

The impact of COVID-19 on consumption poverty in Mozambique

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Abstract

This study assesses the impact of COVID-19 on household consumption poverty. To predict changes in income and the associated effects on poverty, we rely on existing estimated macroeconomic impacts. We assume two main impact channels: direct income/wage and employment losses. Our simulations suggest that consumption decreased by 7.1%–14.4% and that poverty increased by 4.3–9.9 percentage points in 2020. This points to a reversal of the positive poverty reduction trend observed in previous years. Poverty most certainly increased in the pre-COVID period due to other shocks, so Mozambique finds itself in a deepening struggle against poverty.

KEYWORDS

COVID-19, inequality, Mozambique, poverty

JEL CLASSIFICATION

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1 | INTRODUCTION

The global economic slowdown due to the COVID-19 pandemic is halting and reversing recent achievements in poverty reduction (Lakner et al., 2019; Sumner et al., 2020). The decline in global demand and travel restrictions that

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keep tourists away are hitting poorer countries such as Mozambique hard. Furthermore, governments have limited fiscal space to counteract the economic downturn compared with the generous support packages underway in richer economies. Prior to the pandemic, growth forecasts for Mozambique for 2020 were as high as 6% (United Nations, 2020). Yet, at the end of 2020, the gross domestic product (GDP) at market prices had actually decreased by 1.3% (INE, 2021a).

Egger et al. (2021) documented the serious deterioration of livelihoods in several low-income countries, including sharp declines in income due to job or revenue losses, more widespread food insecurity, and other negative effects, and Mozambique is no exception. With the decline in GDP, the question arises of how much livelihoods, and especially consumption poverty, were affected and what Mozambique can do in terms of policy responses.

After a long war until 1992, Mozambique rapidly reduced poverty between 1996/1997 and 2008/2009 from around 70% to around a level of 50%. In the most recent national poverty assessment from 2014/2015, the official poverty rate stood at 46.1% (DEEF, 2016). A study by Egger et al. (2020) found that in the period after 2015, poverty reduction stagnated due to several economic and climatic shocks. The impact of the pandemic has come on top and has surely worsened the situation, but potentially with heterogeneous impacts across sectors and between urban and rural areas.

The National Statistics Institute (Instituto Nacional de Estatística, INE) is processing the most recent detailed household survey,¹ conducted throughout 2020. Thus, a timely assessment of the microeconomic impact of the COVID-19 pandemic on poverty needed to rely on simulation methods. Betho et al. (2021) assessed the macroeconomic impact of COVID-19 and related government restrictions on the Mozambican economy applying a social accounting matrix multiplier analysis. Employing a set of assumptions and data on key economic indicators, they tuned in on a decline in growth of 3.6% and in employment of 1.9% on average due to COVID-19 in 2020. In other words, Mozambique's economy contracted by 1.3% in 2020, while in the counterfactual of a COVID-free world Mozambique would have grown by 2.3%. According to the study, the hardest-hit sectors through the channel of foreign demand decline were mining, trade and hospitality. Lower domestic demand affected construction, manufacturing and trade and hospitality. The effect worked primarily through capital-intensive sectors relying on foreign demand and primarily affected urban labour.

In the present study, we build on the Betho et al. (2021) results to estimate changes in household income and consumption, and we use these in turn to calculate the impact on the poverty rates. We find that consumption decreased by between 7.1% and 14.4%, and that the poverty rate increased by between 4.3 and 9.9 percentage points, depending on the specifics of the analytical approach in focus.² On average, this corresponds to about 2 million people falling into poverty in less than a year and to a reversal of the positive poverty reduction trend over the period 2008/09–2014/15. Betho et al. (2021) reported larger effects for urban workers, but our results bring out that rural areas experienced a higher increase in their poverty rates. This is due to low initial levels of consumption in rural areas, which make the rural population especially vulnerable to shocks in terms of falling below the poverty line. Similarly, we find that the reduction in consumption is comparable across people with different educational attainment up to completed secondary school, but poverty rates increased much more for uneducated people than for more educated ones. In sectoral terms, small traders show the highest reduction in consumption, while we find the biggest increases in poverty rates for people working in subsistence agriculture. Moreover, while most provinces present similar levels of reduction in consumption, we see scattered increases in average poverty rates. Inequality also appears to have increased due to the COVID-19 shock, mainly in urban areas.

In the context of an ever-evolving situation concerning the unfolding of the COVID-19 pandemic and its repercussions in terms of poverty and inequality, this study comes not only as a relevant tool in supporting policy formulation but also as a timely blueprint for research in the field. First, from a methodological perspective, the availability of detailed macroeconomic projections and a recent nationally representative household budget survey allows us to explore different approaches and options in terms of evaluating the potential microeconomic impact of the pandemic on poverty and inequality. This also makes it possible to disentangle the reasons behind varying outcomes resulting from different approaches, and in reflecting on advantages and disadvantages of employing each approach. Second,

regarding the concrete results and outcomes of the study, we take advantage of the comprehensiveness of the unique set of projections and data available to us to provide detail-rich and meticulous microeconomic projections. This adds considerable value to an academic literature that, until present, has been often limited to broad macroeconomic projections or non-representative phone-survey data with limitations in capturing expenditure or poverty. At the same time, it also supports informed and fact-based policymaking.

In this study, we present short-term estimates of changes in consumption and poverty in Mozambique to help inform policy on potential recovery measures using the latest available data of the 2014/2015 household budget survey (Inquérito de Orçamento Familiar, IOF; henceforth, IOF14). A more detailed analysis based on actual data instead of simulations will be possible once the 2019/2020 household budget survey (IOF 2019/2020) becomes available. Our study assumed that the main channel of poverty impact is through employment and income losses. We did not include other potential channels such as food price increases as prices remained relatively stable throughout 2020.³ We highlight that short-term declines in income can lead to long-run detrimental effects. Examples are poverty traps due to distress sale of assets (Dercon, 2004), poorer health and consequent labour market outcomes due to food insecurity (Alderman et al., 2004; Hoddinott & Kinsey, 2001), and worse labour market outcomes for children not returning to school (Bandara et al., 2015; Beegle et al., 2003; Edmonds, 2006).

The Government of Mozambique has been trying hard to contain the spread of the COVID-19 pandemic while simultaneously avoiding a very costly (and possibly unrealistic⁴) lockdown. At the end of March 2020, President Filipe Nyusi announced the implementation of a state of emergency. It was initially in place for 120 days. After a short interim period of 30 days to enact new legislation covering calamities, a renewal took effect. The first 120 days focused on preventing the disease, while the latest stage of emergency/calamity seems to accept both the existence of the virus and the need for envisaging a 'new normal' combined with a slow opening of the economy.

So far, the government managed to avoid a complete lockdown. Nevertheless, the pandemic combined with the mitigation measures likely came at a heavy cost to the economy. To come to grips with the impact and the policy dilemmas involved, with a view to designing optimal policy responses, we aim here to analyse the impact of the pandemic and its consequences across the economy. When we began this study,⁵ COVID-19 cases had just increased drastically and the government was introducing new stricter measures to reduce the spread of the virus, including its more contagious South African variant.

The study proceeds as follows. Section 2 outlines the trends of consumption poverty and inequality in Mozambique, and Section 3 presents literature on the economic impact of the pandemic globally and in low-income countries. Section 4 summarizes the development of COVID-19 and the government response in Mozambique, whereas Section 5 presents the data used in the analysis. Section 6 explains the methodology applied to address the research question, and Section 7 presents results. Section 8 concludes and provides policy recommendations.

2 | TRENDS IN POVERTY AND INEQUALITY IN MOZAMBIQUE

The Government of Mozambique measures consumption poverty and inequality using the nationally representative household budget survey (IOF) collected every 5 years since 1996/1997. While INE collected the most recent survey during 2019/2020, the data are not yet available. Once available, it will help shed light on the direct impact of the pandemic on livelihoods and the consequences of the events between 2014/2015 and 2020. In the meantime, we rely on the latest available household consumption data from 2014/2015.

