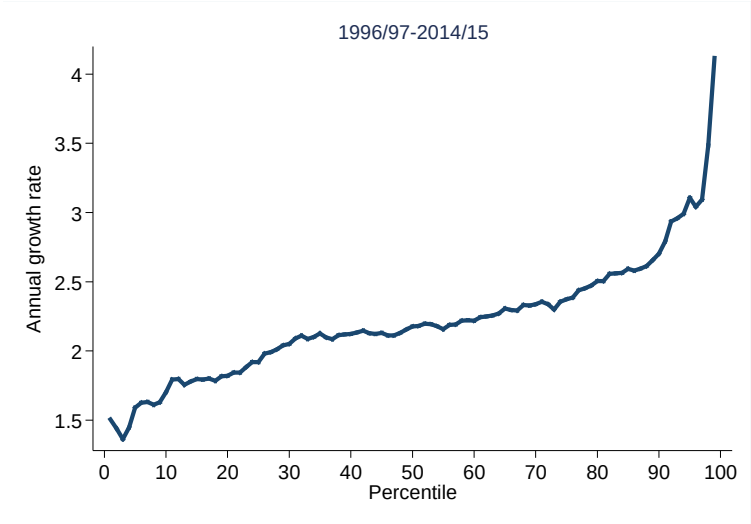
4a: Growth incidence curves, real consumption, each survey compared with the subsequent one



4b: Growth incidence curves, real consumption, combined



4c: Growth incidence curves, real consumption, 1996/97–2014/15

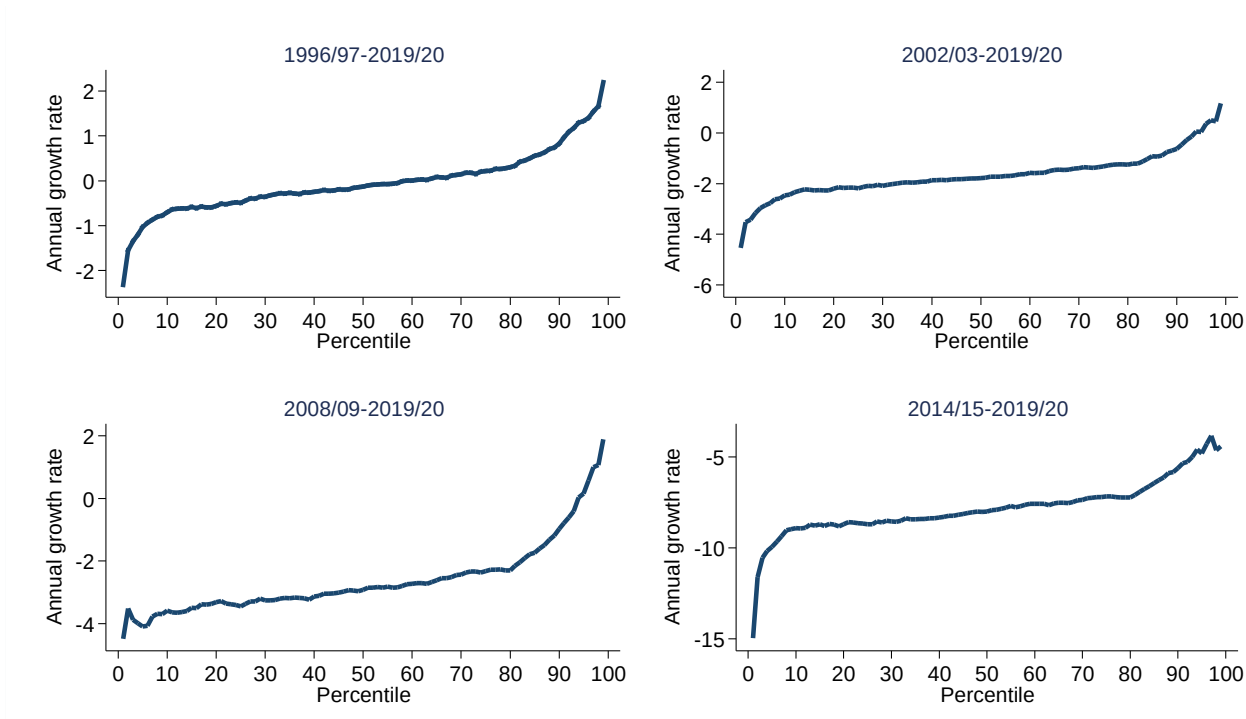


Note: the GICs shown are based on the distribution of real consumption. In each survey, nominal consumption is transformed into real consumption by applying a spatial and a temporal deflator to make nominal consumption values obtained in different areas of the country and at different times of the year comparable. To make real consumption values obtained in different survey rounds comparable, we divide survey-specific real consumption values by corresponding official poverty lines. Given that the poverty line represents the cost of acquiring a basic basket of food and non-food items, it is a reference of the relevant cost of living for the poorest part of the population in each round. The unit of measurement of this indicator is thus the number of basic baskets of food and non-food items. Percentiles shown are obtained from survey-specific real consumption distributions.

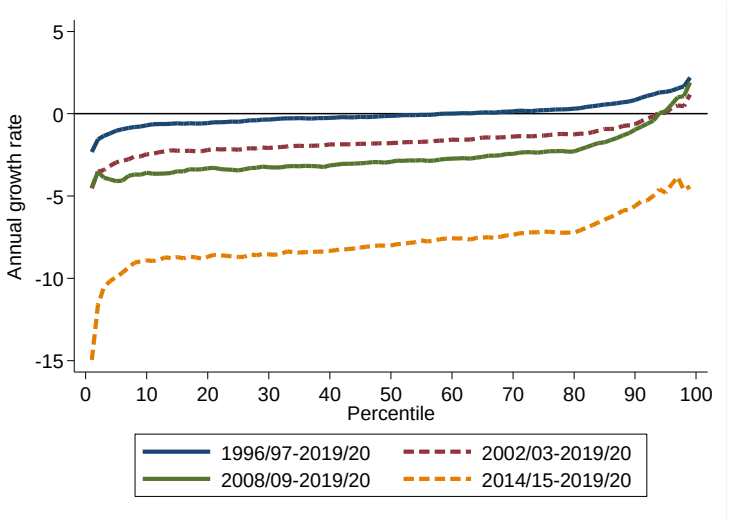
Source: authors' illustration based on IAF96/97, IAF02/03, IOF08/09, IOF14/15, and IOF19/20.

Figure 5: Growth incidence curves, 1996/97–2019/20, each survey compared to the most recent one

5a: Growth incidence curves, real consumption, each survey compared with the most recent one



5b: Growth incidence curves, real consumption, combined



Note: The GICs shown are based on the distribution of real consumption. In each survey, nominal consumption is transformed into real consumption by applying a spatial and a temporal deflator to make nominal consumption values obtained in different areas of the country and at different times of the year comparable. To make real consumption values obtained in different survey rounds comparable, we divide survey-specific real consumption values by corresponding official poverty lines. Given that the poverty line represents the cost of acquiring a basic basket of food and non-food items, it is a reference of the relevant cost of living for the poorest part of the population in each round. The unit of measurement of this indicator is thus the number of basic baskets of food and non-food items. Percentiles shown are obtained from survey-specific real consumption distributions.

Source: authors' illustration based on IAF96/97, IAF02/03, IOF08/09, IOF14/15, and IOF19/20.

3.3 Lorenz curves and Gini index

We now move on to discussing and depicting a series of Lorenz curves derived from the real consumption distribution already described in the data section, for 2019/20 and all other years. Lorenz curves are graphical representations of the distribution of income, consumption, or wealth within a population, and are thus important tools in the analysis of inequality. They plot percentiles of the population, sorted from the poorest to the richest individual, against cumulative shares of income, consumption, or wealth up to that percentile. Hence, the curve shows, for each percentile of the population, the share of total income, consumption, or wealth absorbed by the share of population up to that percentile. Analysts generally plot Lorenz curves together with a 45-degree sloped line which represents a situation of perfect equality: indeed, in a situation of perfect equality, the bottom, say, 20 per cent of the population would take a share of total consumption exactly equal to the 20 per cent of total income/wealth/consumption. Hence, from a graphical point of view, the further the Lorenz curve is from the line of perfect equality, the more unequal a society is.

Figure 6 presents the Lorenz curves for 2019/20 at the national level (panel a) and disaggregated into rural and urban areas (panel b) and regions of the country (panel c), as well as a comparison between the 2019/20 Lorenz curve and the curves relative to previous survey rounds (panel d). In accordance with what we discussed above, the Lorenz curves depicted in Figure 6, panel d, show a clear increase in inequality across the entire time period analysed and in each successive subperiod. Importantly, there is an increase in inequality also in the last period, 2014/15–2019/20, even though these years saw a significant contraction in consumption.

The dominance analysis broadly confirms these results. In general, the Lorenz curve of a distribution A dominates the Lorenz curve of a distribution B if the curve for A is above the curve

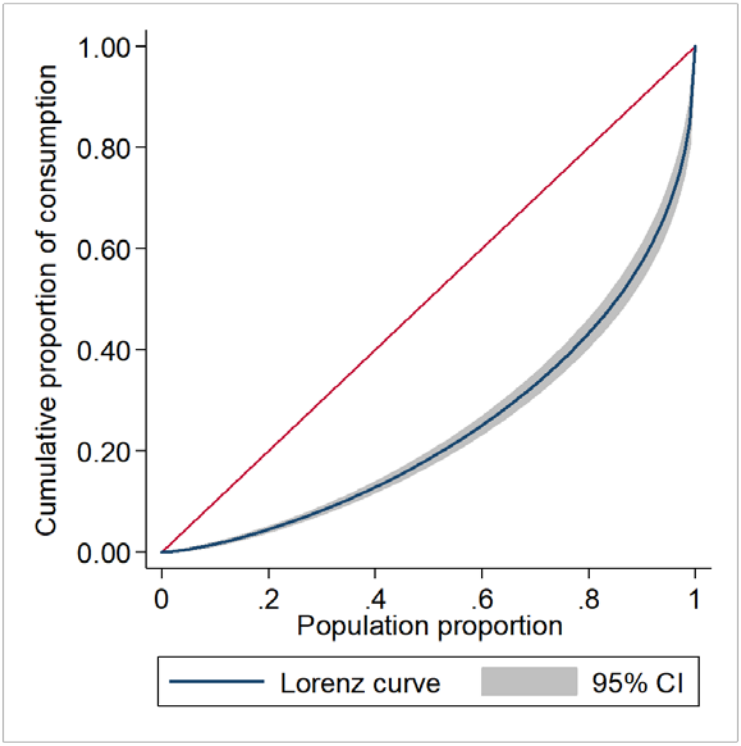
for B at all points of the distribution. In this case, the distribution A is more equal than the distribution B. However, when the curves intersect, it is possible to make statements only about segments of the distribution. This is true also in most of the cases presented here. Nonetheless, in the majority of them we are able to make statements about quite large segments of the distribution, so that inequality comparisons emerge with reasonable clarity.

In particular, the real consumption distribution for 2014/15 dominates that for 2019/20 (i.e., the distribution for 2014/15 is more equal than that for 2019/20) between percentiles 0.1 and 98.4. Moreover, the 2019/20 distribution is dominated by all of the other distributions across almost the entire distribution (the 1996/97 distribution dominates that for 2019/20 between percentiles 0 and 99.7; the 2002/03 and the 2008/09 distributions dominate that for 2019/20 between percentiles 0 and 99.5).

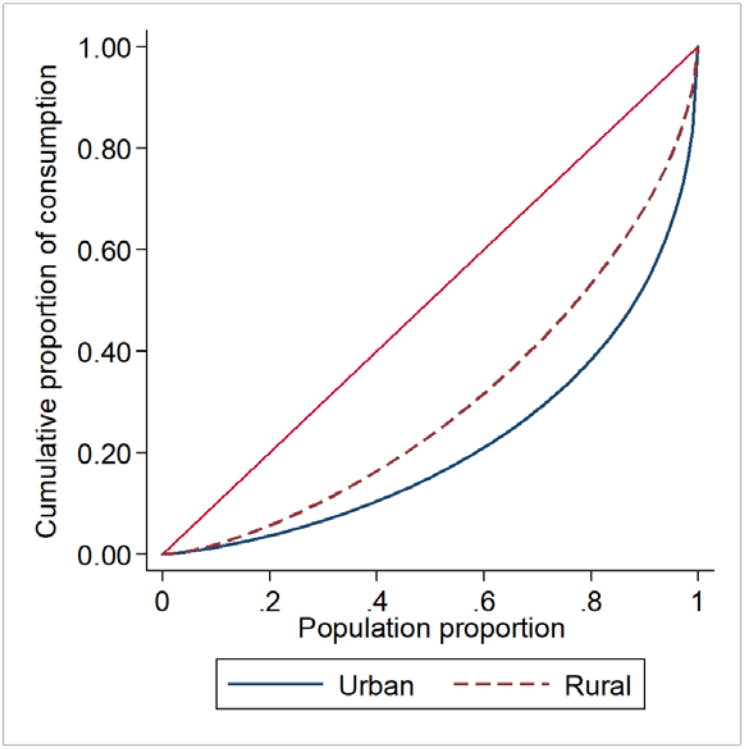
Looking at the Lorenz curves at urban/rural (panel b) and regional levels (panel c) for 2019/20, it emerges that inequality is greater at the urban level and in the southern region, compared with rural areas and central/northern regions. For urban/rural areas, our dominance analysis shows that this is true for most of the distribution. The urban distribution lies below the rural distribution between percentiles 2.8 and 99.5. For the regional analysis, we find that both the central region (between percentiles 0 and 97.1) and the northern region (between percentiles 1.9 and 99.9) dominate the southern region.

Figure 6: Lorenz curves

6a: National level, 2019/20



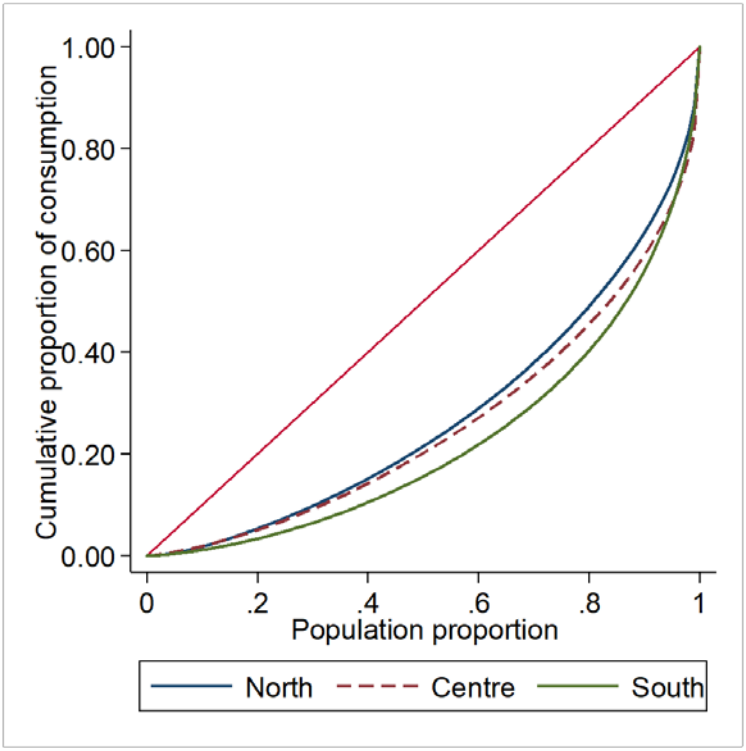
6b: Urban/rural level, 2019/20



Dominance analysis

Curve 1: Urban	Curve 2: Rural	
Number of intersection	Critical percentile	Case
1	0	Curve 1 is above Curve 2 before the intersection
2	0.001	Curve 1 is below Curve 2 before the intersection
3	0.028	Curve 1 is above Curve 2 before the intersection
4	0.995	Curve 1 is below Curve 2 before the intersection
5	0.998	Curve 1 is above Curve 2 before the intersection