After a long war until 1992, Mozambique entered a period of fast growth and poverty reduction in the 1990s. Annual growth rates were on average 7.2% during the period 2000 until 2016 and GDP per capita grew by 4% annually so that Mozambique was among the fastest growing economies in Sub-Saharan Africa (SSA) (World Bank, 2018). Over the same period, poverty rates fell by 25 percentage points, yet with an increase in the number of poor people due to high population growth. The latest national poverty assessment published in 2016 and based on data from IOF14 estimated the poverty headcount to be at 46.1% corresponding to 11.8 million Mozambicans living in poverty

(DEEF, 2016). This is almost as many poor people as in 1997 when estimates suggested 12 million Mozambicans were poor (DEEF, 2016). Furthermore, consumption gains show divergent trends. There is a strong rural–urban divide and a regional hierarchy has emerged, with the southern region, where also the national capital Maputo is located, being relatively better off. Rural areas in the central and northern regions remain disconnected from markets, electricity, and other basic services as documented in the multidimensional poverty analyses (Cardoso et al., 2016; DEEF, 2016). For example, in 2014/15, 18% of urban Mozambicans were considered multidimensionally poor contrasting with 72% of the rural population (DEEF, 2016).

Inequality at the national level has increased from a Gini coefficient of 0.40 in 1997 to 0.47 in 2014/2015, which is relatively high in comparison to other low-income SSA countries (World Bank, 2018). The rise in inequality stems primarily from urban areas and especially in the southern region where higher income groups made substantial gains. In 2014/15, the top 5% of the consumption distribution in urban areas consumed 21 times as much as the lowest 5%. In contrast, in rural areas, this ratio remained relatively stable at around 8–9.

Since the last national poverty assessment and nationally representative household survey in 2014/15, a combination of several crises hit the country. The so-called hidden debt scandal led to donor withdrawal and a sharp reduction in aid as well as a drop in GDP. At the same time, prices and demand for Mozambique's highest value products, such as coal and gas, dropped and the country was hit by severe weather events causing great damage to people's livelihoods. In addition, conflicts burst in the northern province of Cabo Delgado, destabilizing the region and with attacks on civilians, who fled in masses to neighbouring provinces and across the border into Tanzania. Egger et al. (2020), with data from the demographic and health surveys, document that these combined events led to a stagnation in multidimensional poverty between 2015 and 2018.

3 | COVID-19 AND POVERTY IN LOW-INCOME COUNTRIES

After almost 25 years of decline in global poverty, the outbreak of COVID-19 represents a gloomy setback for human development, further undermining the goal of bringing global extreme poverty to less than 3% by 2030 (World Bank, 2020). An emerging body of literature addresses the economic impacts of the COVID-19 pandemic, both on a global and on a national scale.

In the wake of the pandemic, in March 2020, the International Labour Organization (ILO) estimated an increase in global unemployment of between 5.3 and 24.7 million in 2020 (see ILO, 2020). The ILO report also projected an increase in working poverty of between 9 and 35 million using a poverty line of US\$3.20/day (ILO, 2020). These estimates emerged from a hybrid dynamic stochastic general equilibrium/computable general equilibrium model implemented by McKibbin and Fernando (2020), who proposed three potential scenarios (low, middle, and high) with a drop in GDP of 2, 4, and 8%, respectively. Laborde et al. (2020) presented a set of parallel projections in March 2020, which they updated in April. For their scenarios, they used the International Food Policy Research Institute (IFPRI) global general equilibrium model, MIRAGRODEP, and they concluded that globally, in the absence of mitigating policy interventions, an additional more than 140 million people could fall under the US\$1.90/day poverty line.

ILO's and IFPRI's estimates were based on variants of computable general equilibrium models that estimate how supply and demand shocks, changes in production factors, or trade and output contractions affect poverty. Taking a different approach, Sumner et al. (2020) estimated the impact of the pandemic on global poverty due to direct consumption shocks. The authors provided estimates based on three scenarios with 5, 10 or 20% income or consumption contraction, performed for the US\$1.90, US\$3.20 and US\$5.50 per day poverty lines, respectively. Assuming a 5% contraction in per capita incomes, the global poverty headcount was projected to increase by more than 80 million for the US\$1.9/day poverty line, more than 130 million for the US\$3.2/day standard, and almost 124 million for the higher poverty line of US\$5.5/day. In the high global contraction scenario, of 20%, the increases could be about 420 million, 580 million and 520 million people, respectively. Notably, these estimates reflected distribution neutral assumptions and omitted any policy impact, and labour market and household level responses.

Lakner et al. (2019) simulated global extreme poverty until 2030 under different growth and inequality scenarios based, until 2021, on the growth projections of the June 2020 edition of the World Bank's Global Economic Prospect report. After 2021, the authors used three different scenarios based on historical growth rates. The study modelled the impact of distributional changes on poverty by changing a country's Gini index and using different growth incidence curves. To model the pass-through rate from growth in GDP to household level growth, the authors relied on a machine-learning algorithm (model-based recursive partitioning). The study concluded that COVID-19 might have pushed 60 million people into extreme poverty in 2020. The authors also highlighted that distributional changes could have had a substantial impact on poverty reduction. A 1% annual decline in each country's Gini index was shown to have a bigger impact on global poverty than if each country experienced a 1 percentage point higher annual growth rate than expected.

Valensisi (2020) provided a preliminary assessment of the COVID-19 impact on global poverty based on the International Monetary Fund's (IMF) growth forecasts in April 2020. The author, assuming a distribution neutral shock, estimated an increase of 68 million people living below the US\$1.90/day poverty line in 2020, but this number could easily rise to 100 million in case of a recession deeper than the one forecasted by the IMF. The study also underscored the disproportional social and economic impact that the crisis could have on least developed countries (LDCs). Intrinsic vulnerabilities of LDCs make them highly susceptible to external shocks, which often act through a tension in the balance of payment. In addition, a considerable share of the population in LDCs is concentrated just above the global extreme poverty line. The economic shock could dissolve the past decades' gains in poverty reduction and exacerbate structural vulnerabilities, hitting particularly hard in South Asia and SSA.

Attempting to tackle the scarcity of systematic quantitative evidence on the economic impact of the COVID-19 crisis in low- and middle-income countries, some studies relied on phone surveys, based on random phone digital dialling (RDD), on previously conducted studies, or high-frequency phone surveys (HFPS). While these studies shed further light on the actual impact of COVID-19 on households, care is required for sample selection and comparability of the surveys across countries.

Egger et al. (2021) presented results from 16 samples in nine countries (Bangladesh, Burkina Faso, Colombia, Ghana, Kenya, Nepal, Philippines, Rwanda and Sierra Leone), covering heterogeneous samples relying on RDD and on earlier studies. The study looked at changes in income, employment, access to markets, food security and government or NGO support and reveals heightened economic distress and a substantial increase in the incidence of food insecurity. Between 8% and 87% of those responding reported a drop in income, with a median share of 70%. In addition, 5%–49% (median 30%) reported not to have worked since the crisis hit. Substantial impediments to livelihood, in terms of access to markets and healthcare, which resulted in 9%–87% of the respondents being forced to miss or reduce meals (median share is 45%) compounded these effects.

Khamis et al. (2021) presented estimates on the impact of the crisis in the labour market in 39 countries based on HFPS data, and evaluated the consistency of these data with macroeconomic projections (IMF's World Economic Outlook and ILO's ILOSTAT). The study found that work stoppage was common, averaging 34% across countries, while, especially in Latin America and the Caribbean, wage workers frequently reported partial or no payments. Dividing the workers into three different sectors—agriculture, industry and services—the study found that work stoppages were more common in services and industry than in agriculture, even though the last sector also experienced significant disruptions. When comparing the results to macroeconomic projections, the authors highlighted some discrepancies with labour market outcomes based on HFPS data, especially in SSA. This suggests that macroeconomic projections do not fully capture the impact on households, particularly in countries with high levels of informality.

A growing body of literature also aims to provide projections and assessments for the country-specific impact of the pandemic-related crisis. The vast majority of these studies consist of microeconomic and macroeconomic projections of the national impact of the pandemic, due to the lack of real-time data. However, a few exceptions relied on weekly financial household data (Janssens et al., 2021) or nationally representative surveys (Jain et al., 2020; Menta, 2021).

An example of the first strand of this literature is the study by Suryahadi et al. (2020) on the impact of COVID-19 on poverty in Indonesia. The forecast of the impact on the distribution of household expenditure used the 2005–

06 Indonesian economic shock, which the authors applied as a pattern of shock experienced by each expenditure percentile to measure the distributional impact of COVID-19 on household expenditure. Due to the pandemic, the growth rate for 2020 was expected to reduce from 5% to between 4.2% and -3.5%. Depending on the gravity of the scenario, the poverty headcount was expected to grow by an additional 1.3–19.7 million people.