6c: Regional level, 2019/20

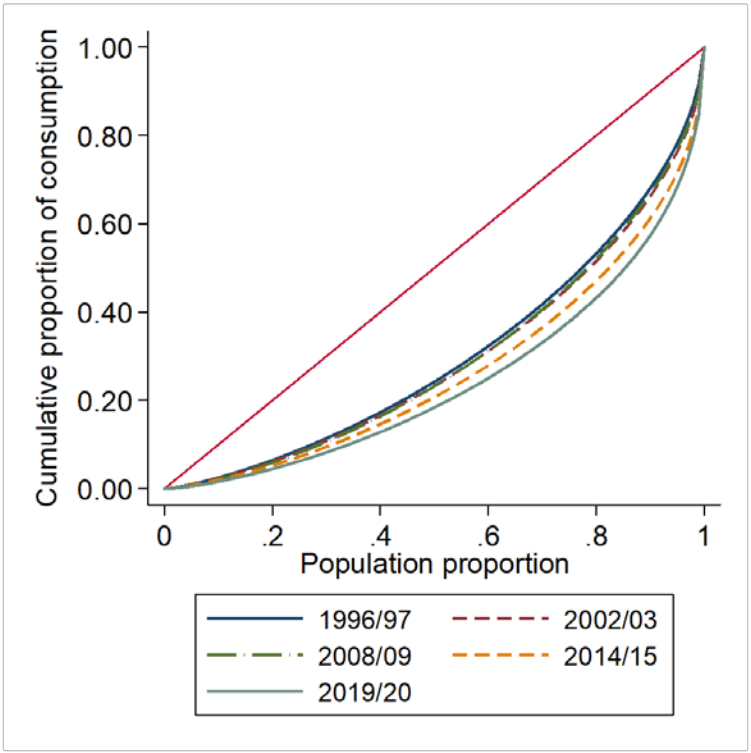


Dominance analysis

Curve 1: South	Curve 2: North	
Number of intersection	Critical percentile	Case
1	0.005	Curve 1 is below Curve 2 before the intersection
2	0.019	Curve 1 is above Curve 2 before the intersection
3	0.999	Curve 1 is below Curve 2 before the intersection

Curve 1: South	Curve 2: Centre	
Number of intersection	Critical percentile	Case
1	0.971	Curve 1 is below Curve 2 before the intersection
2	0.992	Curve 1 is above Curve 2 before the intersection
3	0.999	Curve 1 is below Curve 2 before the intersection

6d: National level, 1996/97–2019/20



Dominance analysis

Curve 1: 2019/20	Curve 2: 1996/97	
Number of intersection	Critical percentile	Case
1	0.997	Curve 1 is below Curve 2 before the intersection
2	0.999	Curve 1 is above Curve 2 before the intersection

Curve 1: 2019/20	Curve 2: 1996/97	
Number of intersection	Critical percentile	Case
1	0.997	Curve 1 is below Curve 2 before the intersection
2	0.999	Curve 1 is above Curve 2 before the intersection

Curve 1: 2019/20	Curve 2: 2008/09	
Number of intersection	Critical percentile	Case
1	0.995	Curve 1 is below Curve 2 before the intersection

Curve 1: 2019/20	Curve 2: 2014/15	
Number of intersection	Critical percentile	Case
1	0.001	Curve 1 is above Curve 2 before the intersection
2	0.984	Curve 1 is below Curve 2 before the intersection

Note: cumulative proportions of consumption are based on real consumption distributions. In each survey, nominal consumption is transformed into real consumption by applying a spatial and a temporal deflator to make nominal consumption values obtained in different areas of the country and at different times of the year comparable. To make real consumption values obtained in different survey rounds comparable, we divide survey-specific real consumption values by corresponding official poverty lines. Given that the poverty line represents the cost of acquiring a basic basket of food and non-food items, it is a reference of the relevant cost of living for the poorest part of the population in each round. The unit of measurement of this indicator is thus the number of basic baskets of food and non-food items. Population and consumption proportions shown are obtained from survey-specific real consumption distributions. The Lorenz curves presented plot percentiles of the population,

sorted from poorest to richest individual, against cumulative shares of consumption up to that percentile. Hence, the curve shows, for each percentile of the population, the share of total consumption assumed by the share of population up to that percentile. The 45-degree sloped line represents perfect equality, wherein the bottom 20 per cent of the population would take 20 per cent of total income/wealth/consumption. The further the Lorenz curve is from the line of perfect equality, the more unequal a society is.

Source: authors' illustration based on IAF96/97, IAF02/03, IOF08/09, IOF14/15, and IOF19/20.

The increase in inequality described in the previous section emerges again when using other indices such as the Gini.[5] The Gini index is an aggregate measure of the distribution of income across a population. It is derived from the Lorenz curve presented above by taking the area between the line of perfect equality and the Lorenz curve and dividing it by the area of the triangle below the line of perfect equality. The larger the Gini is, the more unequal the society analysed is said to be. Accordingly, the Gini index ranges between 0 and 1. It is equal to 0 when the Lorenz curve coincides with the line of perfect equality, i.e. the area between the Lorenz curve and the line of perfect equality is itself equal to 0. It is equal to 1 when the area between the Lorenz curve and the line of perfect equality coincides with the triangle below the line of perfect equality. In this hypothetical case, the richest individual would take all of the consumption while all other individuals would have a share of 0 per cent of total consumption.

Figure 7 presents the estimates of the Gini index for Mozambique from 1996/97 to 2019/20, at the national level and disaggregated into rural and urban areas. The Gini index estimates indicate a worsening situation, with an increasing concentration of consumption among better-off people across the whole period. Indeed, the index increased from 0.40 in 1996/97 to 0.51 in 2019/20, with an overall increase of 28.7 per cent. The increase was modest from 1996/97 to 2002/03 (+4.6 per cent), remaining almost constant at a level slightly above 0.40 until 2008/09 (−0.1 per cent compared with the previous period). In the following decade, the Gini increased by 12.7 per cent from 2008/09 and by 9.2 per cent from 2014/15 to 2019/20, climbing up sharply to the current level (0.51).

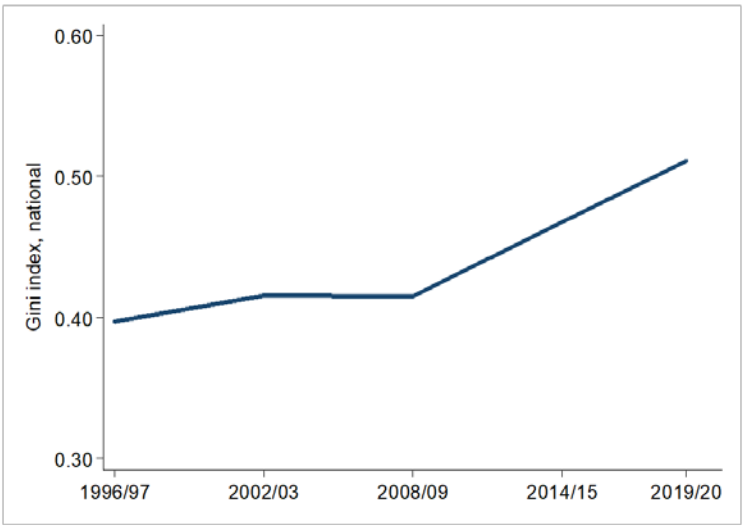
Contrasting this with the situation before 2014/15, where inequality growth was mostly concentrated in urban areas, the worsening of inequality in 2019/20 took a toll on both rural and urban communities. In urban areas, the Gini index started to increase above its historical trend during the period 2008/09–2014/15, continuing to increase, even if at a lower speed, during 2014/15–2019/20, reaching a level of 0.57. In rural areas, it started to increase only in the last period, 2014/15–2019/20, moving from 0.37 to 0.41 after having been roughly constant at 0.37 since 1996/97.

At regional level, inequality is higher in the southern region, where it increased the most during 2008/09–2014/15. In the central and northern regions, inequality as measured by the Gini index only started to go up in the 2014/15–2019/20 period. In particular, Figure 7 reveals that inequality broadly followed an upward linear trend in the southern region over the whole period, even though oscillations are present around this trend. In the central region, instead, inequality mostly stagnated between 1996/97 and 2008/09, before increasing markedly afterwards. In the 0north, inequality only slightly increased between 1996/97 and 2014/15, accelerating in the last period, 2014/15–2019/20. This pattern is similar to that found in the rural areas of the country.

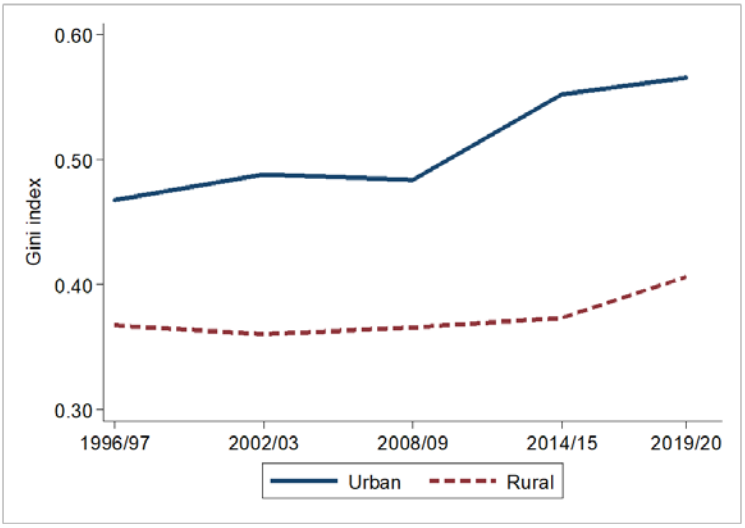
[5] Gradín and Tarp (2019b) note that the increase in inequality also emerges when one uses the generalized entropy and Atkinson families of inequality indices, all of them consistent with Lorenz dominance.

Figure 7: Gini index, 1996/97–2019/20

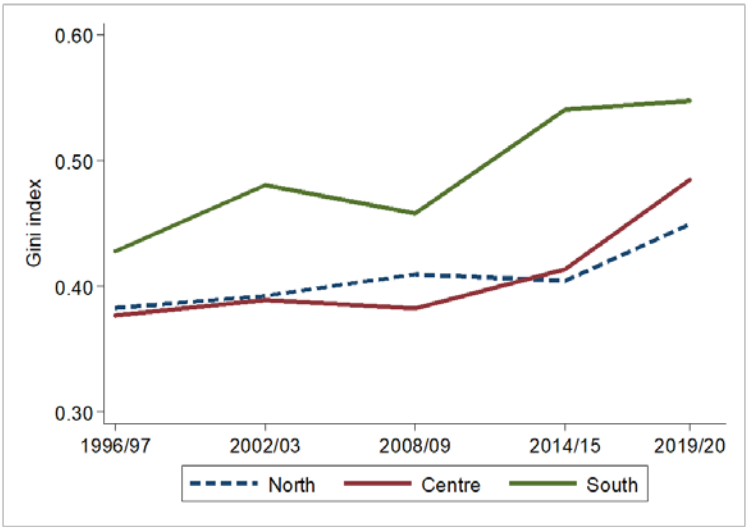
7a: National level



7b: Urban/rural level



7c: Regional level



Provincial level

	1996/97	2002/03	2008/09	2014/15	2019/20
Niassa	0.354	0.371	0.437	0.382	0.385
Cabo Delgado	0.369	0.465	0.343	0.378	0.420
Nampula	0.391	0.359	0.417	0.416	0.475
Zambezia	0.324	0.347	0.368	0.410	0.377
Tete	0.347	0.392	0.330	0.362	0.586
Manica	0.415	0.394	0.345	0.389	0.500
Sofala	0.403	0.431	0.459	0.470	0.464
Inhambane	0.376	0.441	0.392	0.450	0.489
Gaza	0.381	0.407	0.430	0.452	0.506
Maputo Province	0.422	0.426	0.387	0.469	0.496
Maputo City	0.444	0.524	0.508	0.582	0.524

Note: The Gini index is a measure of the distribution of income across a population. It is derived from the Lorenz curve, computed by dividing the area between the line of perfect equality and the Lorenz curve by the area of the triangle below the line of perfect equality. The larger this area, the more unequal the society. The Gini index thus ranges between 0 and 1, equal to 0 when the Lorenz curve coincides with the line of perfect equality and 1 when the area between the Lorenz curve and the line of perfect equality coincides with the triangle below the line of perfect equality. The Gini indices shown are obtained from survey-specific real consumption distributions.

Source: authors' illustration based on IAF96/97, IAF02/03, IOF08/09, IOF14/15, and IOF19/20.

Until now we have focused only on relative inequality—that is, disparities in income, consumption, or wealth among individuals in a society in relative terms. Indeed, most of the inequality indices and measures used in the literature are relative, an example being the Gini index presented above. Relative measures of inequality are scale invariant: if all of the incomes of the distribution are multiplied (or divided) by the same value—i.e. there is an increase (or decrease) in the same proportion across the distribution—inequality remains unchanged.

However, one can also focus on absolute disparities—that is, one may consider that inequality does not change if one adds the same value to all incomes (referred to as translation invariance). Ravallion (2014) effectively explains the translation invariance axiom with an example: two households have an income of $1,000 and $10,000 dollars respectively. A change in the distribution occurs, and both incomes now double to, respectively, $2,000 and $20,000 dollars. In terms of relative inequality, nothing has changed, as there was a change in the same proportion across the income distribution. In an absolute perspective, however, the difference in income between the

two household has doubled from $9,000 to $18,000, meaning that absolute inequality has increased sharply. Another illuminating example is that proposed by Niño-Zarazúa et al. (2017): when income doubles in such a way as that presented above, the poorest of the distribution can now buy two chickens, while the richest can afford two yachts. Someone with an absolute perspective on inequality would argue that inequality has increased.

In what follows, we provide additional details on the evolution of inequality in Mozambique by applying an absolute measure of inequality, i.e. the absolute Gini—an absolute version of the standard Gini index.

Following Bandyopadhyay (2018), the standard (relative) Gini coefficient, G_t, is calculated as follows:

$$G_t = G(Y_t) = \frac{1}{2n^2\mu_t}\sum_{i=1}^{n}\ \sum_{j=1}^{n}\left|y_{it} - y_{jt}\right| \quad (1)$$

where

$$Y_t = (y_{1t}, y_{2t}, \dots, y_{nt}) \quad (2)$$

and

$$\mu_t = \frac{1}{n}\sum_{i=1}^{n} y_i \quad (3)$$

where y_{it} is the income of individual i at time t; Y_t is the income distribution across individuals in time period t, while μ_t is the mean income of income distribution Y_t. Equation 1 above also corresponds to the ratio of two components:

$$G_t = \frac{A_t}{\mu_t} \quad (4)$$

where

$$A_t = \frac{1}{2n^2}\sum_{i=1}^{n}\ \sum_{j=1}^{n}\left|y_{it} - y_{jt}\right| \quad (5)$$

indicates the absolute Gini and corresponds to half of the mean difference.[6] As discussed with the examples presented above, trends of the absolute and relative Gini can be very different or even opposite. This means that looking at either relative or absolute inequality can reveal a very different picture in terms of the evolution of inequality in certain contexts (Bandyopadhyay 2018).

Focusing on absolute inequality in Mozambique, the trend evolution over the years provides some interesting details about the evolution of inequality, which we capture by relative inequality measures. As introduced, the absolute Gini is a measure that reflects the absolute disparities (i.e. in terms of meticais per person per day, not in terms of ratios) between individuals in a society in a given year.