Cuesta and Pico (2020) analysed the effect of the crisis on gendered employment disparities, income generation gaps, and poverty gaps by developing an ex-ante simulation exercise using a static microsimulation model. In doing so, the authors predicted poverty scenarios with and without COVID-19 and analysed the effect of different policy interventions. The study estimated that the pandemic increased the number of people living in poverty by between 3% and 9.1% and found no significant difference in the poverty impact on men and women.

For Mozambique, Mussagy and Mosca (2020) estimated the poverty and inequality outcomes of COVID-19. The projections presented in the study used a contraction of 5%, 10% and 20% in consumption (optimistic, moderate and pessimistic scenarios) and were based on the data of the nationally representative household budget survey undertaken in 2014/15. The reduction in consumption was not homogeneous across households; rather, it depended on a series of household characteristics such as the level of poverty recorded in the last assessment, the household size and whether the household was located in an area affected by the recent cyclones or insurgencies.⁶ When the international US\$1.90/day poverty line was used, the microsimulation resulted in an estimated national poverty rate of 92.6%, 93.1% or 93.37% (1–2 percentage points up from an initial level of 91.7%), depending on the scenario.⁷ The pandemic was expected to have a slightly more severe impact in urban areas, in line with the projections of the latest *Poverty and Shared Prosperity* report (World Bank, 2020). However, in Mozambique, COVID-19 was not projected to invert the historical trend of a higher level of poverty in rural areas. As for the level of inequality, the study estimated an increase in the Gini index to 0.478, 0.484 or 0.504 for each of the scenarios. The limitations of this study include that it did not take into account the effect of mitigation policies implemented by the government and that the time perspective of the pandemic's economic impact was limited to two trimesters.

Another attempt to analyse the implications of COVID-19 for the economy, business, and households in Mozambique is contained in the recently published *Mozambique Economic Update* of February 2021 (World Bank, 2021a). The study highlighted that in 2020, the country was expected to experience its first economic contraction in almost 30 years. This combined with a slowdown in foreign direct investment and capital inflows, and substantial fiscal challenges. COVID-19 has also seriously affected enterprises and households, causing sudden income losses and worsening living conditions, hitting particularly hard the services sector and the urban poor engaged in the informal sector. In terms of poverty incidence, the study presented different scenarios characterized by a decline in consumption of 5, 10, 25, and 50%. A reduction of 10% in consumption per capita by all households, which the authors regarded as reasonable given the scale of the crisis, would lead to an increase in the poverty rate by more than 5 percentage points, meaning that at least 1.4 million more Mozambicans could fall below the national poverty line. Moreover, the World Bank report also stressed the potential impact of the crisis on human capital in the medium to longer term, especially due to school closures. These challenges could pose serious threats to Mozambique's progress towards achieving the United Nation's Sustainable Development Goals.

4 | COVID-19 IN MOZAMBIQUE AND THE GOVERNMENT RESPONSE

We proceed to discuss the development of the COVID-19 pandemic and the government responses to mediate its effect. Figure 1 illustrates the evolution of COVID-19 in Mozambique until December 2020. At the onset of the COVID-19 pandemic, Mozambique was able to protect itself against the spread of the virus due to early border closure, travel restrictions including quarantine, and strict containment measures. In this way, the so-called first wave from March until June 2020 saw relatively few cases. This continued to be so for a few more months until September 2020 when numbers increased but plateaued at a slightly higher level. With the end-of-year holidays and re-opening of the borders with South Africa, where the more infectious mutation of the virus

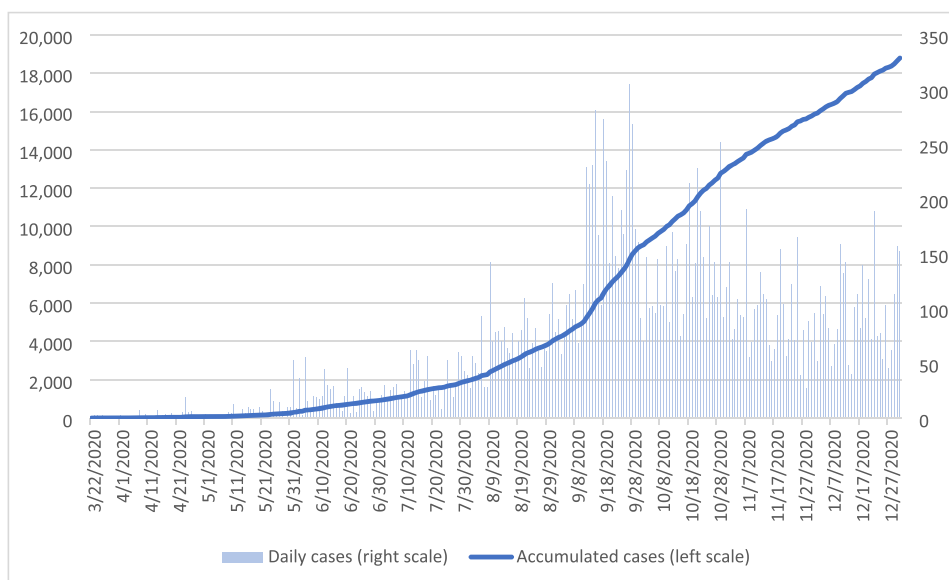


FIGURE 1 COVID-19 in Mozambique—daily and accumulated cases. *Source:* authors' computation based on Ministério da Saúde (2020)

was rapidly spreading, the infection rate jumped over the festive season and into 2021, with a concentration in the capital city of Maputo.

Since the first cases of COVID-19 in the country in March 2020, Mozambique has identified and implemented several concrete measures to prevent and/or contain COVID-19, the first measure being the state of emergency, through the Presidential Decree No. 11/2020 of March 30, ratified by Law No. 1/2020 of 31 March, for 30 days. Among several other measures, the last measure taken until the time of this study was the extension of Decree No. 2/2021 of 4 February 2021, reviewing the measures to contain the spread of the pandemic of COVID-19 and continuing management of the public disaster situation, including curfews in the metropolitan area of Greater Maputo (Maputo and Matola cities and Marracuene and Boane Vila) from 9:00 PM to 4:00 AM.

The different government measures targeted sanitary measures, travel restrictions, import and export restrictions, an economic recovery plan, a support plan for businesses, and a support plan for exporters. Some examples of the economic stimulus and social protection policy measures taken include a value-added tax (VAT) exemption for sugar, cooking oil, and soap until 2023 for families and firms⁸; a fund for micro, small, and medium enterprises (MSMEs) released by the National Social Security Institute to guarantee payment of salaries and protect jobs (US\$ 22.9 million); and a line of credit to MSME subsidized by the National Investment Bank of Mozambique (Banco Nacional de Investimento, BNI) that saw applications from companies six times larger than the available resources. Moreover, a total of 2.9 billion Mozambican meticals (MZN) was budgeted for payment of debts with suppliers of goods and services to the state; total exemption was given to customs duties and miscellaneous taxes on the import of medicines and reagents, as well as all COVID-19 prevention materials and ventilators. Measures to waive and postpone payments of corporate taxes for firms with less than MZN 2.5 million revenue were also introduced, even though they only affected a small proportion of firms,⁹ and negotiations about minimum wage adjustments were suspended. With respect to benefit and social protection policies, utility tariffs were reduced¹⁰; a projected fund of US\$240 million was designed to assist 1 million vulnerable people in urban areas and border towns; existing beneficiaries of social assistance programmes were meant to receive an additional amount worth a 3-month benefit (592,179 beneficiaries); additional households were registered to receive a monthly transfer of 1,500 MZN per month for a period of 6 months¹¹; a subsidy of 30% of salaries for civil servants in the health and defence sector

was approved; the cost of mobile money transactions was reduced and daily and unique transaction limits were increased to support transactions during the COVID-19 pandemic. On top of this, the Bank of Mozambique reduced the cost for consumers for bank transactions; measures adopted included reducing interest rates and regulatory requirements, raising the liquidity of the banking sector. A credit line of US\$500 million was also made available for imports. Plus, tax forgiveness and deferral were employed to provide private sector companies with cash relief; the electricity tariff was reduced for small and medium enterprises (SMEs) during the emergency period; and the BNI announced the operationalization of a 600 million MZN financing line for MSMEs to cope with the impact of COVID-19.

Expectations were that poor families could suffer if they earned income from work, mainly in the private sector where companies had to shut down. In that sense, actions that aimed to protect SMEs are likely to have been effective in alleviating the situation of entrepreneurs and of workers. Especially households with low consumption levels were at risk of falling into poverty due to income loss. Thus, measures such as reduction in utility tariffs or mobile money transaction costs as well as the strengthening of the social protection system might have helped to reduce the impact.

5 | HOUSEHOLD DATA

We used the quarterly data from the 2014/15 household budget survey (i.e., IOF14) as a primary data source in this study. IOF14 is the latest of the four nationally representative household budget surveys available, produced by INE.¹² The IOF14 is representative of Mozambique as a whole, of rural and urban areas, and of each of the 11 provinces, including the capital, Maputo. It includes information about general household characteristics, employment, education, access to basic services, daily expenses and household consumption from own production, possession of durable goods, housing conditions, receipts and transfers received and paid, income from various sources, as well as less frequent expenses.

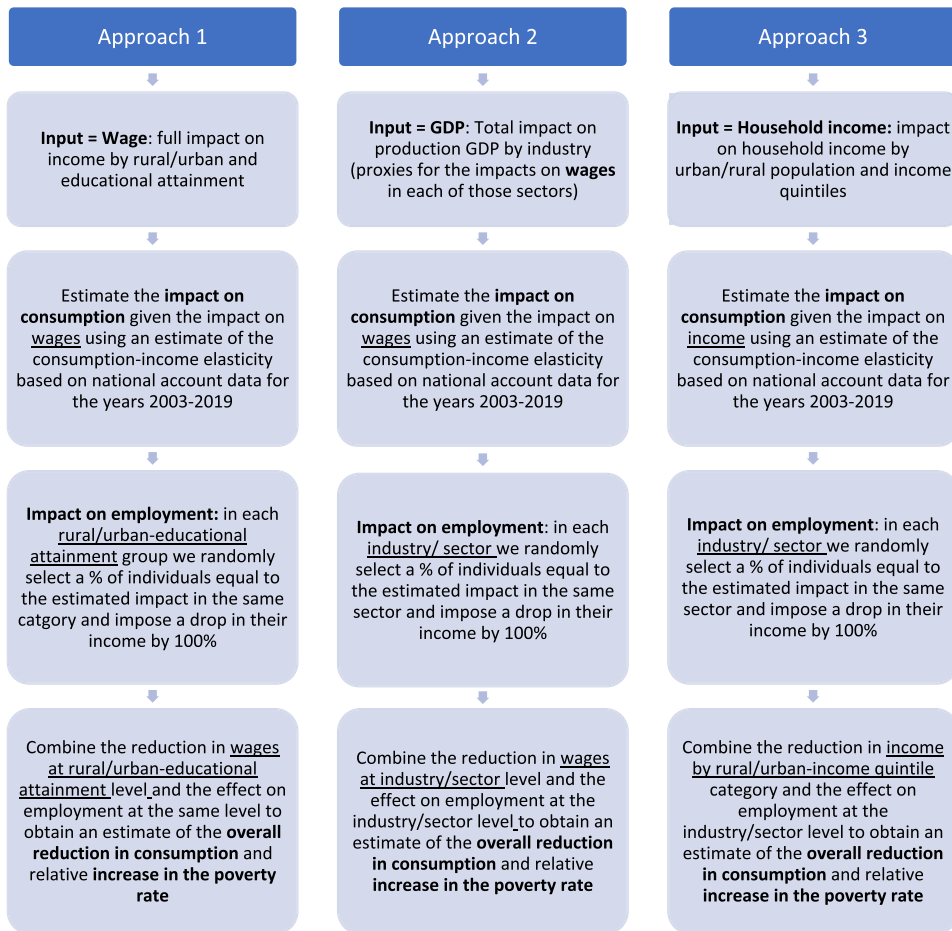
The official method for poverty calculations in Mozambique employs the widely used ‘cost of basic needs’ approach and it computes temporal and spatially adjusted region-specific poverty lines of minimum consumption. Consumption is computed per capita per day and covers large expenses during the past 12 months, regular monthly expenses on items such as school fees or clothes, and daily consumption of food including consumption of own production.

Inequality is computed as the Gini coefficient based on daily per capita consumption (for a detailed description of the methodology, see DEEF, 2016).¹³ Moreover, the IOF14 is a repeated interview (mini-panel) survey (DEEF, 2016; INE, 2015a). Implementation took place from mid-August 2014 to mid-August 2015, and INE divided the 12-month period as follows: Quarter 1, mid-August to mid-November 2014; Quarter 2, mid-November 2014 to mid-February 2015; Quarter 3, mid-February to mid-May 2015; and Quarter 4, mid-May to mid-August 2015.¹⁴ Additional information on IOF14 and on the poverty assessment derived from the analysis of these data is found in DEEF (2016) and INE (2015a).

6 | METHODOLOGY

We assumed two main impact channels are at work, leading to lower consumption and higher poverty: direct income/wage and employment losses. To estimate the direct impact on income/wage, we relied on the information from Betho et al. (2021) on the impact on wages, on GDP by industry, and on household income. To estimate the employment losses, we used the information on the impact on employment from Betho et al. (2021). The two impact channels—direct income/wage and employment losses—were then combined to assess the final impact on consumption and poverty using the IOF14 data.

We pursued three analytical approaches, referred to in what follows as Approach 1, Approach 2 and Approach 3. Approach 1 uses as primary inputs the impacts on wages disaggregated by rural/urban and educational attainment, and the impacts on employment disaggregated at the same level; in Approach 2 the inputs consist of the impact on GDP by industry/sector and of the impacts on employment disaggregated at the same level; finally, Approach 3, instead of using the impact on wages as done in the previous approaches, uses as input the impact on household income by urban/rural population and income quintiles, plus the impact on employment disaggregated at the same level. The impacts on wages, GDP, on household income and on employment were gathered from Betho et al. (2021). These impacts were identified among the many sets of results from Betho et al. (2021) because they were directly applicable to a microeconomic context and also because they presented a level of disaggregation that permitted to obtain much more detailed microeconomic estimates compared to existing studies, for Mozambique and most developing countries.¹⁵ A graphical and more intuitive explanation of the approaches implemented is presented in Scheme 1. Moreover, in Section 7 only the average impacts from the three approaches are presented, while the detailed results are in the Appendix.



SCHEME 1 Approaches implemented to assess the impact of Covid-19 on consumption and poverty using the IOF14 data and macroeconomic estimates from Betho et al. (2021)

We now turn to detailed estimations using the three approaches. In Approach 1, we used as primary inputs the impacts on wages gathered from Betho et al. (2021), and referred to as ‘impact on income GDP by production factor with labour by rural/urban and by educational attainment’.¹⁶ It describes the estimated impact on wage income for different rural/urban and educational attainment categories. The estimated impacts are presented in Table 1 and we see that low-skill workers in urban areas were hit hardest, while high-skill workers in rural areas were among the least affected groups.

To measure the impact on consumption for wage earners in these categories, given the impact on wages just shown, we used an estimate of the consumption–wage elasticity. The method used to provide an estimate for the consumption–income elasticity (marginal propensity to consume) was based on national accounts data from the World Development Indicators of the World Bank for the years 2003–2019 for Mozambique (see World Bank, 2021b). We first obtained the data for GDP (current local currency unit, LCU) and for household final consumption expenditure (current LCU), used as measures of income (Y) and private consumption (C) at national level. We subsequently computed the marginal propensity to consume as $\Delta C/\Delta Y$ for the years 2003–19 and predicted the value of the marginal propensity to consume for 2020 using a linear trend.¹⁷