[6] In turn, $A_t = G_t \times \mu_t$, where G_t is the standard (relative) Gini coefficient and μ_t is the mean income of income distribution Y_t.

Figure 8 presents a comparison between the relative and absolute Gini indices and the absolute Gini at the urban/rural and regional levels. Once more, we can observe two different dynamics depending on the period analysed. In the period 1996/97–2014/15, the absolute Gini index shows a constant increase, especially at the urban level and for the southern region. This confirms that in those years an increasing concentration of consumption among the better off occurred, in absolute terms even more than in relative terms, with the index changing from 0.39 in 1996/97 to 0.55 in 2002/03 (+41.5 per cent). It then remained at 0.55 in 2008/09, and increased to 0.75 in 2014/15 (+36.8 per cent relative to 2008/09 and +95.4 per cent compared with 1996/97. The increase was even steeper at the urban level (+125.7 per cent in 2014/15 relative to 1996/97) and for the southern region (+182.0 per cent in 2014/15 relative to 1996/97).

These estimates also corroborate the findings above concerning the percentile and percentile ratio analyses. Indeed, they reveal that disparities in absolute terms between richer and poorer individuals worsened over time, and this seems to be mostly attributable to the top of the distribution substantially increasing its levels of (real) consumption, whereas the consumption levels of the bottom and the median of the distribution stagnated or only slightly increased.

Focusing on the most recent period, 2014/15–2019/20, we find that—contrary to previous years—absolute inequality reduced at all levels. This may seem counterintuitive given the results presented above, which assert that inequality has continued to increase in recent years as well. However, what has continued to increase in recent years is relative inequality, as measured by the Gini index and other measures such as the percentile ratios or the Palma ratio.

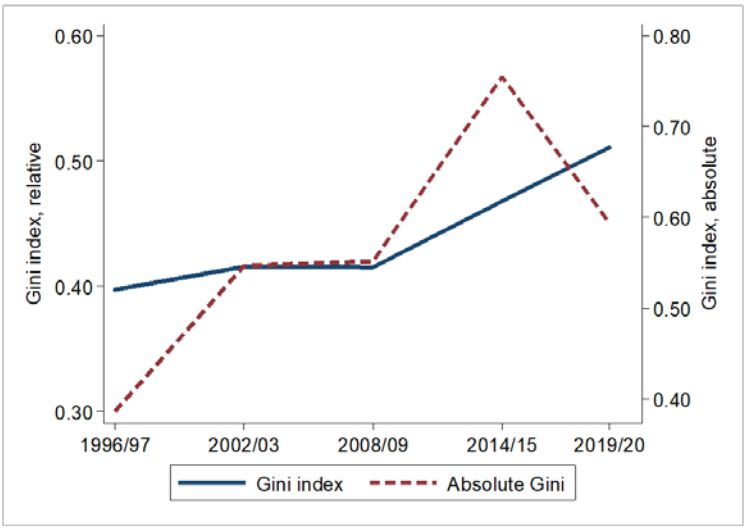
What seems to have happened between 2014/15 and 2019/20 is a drop in consumption for virtually all the individuals in the consumption distribution. In the process, the individuals at the top of the consumption distribution have on average lost more in absolute terms than poorer people, resulting in a reduction in absolute disparities. At the same time, in relative terms the gap between poor and rich individuals increased, so that relative measures of inequality report augmented disparities.[7]

During this period, we observe the same process (i.e. decreasing absolute inequality and increasing relative inequality) at both urban and rural levels, even though it is more evident at urban level, and for the southern region. The dynamic seems less clear when the central and northern regions are analysed, with the northern region showing increasing absolute inequality between 1996/97 and 2008/09 and decreasing absolute inequality afterwards, while the central region presents a broadly increasing trend over the whole period, with small oscillations around the main trend.

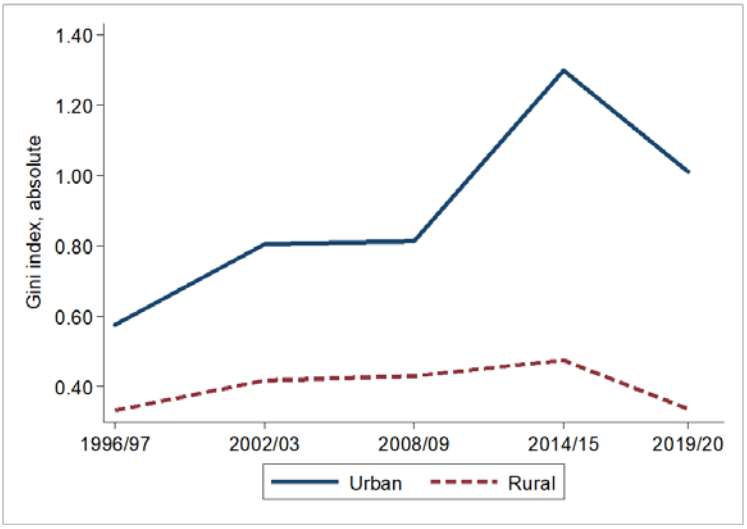
7 A good example in this sense is provided by the percentile and percentile ratio analysis presented above. The results for the period 2014/15–2019/20 show that richer percentiles lost more in absolute terms than their poorer counterparts (i.e. real consumption decreased more in absolute terms for richer percentiles than for poorer percentiles). Nonetheless, the ratios between richer and poorer percentiles increased. For example, the 90th percentile went from a real consumption level of 2.8 in 2014/15 to 2.1 in 2019/20, as measured in terms of basic baskets, whereas the 10th percentile went from a real consumption level of 0.5 in 2014/15 to 0.3 in 2019/20. The absolute difference for the first group is −0.7 while for the second group it is just −0.2—that is, the absolute gap reduced from 2.3 in 2014/15 to 1.8 in 2019/20. Even so, the ratio between the two groups changed from 6.2 in 2014/15 to 7.5 in 2019/20, so that the gap in relative terms expanded. The same occurs for the 95th percentile when compared with the 5th percentile and for most comparisons involving percentiles at the top and the bottom of the distribution.

Figure 8: Absolute Gini, 1996/97–2019/20

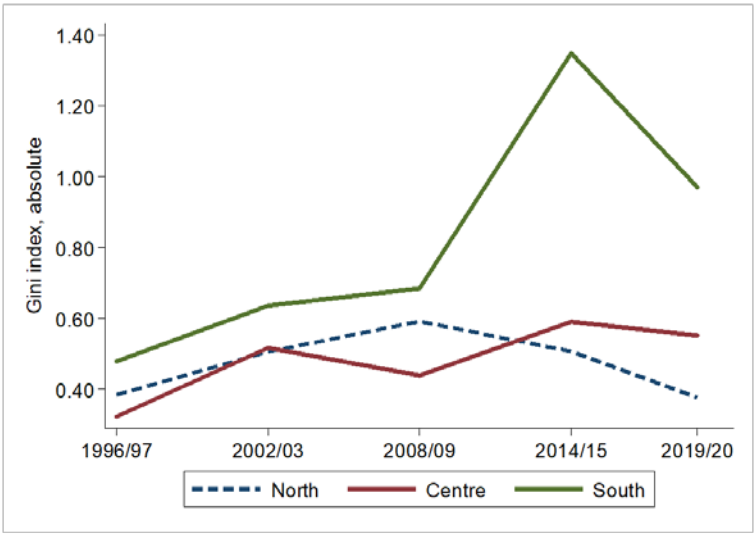
8a: Relative versus absolute Gini, national level



8b: Urban/rural level



8c: Regional level



Note: The Gini index is a measure of the distribution of income across a population. As presented in Equation 1, the standard (relative) Gini index can be expressed as the ratio of two components: $G_t = \frac{A_t}{\mu_t}$, where $A_t = \frac{1}{2n^2}\sum_{i=1}^{n}\ \sum_{j=1}^{n}|y_{it} - y_{jt}|$ indicates the absolute Gini and corresponds to half of the mean difference. In turn, $A_t = G_t \times \mu_t$, where G_t is the standard (relative) Gini coefficient and μ_t is the mean income of income distribution Y_t. The absolute Gini indices shown here are obtained from survey-specific real consumption distributions.