As a robustness check, we also implemented a second method to compute group-specific consumption–wage and consumption–income elasticities, namely, a regression-based approach based on the IOF14 data. In this approach, we computed a set of consumption–wage elasticities for each sector, using a linear regression of the type:

$$\ln c_i = \beta_0 + \beta_1(\ln w_i * \text{sector}_i) + \beta_2 \text{prov}_i + \varepsilon_i \quad (1)$$

where i indicates the individual, c is nominal consumption,¹⁸ w is wage, sector indicates the employment sector, prov refers to the province of residence, and ε is the error term. Sample weights and survey-specific sample design characteristics were also applied. Once we computed sector-specific consumption–wage elasticities using the IOF14 data, it was possible to provide an estimate of the impacts on consumption given the impacts on wage. As an example, if wages for the sector ‘manufacturing’ were reduced by 4.8% and the estimated consumption–wage elasticity for this category was 0.6, then we assigned to all wage earners in this sector a (percentage) reduction in consumption equal to $4.8 \times 0.6 = 2.88$. The values for the consumption–income elasticity (marginal propensity to consume) obtained using the method based on national accounts data were substantially in line with those obtained using the regression-based method: with the method based on national accounts data we obtained a value of 0.639, while with the regression-based method we computed a set of sector-specific consumption–wage elasticities ranging from 0.527 to 0.755. As mentioned, given that the results changed only slightly using one method instead of the other, we decided not to present the results obtained using the regression-based method in the main text, but only in the Appendix.¹⁹

TABLE 1 Full impact on income by rural/urban and educational attainment

Category	Impact (%)
Labour rural, not completed primary	–2.5
Labour rural, completed primary	–2.3
Labour rural completed secondary	–1.5
Labour rural, completed tertiary	–1.9
Labour urban, not completed primary	–3.9
Labour urban, completed primary	–3.9
Labour urban, completed secondary	–3.6
Labour urban, completed tertiary	–2.5

Source: authors' elaboration based on Betho et al. (2021).

Wages/salaries and income in general are in nominal terms in the IOF14 survey, so the per capita and household consumption aggregates used here are also in nominal terms, as are the values for GDP and household final consumption expenditure at the national level. Consequently, we mostly ignored price changes in what follows.²⁰ We think this can be an acceptable assumption, considering that price movements during 2020 were limited compared with other periods. Furthermore, price movements were greatly comparable in magnitude with the price changes observed during the months of August 2014 to August 2015, which correspond to the IOF14 survey period, and with the price changes observed during March/April to December 2020, which are the months connected to the COVID-19 shock. We show the evolution of the consumer price index during the months of the IOF14 survey and during 2020 in Figure A1 in the Appendix. Accordingly, poverty lines are also expressed in nominal terms.

The impacts on wages/income and consumption effects represent the first component of the estimation of the overall effect of the COVID-19 shock on consumption and poverty²¹; the second is the impact on employment, also found in Betho et al. (2021) at various levels of disaggregation.

In particular, in the first approach, we considered the impacts on employment at the rural/urban–educational attainment level. To do so, we considered the impacts on employment in each rural/urban–educational attainment group as probabilities of loss of job for these categories. Therefore, we randomly selected in each group a percentage of individuals equal to the estimated impact on employment in the same group as found in Betho et al. (2021) and imposed a drop of income for these individuals by 100%.²² As an example, if Betho et al. (2021) estimated that the impact on employment for urban workers who have completed secondary education was -4.6% , we randomly selected a number of workers in this category equal to 4.6% of the total working population in this category (urban workers who have completed secondary education) and imposed a drop in income of 100% for the selected individuals.²³ Moreover, we also took into account that when a household member loses their income, this has an impact on the level of consumption of the entire household.²⁴ We estimated this drop in consumption to be about 15% .²⁵

We finally combined the reduction in wages at rural/urban–educational attainment level and the effect on employment at the same level to obtain an estimate of the overall reduction in consumption and the relative increase in the poverty rate. We could easily compute these estimates for the subsample of individuals earning a salary or wage ('wage workers'). However, we proceeded and made a key assumption. It is that the reduction in wages for each rural/urban–educational attainment category could be a good approximation for the reduction in incomes also for the individuals working in these categories but not receiving a fixed wage (such as self-employed or family workers). On this basis, we could then estimate the consumption and poverty effects for all workers in these categories, that is, the (larger) subsample of individuals earning any income from any kind of working activities. In Section 7, we only present the estimates with respect to the larger sample of individuals earning any income from any kind of work activities, while we show those restricted to wage workers in the Appendix.

Approach 2 is similar to Approach 1 with one difference. It is that we used as main inputs the results from Betho et al. (2021) regarding impacts on GDP by industry/sector referred to as 'total impact on production GDP by industry' in place of impacts on wages by rural/urban and by educational attainment. We took these impacts and considered them as proxies for the impacts on wages in each of those sectors. Even though we are aware that this is not fully correct,²⁶ we decided to apply Approach 2 also because it allows to fully exploit the estimates disaggregated by sector, which in our opinion is extremely relevant, given that the differences in the impacts from Covid-19 on consumption and poverty seem to be much more pronounced among industries/sectors than among urban and rural households, high- and low-skilled workers or among poorer and richer households.²⁷ The estimated impacts on GDP by industry/sector are in Table 2. The hardest-hit sector was certainly trade and accommodation, but mining and quarrying and manufacturing also presented significant impacts.

Subsequently, we computed an estimate for the consumption–wage elasticity in order to measure the impact on consumption for wage earners in these sectors by implementing the method based on national accounts data for the years 2003–19 which has been described already and is not repeated here. The robustness check implemented in Approach 1 consisting of computing a set of sector-specific consumption–wage elasticities was also implemented in Approach 2; this has also been described already and is not repeated here.

TABLE 2 Full impact on GDP by main sectors, average over Q1–Q4 of 2020

Category	Impact (%)
Agriculture, forestry, and fishing	−1.9
Mining and quarrying	−8.1
Manufacturing	−4.8
Electricity, gas, and water	−3.1
Construction	−3.7
Trade and accommodation	−9.3
Transport, storage, and communication	−3.5
Finance, real estate, and business services	−1.1
General government services	−0.5
Personal services	−3.1

Source: authors' elaboration based on Betho et al. (2021).

On this basis, it was again possible for us to translate the impacts on wages into consumption impacts. Moreover, in Approach 2, we took into account the impacts on employment and the impact on total household consumption due to the job loss of one of the household members in the same way as we did in Approach 1: we considered the impacts on employment in each sector as probabilities of loss of job for these categories; then we randomly selected, applying 50 repetitions, in each sector a percentage of individuals equal to the estimated impact on employment in the same sector and finally we imposed a drop in the individual's income by 100%. The impact on total household consumption due to the job loss of one household member (equal to about −15%) was applied in Approach 2 as well.

We subsequently combined the wage reductions at the sector/industry level and the effect on employment at the industry/sector level to obtain an estimate of the overall reduction in consumption and relative increase in the poverty rate.²⁸

In Approach 3, we used as inputs the impacts on household income from Betho et al. (2021), referred to as 'impact on household income by urban/rural population and income quintiles.'²⁹ We summarized impacts in Table 3. It emerges that urban households were affected more than rural ones, but also that middle- to lower-income households were affected relatively more than better-off households.

In this case as well, we computed an estimate for the consumption–income elasticity to measure the impact on consumption for households in each of these categories by implementing the method based on national accounts data for the years 2003–2019. A regression-based approach based on the IOF14 data to obtain category-specific consumption–income elasticities was implemented in this case as well as a robustness check. However, in this case we computed a set of consumption–income elasticities for each urban/rural–income quintile category, using the following linear regression, this time estimated at the household level:

$$\ln c_h = \beta_0 + \beta_1 (\ln y_h * rural_h * quintile_h) + \beta_2 prov_h + \varepsilon_h \quad (3)$$

where h indicates the household, c is nominal consumption, y is income, $rural$ indicates whether the household lives in an urban or rural area, $quintile$ is the consumption quintile of household h , $prov$ refers to the province of residence, and ε is the error term. Sample weights and survey-specific sample design characteristics were also applied.

Using the consumption–income elasticity mentioned earlier, we could directly translate the impacts on income into impacts on consumption.³⁰ In this approach as well, the impacts on employment were taken into account in the same way as for the framework of Approaches 1 and 2. We considered the impacts on employment in each sector as probabilities of loss of job for these categories; then we randomly selected, applying 50 repetitions, in each sector

TABLE 3 Full impact on household income by urban/rural population and income quintiles

Category	Impact (%)
Rural, Quintile 1	-2.7
Rural, Quintile 2	-2.6
Rural, Quintile 3	-2.5
Rural, Quintile 4	-2.4
Rural, Quintile 5	-2.4
Urban, Quintile 1	-3.6
Urban, Quintile 2	-3.8
Urban, Quintile 3	-3.7
Urban, Quintile 4	-3.6
Urban, Quintile 5	-3.4

Source: authors' elaboration based on Betho et al. (2021).

a percentage of individuals equal to the estimated impact on employment in the same sector and finally we imposed a drop in the individual's income by 100%. The impact on total household consumption due to the job loss of one household member (equal to about -15%) was applied in Approach 3 as well. Finally, we combined the reduction in income at urban/rural-quintile level and the effect on employment at the industry/sector level to obtain an estimate of consumption and poverty effects.³¹

7 | RESULTS

We now turn to describing the main results from the three analytical approaches just outlined. We present results at the national, urban/rural and provincial levels, by consumption quintiles, educational attainment, gender, main occupation, type of employer and sector of economic activity. Baseline poverty rates and consumption levels are shown in Table 4 at the national, urban/rural, and provincial levels, while the complete table with baseline poverty rates and consumption levels for all the categories is in the Appendix (Table A1).³²

Tables 5 and 6 present key results in terms of decline in consumption and increase in the poverty rate. In particular, we present the results from the three approaches described and our preferred set of estimates, which is the average of the results obtained over the three approaches. The results presented here refer to all workers or, when possible, the entire population. That is, our estimates include, for example, self-employed and informal traders, which constitute a non-negligible share of the working population in Mozambique. Detailed results for each of the three approaches, as well as results for wage workers only, are available in the Appendix.

We present results in terms of percentage reduction in consumption and percentage point increase from the initial poverty rates, at the different levels. For increase in the poverty rate, we also include results corresponding to absolute number of people falling into poverty, as estimated using the population projections for 2020 provided by INE.³³

Starting with consumption, the three approaches yield results in the range from -14.4% to -7.1% at the national level. For the urban population, the results range from -13.4% to -7.6%, while the range is wider from -14.8% to -5.8% for the rural population. Thus, the average consumption reduction is around 10.2%-10.3% at the national level and for the rural and urban populations, respectively. This is not far from the main scenario discussed in World Bank (2021a), which assumes a drop in consumption of 10%.

At the national level, the increase in poverty as estimated in the three different approaches lies in the range between 4.3 and 9.9 percentage points. For the subsample of the population residing in urban areas, we estimate

TABLE 4 Baseline consumption poverty rates (%) and average consumption levels (meticais/person/day) at different levels

	Consumption poverty rates (%)	Average consumption levels (meticais/person/day)
National	46.1	47.1
Urban	37.4	82.3
Rural	50.1	30.8
Province		
Niassa	60.6	32.7
Cabo Delgado	44.8	43.4
Nampula	57.1	28.1
Zambezia	56.6	26.3
Tete	31.7	41.3
Manica	41	41.2
Sofala	44.1	38.9
Inhambane	48.5	45.8
Gaza	51.2	43.0
Maputo Province	18.9	111.3
Maputo City	11.7	180.5

Note: Data represent percentage of poor people over the total population for different areas. The Mozambique metical (MZN) is the national currency; its plural, spelled as meticais, is used here as unit of measurement for consumption. Source: Authors' elaboration based on DEEF (2016) and IOF14.

TABLE 5 Change in consumption reduction (%) at national and urban/rural levels

	Consumption reduction (%)			
	Approach 1	Approach 2	Approach 3	Approach 1–3 average
National	−7.1	−14.4	−9.2	−10.2
Urban	−9.9	−13.4	−7.6	−10.3
Rural	−5.8	−14.8	−10.0	−10.2

Note: In column 'Approach 1–3 average', we present the average from the three approaches. Data represent consumption reduction over all workers/entire population. Source: authors' calculations based on IOF14.

poverty to have increased by between 3.8 and 6.8 percentage points, which is below the estimated impact for the rural population of 4.0 to 10.9 percentage points. That is, the average across the three approaches is 6.8 at the national level, 5.2 for the urban population, and 7.4 for the rural population. These estimates reveal a more serious picture of the impact of COVID-19 on poverty than that noted in Betho et al. (2021). In that analysis, the authors stated that '[...] adopting the growth–poverty elasticity in the period 2008/09–2014/15 of 0.68 estimated by the World Bank,³⁴ a 3.6% loss in GDP is associated with an increase in monetary poverty of 2.45 percentage points.' Based on their projections, Betho et al. (2021) also underscored that a different way of putting this is that the equivalent of more than half the progress in terms of poverty reduction realized between 2008/09 and 2014/15 is likely to have been wiped out in 2020 due to COVID-19. Given the even bleaker nature of our more detailed estimates, which go well beyond relying on a simple aggregate growth–poverty elasticity, it is evident that the impact of COVID-19 on both the poverty rate and the number of poor in absolute terms are a major policy concern. This is so, in particular, since the pandemic comes on top of an otherwise troubling trend since 2015 due to other shocks.

This highlights once more how important it is to estimate the impact of a major shock like the COVID-19 one from both the macroeconomic and the microeconomic perspective, using different sources of data and methods. The World Bank computed the elasticity referred to before during a period of sustained growth and steady poverty reduction. Arguably, the value for the growth–poverty elasticity may well have increased during the contraction spells, as suggested in our present analysis. The implication is that poverty may increase much more when GDP growth suffers a loss than when it falls as growth picks up. Also, these elasticity estimates were computed over a period of 6 years, while the short-term elasticity may be quite different.³⁵

Our results also differ from those of Mussagy and Mosca (2020). They presented two sets of estimates. One used the national poverty lines, which is more directly comparable with ours, and the other relied on the international US\$1.90/day poverty line. They estimated an increase of about 9–18 percentage points compared with the baseline at national poverty lines depending on the scenario (Mussagy & Mosca, 2020). These estimates were on average much higher than those computed here. This likely depends on the choice of Mussagy and Mosca (2020) to use the poverty rates obtained using the older methodology for computing poverty in Mozambique, not the revised one, whose results are official (DEEF, 2016), combined with the relatively crude assumption of reducing the consumption level of the whole population by the same percentage.³⁶

Conversely, our estimates are not far from those in World Bank (2021a): assuming a reduction of 10% in consumption per capita by all households,³⁷ the *Mozambique Economic Update* of February 2021 estimated an increase in poverty of about 5 percentage points, with poverty in urban and rural areas going up by 3.7 and 5.8 percentage points, respectively. On average, the World Bank (2021a) estimates are only about 1.5–1.8 percentage points below those emerging here.

Even though the COVID-19 shock may appear to have hit urban areas more, we find that the percentage change in consumption in urban and rural areas are of comparable magnitudes, about –10%. Nonetheless, we find that rural areas have experienced a bigger increase in poverty rates (7.4 percentage points, on average, versus 5.2 percentage points for the urban areas) (Table 6). Indeed, even small shocks in generally poorer rural areas can push many households below the poverty line, whereas urban households hit by comparatively larger shocks could still end up with consumption levels above the poverty line. The higher probability of falling into poverty for households in rural areas is in line with Salvucci and Tarp (2021). In their study, they also found that the probability of becoming poor had decreased over time from 2008/2009 to 2014/2015. However, they noted as well that the pandemic has most likely reversed this positive trend. Accordingly, the study also highlighted that downward transitions from the

TABLE 6 Poverty rate increase (pp) at different levels and population entering poverty (thousands)

	Approach 1	Approach 2	Approach 3	Approach 1–3 average
Poverty rate increase (pp)				
National	4.3	9.9	6.2	6.8
Urban	5.0	6.8	3.8	5.2
Rural	4.0	10.9	7.3	7.4
Population entering poverty (thousands)				
National	1292.9	2976.6	1864.1	2044.5
Urban	502.5	683.4	381.9	522.6
Rural	800.7	2181.8	1461.2	1481.2

Note: pp, percentage point. In column ‘Approach 1–3 average’, we present the average from the three approaches. Data represent consumption reduction over all workers/entire population. The number of people falling into poverty is estimated using the population projections for 2020 provided by INE; these projections are based on the 2017 census (see INE, 2021d). Source: authors’ calculations based on IOF14.

vulnerable to the poor category were more likely for rural areas than for urban areas. This substantiates our findings of significantly higher increases in the poverty rate relative to comparable rates of consumption reduction.

This is in agreement with the findings by Mussagy and Mosca (2020). They argued that the urban areas suffered more profound consequences because of the pandemic, especially due to the nature of the economic activity in urban centres. Conversely, as agriculture was less affected by the pandemic and the related measures implemented by the government [which is also reflected in the assumption of zero direct supply impact on agriculture in Betho et al., 2021], rural areas suffered less from direct economic impact. However, due to overall much lower consumption levels, more people fell into poverty in rural areas than in urban areas.