Source: authors' illustration based on IAF96/97, IAF02/03, IOF08/09, IOF14/15, and IOF19/20.

3.4 Spatial inequality

In previous sections, we have shown that inequality in consumption is higher in urban areas and in southern Mozambique than in rural areas and the centre and north. In recent years (2014/15–2019/20) increasing inequality has also spread to areas previously largely unaffected, i.e. rural areas and the north.

Overall, a large body of literature and growing evidence shows that Mozambique is characterized by a stark urban–rural divide and a marked north–south gradient between different areas and provinces of the country in terms of spatial inequality in consumption, wellbeing, poverty, and other welfare indicators. In particular, urban areas and the southern provinces consistently present higher levels of development, according to many different indicators and metrics. Moreover, welfare improvements have occurred at different speeds in different areas, sometimes deepening the gap between urban and rural areas and between the centre/north and the south.

Importantly, while the increase in inequality at the national level that occurred between 2008/09 and 2014/15 took place concurrently with a reduction in the national poverty rate of about 6 percentage points, in the subsequent period not only did inequality increase sharply but real consumption levels actually dropped compared with the previous period. As mentioned above, in the last subperiod inequality increased also in rural areas and in the north, and no gains were registered in terms of real consumption. On the contrary, the difference in real consumption between rural and urban areas increased significantly (Table 1). When average real consumption in rural areas is measured as a percentage of average real consumption in urban areas, it goes from 73.5 per cent in 1996/97 to 46.3 per cent in 2019/20. The difference in real consumption between the south and both the north and the centre has also increased. When average real consumption in the north and the centre is measured as a percentage of average real consumption in the south, it decreases from 89.7 per cent (north) and 76.6 per cent (centre) in 1996/97 to 47.3 per cent (north) and 64.2 per cent (centre) in 2019/20 (Table 1).

A disaggregation of the provincial levels sheds more light on this persistently diverging trend. While contraction in real consumption occurred also in the urban south, when average real consumption in the northern and central provinces is measured as a percentage of average real consumption in Maputo City, it shows important drops in all the provinces of the centre/north—i.e. Niassa (from 56.3 to 29.7 per cent), Cabo Delgado (from 75.1 to 24.4 per cent), Nampula (from 63.9 to 28.0 per cent), and Zambezia (from 61.8 to 27.7 per cent) (Table 1).

Therefore, increasing inequality in areas with historically higher incidence of poverty is a serious cause for concern. Worryingly, the result from the latest IOF19/20 data show that this process is indeed taking place. While earlier surveys revealed that increases in inequality did not prevent poverty reduction, estimates from the 2019/20 survey show that increases in inequality were accompanied by significant drops in real consumption as well. In addition, not only is inequality increasing within rural and urban areas, but the latest data also show that the gap in terms of real consumption and welfare between urban and rural areas and the centre/north and south of the country is becoming larger.

Table 1: Real consumption, 1996/97–2019/20

	Real consumption		Average real consumption in rural areas as a percentage of average real consumption in urban areas
	Urban	Rural	Rural
1996/97	1.23	0.90	73.5%
2002/03	1.65	1.16	70.3%
2008/09	1.68	1.18	69.9%
2014/15	2.35	1.27	54.1%
2019/20	1.79	0.83	46.3%

	Real consumption			Average real consumption in the north/centre as a percentage of average real consumption in the south	
	North	Centre	South	North	Centre
1996/97	1.00	0.86	1.12	89.7%	76.6%
2002/03	1.29	1.33	1.32	97.4%	100.3%
2008/09	1.44	1.15	1.50	96.5%	76.8%
2014/15	1.25	1.43	2.50	50.2%	57.2%
2019/20	0.84	1.14	1.77	47.3%	64.2%

	Real consumption										
	Niassa	C. Delgado	Nampula	Zambezia	Tete	Manica	Sofala	Inhambane	Gaza	Maputo Pr.	Maputo City
1996/97	0.86	1.15	0.98	0.95	0.72	1.17	0.60	0.77	1.12	1.08	1.53
2002/03	1.37	1.37	1.23	1.28	1.02	1.34	1.72	0.82	1.33	1.21	2.07
2008/09	1.79	1.44	1.34	1.04	1.29	1.13	1.25	1.31	1.12	1.26	2.46
2014/15	1.07	1.42	1.25	1.23	1.57	1.50	1.66	1.53	1.45	2.73	4.52
2019/20	0.90	0.74	0.85	0.84	1.53	1.22	1.26	1.22	0.82	2.14	3.05
	Average real consumption in each province as a percentage of average real consumption in Maputo City										
	Niassa	C. Delgado	Nampula	Zambezia	Tete	Manica	Sofala	Inhambane	Gaza	Maputo Pr.	
1996/97	56.3%	75.1%	63.9%	61.8%	46.6%	76.5%	38.9%	50.1%	72.8%	70.4%	
2002/03	66.2%	66.4%	59.4%	61.6%	49.3%	64.8%	82.9%	39.7%	64.0%	58.5%	
2008/09	73.0%	58.6%	54.4%	42.3%	52.6%	46.2%	51.1%	53.3%	45.5%	51.3%	
2014/15	23.6%	31.3%	27.7%	27.1%	34.8%	33.3%	36.7%	33.9%	32.1%	60.5%	
2019/20	29.7%	24.4%	28.0%	27.7%	50.3%	40.2%	41.2%	40.1%	26.8%	70.2%	

Note: in each survey, nominal consumption is transformed into real consumption by applying a spatial and a temporal deflator to make nominal consumption values obtained in different areas of the country and at different times of the year comparable. To make real consumption values obtained in different survey rounds comparable, we divide survey-specific real consumption values by corresponding official poverty lines. Given that the poverty line represents the cost of acquiring a basic basket of food and non-food items, it is a reference of the relevant cost of living for the poorest part of the population in each round. The unit of measurement of this indicator is thus the number of basic baskets of food and non-food items.

Source: authors' construction based on IAF96/97, IAF02/03, IOF08/09, IOF14/15, and IOF19/20.

A similar trend is evident when focusing on multidimensional poverty. The calculation of multidimensional poverty is based on the Alkire-Foster method (see Appendix) and follows the same methodology outlined in MEF-DEEF (2016). Basically, the Alkire-Foster method is applied to six wellbeing indicators, with equal weighting. They include: (i) having at least one household member who has completed 1st Grade Primary Education (five years); (ii) access to safe water; (iii) access to quality sanitation; (iv) good quality roof; (v) access to electricity; and (vi) ownership of the most common durable goods. Details are provided in the Appendix.

In Table 2 we present the levels of deprivation in each of the indicators described above. Overall, there is a positive trend of reduction of deprivation in the majority of the indicators, though levels of deprivation in access to a safe water source and ownership of durable goods increased in 2019/20. As was the case for average real consumption in different areas and provinces, there are substantial differences between urban and rural areas and across regions with regard to every indicator considered. Comparing urban and rural areas, the most recent data reveal stark differences in deprivation levels, especially in terms of access to electricity. Only 26.7 per cent of households in urban areas are deprived in this dimension, while for rural areas the level is close to 90 per cent. As for the north–south divide, differences stand out in terms of the quality of the roof of the house (only 9 per cent of people in the south are deprived in this indicator, while in the north the percentage of households with roofing using rudimentary materials is 69.3 per cent). While access to safe water improved in urban areas from 2014/15 to 2019/20, an opposite trend occurred in the rural areas of the country, where the percentage of households deprived in this indicator increased to 64.1 per cent.

As explained in the Appendix, to calculate multidimensional poverty, MEF-DEEF (2016) defined a cut-off of 60 per cent. That means that if an individual is deprived in at least 60 per cent of the weighted welfare indicators described in Appendix Table A1, they are considered poor from the multidimensional point of view. We apply equal weight to all of the indicators analysed here, meaning that an individual is considered poor when they are deprived in at least four out of the six indicators. The multidimensional poverty headcount thus obtained (or poverty incidence, H) is the proportion of households identified as poor. Poverty intensity (A) is the average level of deprivation among the population considered multi-dimensionally poor. The adjusted poverty incidence (M^0) or Multidimensional Poverty Index (MPI) indicates the level of multidimensional poverty, considering both intensity and incidence of multidimensional poverty, so that $M^0 = H \times A$.

Table 3 presents the poverty incidence and the MPI at the national, urban/rural, regional, and provincial levels. At the national level, while there was a constant decrease in this index from 1996/97 to 2014/15, in the latest subperiod the MPI and multidimensional poverty incidence almost stagnated. This corresponds to a time of rising inequality and decreasing real consumption levels. When using this indicator, we can see also that the differences between urban and rural areas as well as those at the regional and provincial levels are substantial. In particular, while the MPI is 0.59 in rural areas, the value is only 0.15 for urban areas, and multidimensional poverty incidence is 71 per cent in rural areas and 19 per cent in urban areas, i.e. the percentage of people considered multidimensionally poor in rural areas is more than three times higher than that in urban areas. At the provincial level, the differences are even more marked. While the MPI is lower than 0.05 for Maputo City and Maputo Province, the values for all of the provinces in the north are higher than 0.50. Moreover, the percentage of multidimensionally poor is considerably higher in northern and central provinces (Niassa, Cabo Delgado, Nampula, Zambezia, Tete, Manica, Sofala) than it is in the most southern areas (Gaza, Maputo Province, and Maputo City). This stark divide, which exists in the MPI at provincial level, is also shown in Figure 8, for all available years.

Table 3: Prevalence of deprivation for each multidimensional poverty indicator, 1996/97–2019/20 (%)

	1996/97	2002/03	2008/09	2014/15	2019/20	1996/97	2002/03	2008/09	2014/15	2019/20
	Education					Water				
National	64.1	53.3	40.4	32.4	27.5	73.1	58.6	57.5	47.2	49.8
Urban	28.6	22.4	16.1	10.8	10.4	34.5	30.4	32.9	16.5	23.1
Rural	73.6	67.8	51.0	42.6	36.7	83.4	71.9	68.3	61.4	64.1
North	72.1	64.0	49.4	43.1	39.4	80.1	57.5	60.7	56.8	58.8
Centre	70.2	58.5	44.0	35.1	27.5	78.5	67.3	64.9	53.9	58.2
South	45.4	31.2	21.5	11.9	8.6	56.4	45.4	39.9	20.4	16.8
	Sanitation					Roof				
National	95.5	86.0	82.0	71.6	67.6	78.3	70.9	67.3	58.0	52.1
Urban	85.4	61.8	54.9	41.1	38.2	38.0	37.3	31.8	25.3	20.9
Rural	98.3	97.4	93.9	85.9	83.4	89.0	86.7	82.8	73.3	68.8
North	98.6	92.8	90.6	79.3	76.3	95.9	90.4	85.8	77.1	69.3
Centre	98.3	91.0	89.1	80.0	74.4	90.4	83.6	78.3	65.7	58.7
South	87.9	69.2	57.5	44.3	38.4	38.9	25.5	22.0	15.2	8.7
	Electricity					Durable goods				
National	93.9	91.1	84.8	72.9	67.9	87.3	79.5	68.7	49.8	58.0
Urban	75.2	73.2	53.3	28.8	26.7	92.2	88.3	79.6	60.7	35.3
Rural	98.9	99.5	98.6	93.5	89.9	69.2	60.8	43.8	26.4	70.2
North	96.6	93.6	90.9	79.8	73.5	93.8	83.2	78.3	55.4	64.6
Centre	97.3	95.0	91.4	82.8	77.2	91.2	87.3	75.0	59.7	64.3
South	85.5	81.4	64.7	43.9	38.8	72.8	63.6	43.0	24.6	33.9

Note: Prevalence of deprivation (in percentage) for each multidimensional poverty indicator considered in the multidimensional poverty assessment.

Source: authors' construction based on IAF96/97, IAF02/03, IOF08/09, IOF14/15, and IOF19/20.

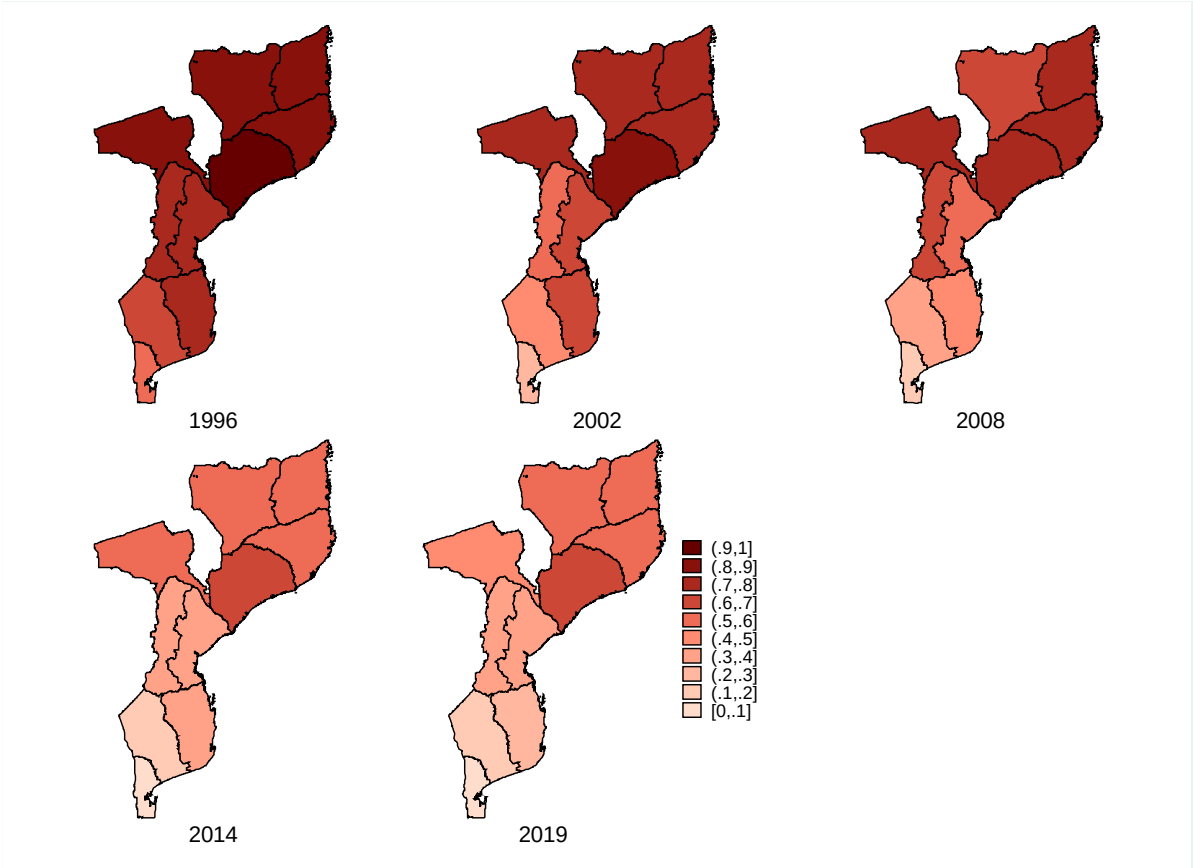
Table 4: Multidimensional poverty incidence (H) (%) and MPI (M^0), 1996/97–2019/20