Concerning absolute numbers of people entering poverty because of the COVID-19 shock, we estimate (as described earlier) that approximately 1.5 million people in rural areas have fallen into poverty, whereas the estimated number for urban areas is about 523,000 people, summing up to about 2 million people at the national level (Table 6). In this case, too, this estimate is not very far from the one in World Bank (2021a), which estimated that about 1.4 million more Mozambicans could have fallen below the poverty line.³⁸

Average results, over the three approaches and for all workers/entire population, are shown in Figure 2. They include results at the national, urban/rural, and provincial levels, by consumption quintiles, educational attainment, gender, main occupation, type of employer and sector of economic activity. Disaggregated results from the three approaches are shown in the Appendix.

With respect to the differences in the results obtained from the three approaches, from Tables 5 and 6 it looks as though the results from Approach 2 are on average considerably worse than those obtained from Approaches 1 and 3, both in terms of reduction in consumption and poverty increase. This might indicate that in the case of Mozambique the assumption at the basis of Approach 2, according to which GDP by industry/sector provide a reasonable approximation for the impacts on wages in those sectors, would not be verified. However, from Tables A2 and A3 in the A4, we get the result that the estimates from Approach 2 in almost all cases fall between those obtained with Approaches 1 and 3, both in terms of reduction in consumption and poverty increase, when looking at wage workers only. Hence, what seems to have a big impact on the results in this case is projecting the estimates from Approach 2 on the entire population. This difference in the results from Approach 2 can partly be explained by the magnitude of the informal labour market in Mozambique, which can arguably reflect variations in GDP differently from the formal labour market. With respect to this, Khamis et al. (2021) also point out that GDP projections cannot fully capture labour market impacts and other measures of household welfare due to the generally longer time horizons of macroeconomic projections, and the difficulty of including labour market policy responses and institutions in GDP projections. Furthermore, the difference in the results can also reflect the above noted feature that the differences in the impacts from Covid-19 on consumption and poverty seem to be much more pronounced among industries/sectors than among urban and rural households, high- and low-skilled workers or among poorer and richer households.

Comparing provinces, we estimate consumption to have decreased relatively homogeneously between 10 and 11% in all provinces. Conversely, the estimated increase in the poverty rate due to COVID-19 is highest in Tete and Manica (8–10 percentage points), followed by Niassa, Cabo Delgado, Nampula, Zambezia, Sofala, Inhambane, and Gaza (6–7 percentage points) and lowest in Maputo City and Maputo Province (4–5 percentage points). This partly reflects the urban/rural nature of the provinces and the provinces' initial level of consumption.

Moreover, even though Betho et al. (2021) estimated the shocks to be bigger for skilled than for unskilled workers, we find that the incidence of poverty appears to have increased much more for individuals with low educational attainment than for better-educated ones. The values range from 6 to 7 percentage points for low-educated individuals to 1–3 percentage points for individuals with high educational attainment (Figure 2). The fact that the estimated consumption effects do not present such stark differences across the different educational attainment groups underlines how already low levels of consumption among low-educated people results in larger poverty effects.

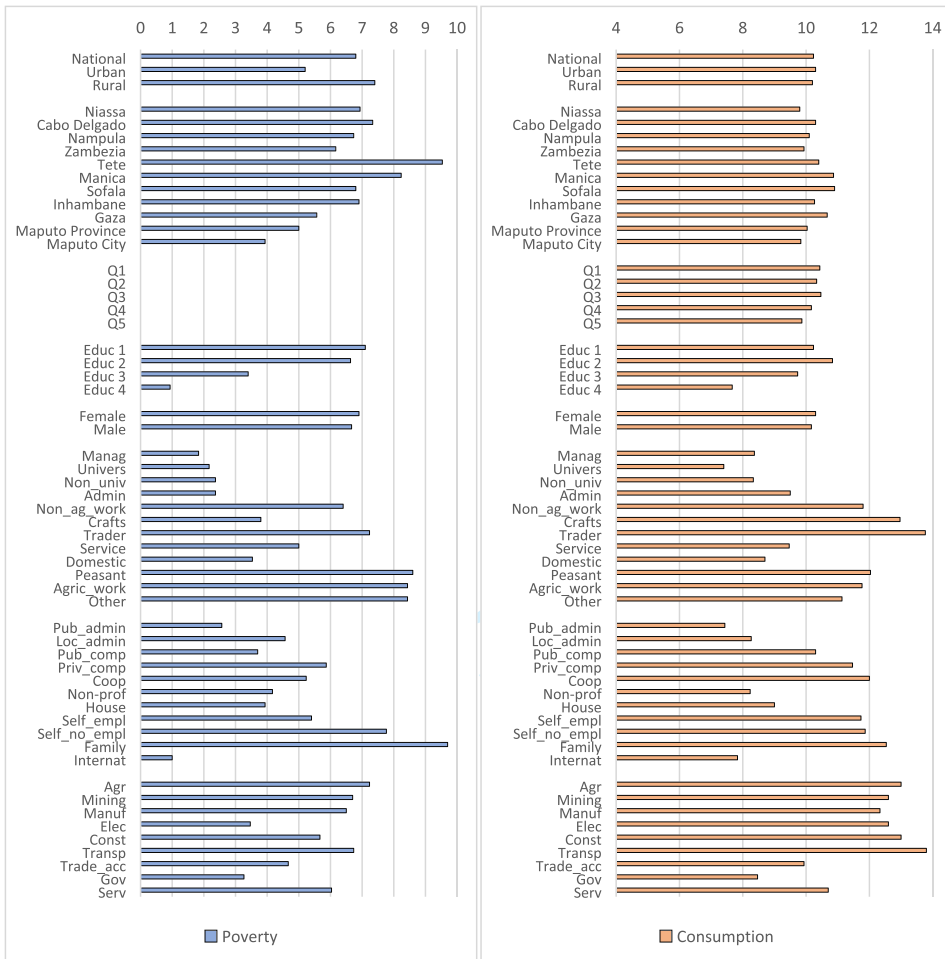


FIGURE 2 Poverty rate increase (pp) and consumption reduction (%) at different levels. *Note:* pp, percentage point; Q1–Q5, consumption quintiles 1–5, respectively; Educ 1, no education/incomplete primary education; Educ 2, complete primary/incomplete secondary education; Educ 3, incomplete/complete second cycle of secondary education; Educ 4, incomplete/complete tertiary education; Manag, senior manager; Univers, university staff/technician; Non_univ, non-university staff/technicians; Admin, administration staff; Non_ag_work, non-agricultural workers; Crafts, self-employed craftsman; Trader, small trader; Service, service staff; Domestic, domestic employee; Peasant, smallholder/peasant; Agric_work, agricultural worker; Other, other occupations; Pub_admin, public administration; Loc_admin, local administration; Pub_comp, public company; Priv_comp, private company; Coop, cooperative; Non-prof, non-profit institutions; House, private house; Self_empl, self-employed with employees; Self_no_empl, self-employed without employees; Family, family worker without remuneration and domestic workers; Internat, international organization/embassy; Agr, agriculture, forestry and fishing; Mining, mining and quarrying; Manuf, manufacturing; Elec, electricity, gas and water; Const, construction; Transp, transport, storage, and communication; Trade_acc: trade, catering and accommodation, and finance; Gov, general government services; Serv: personal services and other services. The results for the increase in poverty rates for different quintiles are not shown because they are not meaningful. The averages are computed over Approaches 1–3 and over all workers/entire population. Disaggregated results from the three approaches are shown in the Appendix. *Source:* Authors' calculations based on IOF14

As for the different occupations, poverty increased more for people working in subsistence agriculture and for agricultural workers (around 8–9 percentage points), while the change in consumption was much more

TABLE 7 Increases in inequality (Gini index) at national and urban/rural levels

Gini	Approach 1–3 average
National	0.003
Urban	0.004
Rural	0.003

Note: The average increase in the Gini index (in absolute numbers) is shown at different levels, where we compute the averages over the three approaches and over all workers/entire population. Source: Authors' calculations based on IOF14.

pronounced for small traders (–14%). Regarding the different types of employer, consumption reduced more for people working for private enterprises and cooperatives, self-employed individuals with and without employees, and family workers without remuneration and domestic workers, but poverty rates seem to have increased more for family workers and domestic workers (housemaids, nannies, and similar) and for self-employed without employees. Finally, as for the main sectors of economic activity, the reduction in consumption was the highest in transport and communication while, as outlined earlier, poverty increased especially for families depending on income from agriculture, mining, manufacturing, transportation, construction and personal and other services (Figure 2).