	H					M^0				
	1996/97	2002/03	2008/09	2014/15	2019/20	1996/97	2002/03	2008/09	2014/15	2019/20
National	0.86	0.76	0.69	0.54	0.53	0.77	0.66	0.59	0.44	0.43
Urban	0.50	0.41	0.31	0.18	0.19	0.40	0.32	0.25	0.14	0.15
Rural	0.95	0.92	0.86	0.71	0.71	0.87	0.82	0.73	0.58	0.59
North	0.95	0.87	0.81	0.67	0.65	0.87	0.77	0.69	0.55	0.54
Centre	0.93	0.84	0.80	0.63	0.61	0.85	0.75	0.68	0.52	0.50
South	0.64	0.48	0.33	0.19	0.15	0.53	0.38	0.26	0.14	0.11
Niassa	0.95	0.89	0.77	0.71	0.68	0.87	0.77	0.63	0.58	0.56
Cabo Delgado	0.97	0.90	0.83	0.62	0.65	0.87	0.80	0.70	0.51	0.53
Nampula	0.95	0.85	0.82	0.67	0.64	0.87	0.76	0.71	0.57	0.53
Zambezia	0.96	0.92	0.88	0.74	0.74	0.91	0.84	0.76	0.62	0.62
Tete	0.95	0.89	0.85	0.67	0.59	0.87	0.79	0.71	0.55	0.48
Manica	0.89	0.70	0.76	0.49	0.47	0.79	0.59	0.62	0.39	0.36
Sofala	0.86	0.71	0.62	0.46	0.50	0.77	0.61	0.52	0.36	0.39
Inhambane	0.83	0.81	0.60	0.43	0.37	0.72	0.67	0.49	0.33	0.28
Gaza	0.79	0.52	0.47	0.23	0.19	0.66	0.41	0.37	0.17	0.14
Maputo Province	0.73	0.38	0.18	0.07	0.05	0.59	0.27	0.13	0.05	0.03
Maputo City	0.18	0.13	0.03	0.01	0.00	0.13	0.09	0.02	0.00	0.00

Note: Multidimensional poverty incidence (H) and MPI (M^0) in the multidimensional poverty assessment, 1996/97–2014/15. National, urban/rural, regional, and provincial levels. Multidimensional poverty incidence (H) is the percentage of individuals identified as poor—i.e., individuals facing a percentage of deprivation above the established poverty cut-off (60% of the deprivation dimensions, or four of the six selected indicators). The adjusted poverty incidence or multidimensional poverty index ($M0$ or MPI) indicates the extent to which the population in a given region is poor, taking into account incidence and intensity of poverty, $M^0 = H\ x\ A$.

Source: authors' construction based on IAF96/97, IAF02/03, IOF08/09, IOF14/15, and IOF19/20.

Figure 8. Multidimensional poverty index (MPI), provincial level, 1996/97–2019/20



Note: MPI (M^0) in the multidimensional poverty assessment, 1996/97–2014/15, provincial level (each graph corresponds to one survey year). The adjusted poverty incidence or multidimensional poverty index (M^0 or MPI) indicates the extent to which the population in a given region is poor, taking into account incidence and intensity of poverty, $M^0 = H\ x\ A$.

Source: authors' illustration based on IAF96/97, IAF02/03, IOF08/09, IOF14/15, and IOF19/20.

4 Conclusions

At the turn of the millennium, Mozambique started on a journey of fast-paced economic growth, accompanied by substantial reduction in the poverty rate. However, a considerable increase in the level of inequality has accompanied this development, especially in recent years. In fact, until 2014/15 consumption increased much more for richer households, leaving the worse off behind. In the last few years, due to the multiple crises that have shocked the country, consumption has reduced across the distribution. However, the decrease was proportionally higher for those at the bottom of the consumption distribution, while better-off people suffered relatively less from the shocks.

This increase in inequality comes about in an already unequal country that has for a long time being characterized by stark divides in terms of consumption and multidimensional poverty along

the urban–rural dimension, the north–south gradient, and the regional dimension.[8] What is more, the multiple economic, natural, social, and political shocks that affected the country from 2014/15 had dire consequences for the wellbeing of the population. All percentiles of the population experienced a drop in real consumption, but the better off lost less, in proportion, than their poorer counterparts, even though they lost more in absolute terms. This means that the relative gap between better-off and worse-off people has continued to increase.

As the country embarks on the production and exporting of strategically important natural and mineral resources, an increasing trend in income inequality paired with persistently high and worsening poverty levels may be dangerous for social cohesion, economic and social stability, governance, and growth. Effective policy action is required to ensure a higher degree of inclusive growth, to avoid what used to be a fast-growing and poverty-reducing developing country becoming an even further divided, unequal, and conflict-prone state.

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[8] Gradín and Tarp (2019b) highlight that this increase in inequality can also be explained as the result of the emergence of an increasingly skilled population working in the small but expanding non-subsistence private sector of the economy.

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Appendix: The Alkire-Foster method and its application in the Mozambican case

The Alkire-Foster method is one of the most widely used methodologies at international and national levels for the aggregation of indicators and dimensions of deprivation, and for the creation of a multidimensional poverty index (Alkire and Foster 2011). Intuitively, this methodology allocates weights to each deprivation dimension and in turn to each deprivation indicator within each dimension. Each indicator is a binary variable, which assumes only the values 0 (deprived) or 1 (not deprived). Indicators and dimensions of deprivation can have the same weight or different weights depending on the importance we attach to each indicator/dimension in relation to poverty status. The next step in the calculation of multidimensional poverty is the definition of a poverty threshold or cut-off—that is, a percentage of joint deprivation of the various dimensions/indicators that identifies a family or an individual as poor. For example, we can consider that households deprived in at least 50 per cent (or 40, 60, or 80 per cent) of the (weighted) dimensions are poor. In this way, it is possible to identify families as 'poor', to check in which and in how many dimensions the poor are deprived, and, finally, to calculate a joint MPI. In general, the following poverty estimates are computed:

1. Poverty Incidence (H), which is the percentage of individuals or households identified as poor from the multidimensional point of view, i.e. individuals or households facing a percentage of deprivation above the established poverty cut-off;
2. Poverty Intensity (A), which indicates the average level of deprivation among the population considered poor;
3. Adjusted Poverty Incidence (M^0) or MPI, which indicates the extent to which the individual, family, or population is poor, taking into account the incidence of poverty and its intensity: $M^0 = H \times A$.

The Alkire-Foster method has been widely used across SSA and other countries in the world; it reflects cumulative investments made over time by households and the government, and it is generally stable and simple to measure. However, this method requires the assigning of weights that are associated with each dimension/indicator, as well as a choice regarding the cut-off point that separates poor from non-poor households/individuals.

In the Mozambican case, we applied the Alkire-Foster method, taking into account six wellbeing indicators, with equal weighting, listing indicators and deprivation conditions as shown in Table A1. Each of these indicators is a binary variable, with values corresponding to 'deprived' or 'not deprived'.

To calculate multidimensional poverty, the cut-off used in the Mozambican case is 60 per cent. This means that an individual deprived in at least 60 per cent of the weighted welfare indicators described in Table A1 is poor from the multidimensional point of view. Given that we apply equal weight to all the indicators analysed here, this means that an individual is poor when deprived in at least four out of the six indicators.

Table A1: Welfare indicators, deprivation conditions, and weights

Indicator	Household deprivation condition
Primary school (1/6)	If no one has completed 1st Grade Primary Education (5 years)
Safe water (1/6)	If the household does not use piped water (inside the house, outside the house/yard), water from the fountain, water from a borehole or well with a mechanical or manual pump, mineral water, or bottled water
Safe sanitation (1/6)	If the household uses an unimproved latrine, or does not have any type of toilet or latrine
Roofing (1/6)	If the household house is not covered by a concrete slab, tile, or fibre cement/zinc sheets
Access to electricity (1/6)	If the household does not have access to electricity
Ownership of durable goods (1/6)	If the household does not have at least three durable goods from a list of the most common durable goods (bicycle, car, motorcycle, television, radio, telephone, computer, printer, bed, refrigerator, freezer, stereo)

Note: indicators, deprivation conditions, and weights considered in the multidimensional poverty assessment, 1996/97–2019/20. Weights are in parentheses.

Source: authors' construction based on MEF-DEEF (2016).