With respect to inequality, since the three approaches provide similar results, we report in Table 7 only the average results relative to the increase in the Gini index from the baseline. The Gini index computed using the original IOF14 data and the simulated consumption aggregate from the three approaches shows that the inequality index might have increased by 0.003 from an initial value of about 0.534 due to the COVID-19 shock.³⁹ The estimated (average) increase in inequality is bigger in urban than in rural areas (0.004 versus 0.003). Given the 1-year duration of the COVID-19 shock, this corresponds to a smaller annual inequality increase than the annual increase experienced during the 2008/2009–2014/2015 period where the Gini index rose by about 0.05 over the full period (DEEF, 2016).

The detailed results for consumption reduction, in percentage, and poverty rate increase, in percentage points, for wage workers only and for all workers/entire population, using the two methods outlined for computing the consumption–income elasticity, at national and urban/rural level, are found in the Appendix. Moreover, the results for consumption reduction, in percentage, and poverty rate increase, in percentage points, for the three approaches and for all workers/entire population, at provincial level, by consumption quintiles, educational attainment, gender, main occupation, type of employer and sector of economic activity are also presented in the Appendix.

8 | POLICY RECOMMENDATIONS AND CONCLUSIONS

We have attempted in this study to estimate the impact of the COVID-19 pandemic on household consumption levels and poverty in Mozambique. The study relied on the assessment of the macro-impact of COVID-19 and related government restrictions on the economy by Betho et al. (2021), and we provided estimates of change in household income and consumption, which in turn were used to estimate poverty rates. In particular, we used the data from the latest available household budget survey, IOF14, and took as inputs the impacts on GDP, employment and household income estimated at the macroeconomic level.

We assumed that two main channels are at work in leading to lower consumption and higher poverty: direct income/wage and employment losses. To estimate the direct impact on income/wage, we relied on the information from Betho et al. (2021) on the impact on wages, on GDP by industry, and on household income. To estimate the employment losses, we used the information on the impact on employment, from Betho et al. (2021). The two impact channels—direct income/wage and employment losses—were then combined to assess the overall impact on consumption and poverty.

The main results included that consumption decreased by 7.1%–14.4% and that poverty increased by about 4.3–9.9 percentage points, depending on the approach implemented. The average consumption reduction is slightly above 10% at the national level and for the urban/rural population. For poverty, we found an average increase of 6.8 percentage points at the national level, 5.2 percentage points for the urban population, and 7.4 percentage points for the rural population.

This increase in the poverty rate corresponds to about 2 million people entering poverty in less than a year, with approximately 1.5 million additional poor people in rural areas and an estimated 500,000 people in urban areas. This reflects the higher probability of falling into poverty for households in rural areas, due to already low levels of consumption and their higher vulnerability to external shocks.

Consumption was estimated to have decreased relatively homogeneously across provinces, but the incidence of poverty seemed to have increased much more for individuals with low educational attainment than for those with high educational attainment. Furthermore, poverty seemed to have increased more for people working in subsistence agriculture and agricultural workers, while the decline in consumption was much more pronounced for small traders. Consumption reduced more for people working for private enterprises, cooperatives, self-employed with and without employees, and family workers without remuneration or domestic workers, but poverty rates increased more for family workers/domestic workers. For the main sectors of economic activity, poverty increased especially in agriculture, mining, construction, transportation, and personal and other services. Finally, we also estimated that inequality increased, as measured by the Gini index, but only modestly compared with the annual average for the 5–6 years between 2008/2009 and 2014/2015.

Clearly, the preciseness of our results is conditional on the assumptions made and on the estimates contained in Betho et al. (2021). Nonetheless, our findings clearly confirmed that after a long period of marked reduction in the poverty rate, the outbreak of COVID-19 has produced a gloomy setback for poverty reduction in Mozambique that comes on top of the impact of other shocks experienced during the past 5 years. Many years of progress have cancelled out and the need for reverting to a downward trend for the poverty rate stands out as a key policy priority.

Our results highlighted, first, that following the COVID-19 shock, the number of households falling in poverty or experiencing a large drop in consumption has increased. This included household categories previously seen as generally less vulnerable such as urban households, individuals working in the informal sector or even in the formal sector, but in sectors seriously affected by the pandemic, small traders residing in the worst-hit areas, or people working in the hospitality sector. The implication is that the drivers of poverty could have changed following the COVID-19 shock. Yet, we also found that the longer-term structural drivers of poverty are still at work during the COVID-19 shock: people in rural areas, working in agriculture and/or as family workers without remuneration, or working in services associated with the family, not or less educated, are among the worst-hit population groups in terms of likelihood of falling into poverty. Surely, additional drivers of vulnerability emerged due to COVID-19, which are not simply additional to standard drivers, as also highlighted in Salvucci and Tarp (2021).

We have presented characteristics linked to bigger reductions in consumption and higher probabilities of entering poverty, which should help in the design of specific emergency social programmes or help re-thinking the existing social protection schemes to respond to the current situation. Certainly, it emerged that it is essential to support households in rural areas, working in subsistence agriculture and not educated, particularly in the central and northern regions of the country. Chronic poverty interventions that link to the structural drivers of poverty remain critically important, as also highlighted in the four existing poverty assessments (DEEF, 2016; DNEAP, 2010; DNPO, 1998, 2004). Policies in this sense include bigger/better investments in rural development, increasing the productivity of smallholder farmers, expanding markets to enable subsistence farmers to shift to commercial agriculture, among others.

At the same time, it comes across as most important to plan for the implementation of basic safety nets, for example, in the form of cash transfers for vulnerable groups that are perhaps not in poverty, but that are at risk of experiencing huge drops in consumption due to unexpected shocks, such as the COVID-19 pandemic. This is especially important for people working in the informal sector in urban areas or working in the personal service sector.

Future research will rely on the upcoming 2020 household survey to validate our results and provide additional insights on the impact of the crises and economic shocks Mozambique has suffered over the past 5–6 years and their impact on the poverty rate and absolute number of poor people.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available upon request from the National Statistics Institute of Mozambique (INE) or from the Ministry of Economics and Finance of Mozambique (MEF). Restrictions apply to the availability of these data, which were used under agreement with MEF for this study.

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ENDNOTES

- ¹ As of July 2021.
- ² See Section 6 for details as well as the Appendix.
- ³ See the bulletin in INE (2021b). Inflation over the 12 months of 2020 was 3.52%, very close to the value registered in 2018 and 2019.
- ⁴ See Jones et al. (2020) and Egger et al. (2020).
- ⁵ First quarter of 2021.
- ⁶ The way in which the reduction in consumption depends on the above-mentioned characteristics is not specified in the paper.
- ⁷ Conversely, when the national poverty line is used as a reference, the national poverty rate is estimated to increase up to 58.1%, 61.1% and 67.5% (from an initial level of 49.2%), depending on the scenario. Here, it seems that the authors decided to use the poverty rates obtained using the older methodology for computing poverty in Mozambique, not the revised one, whose results are official (DEEF, 2016). Indeed, the official poverty rate at national level for 2014/2015 is not 49.2% but 46.1%.
- ⁸ The effectiveness of this measure is subject to doubt because to compensate VAT credits with other taxes owed depends on having a legal case already decided in court, which is not common, especially with the courts closed.
- ⁹ 40% of personal income tax firms do not pay taxes, while many in this cohort are in the simplified tax regime.
- ¹⁰ Fee exemption for drinking water up to 5 m³, 10% reduction in the energy bill of general tariff customers excluding households and exemption of energy payments for social tariff customers, with effect from June 2020 for a period of 6 months.
- ¹¹ However, this programme is still in the process of being rolled out, with only a few households having received their first payments.
- ¹² Before IOF14, three household budget surveys for 1996/1997, 2002/2003 and 2008/2009 existed (abbreviated as IAF96, IAF02 and IOF08, respectively). 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, the United Nations University World Institute for Development Economics Research, and the University of Copenhagen, depending on the survey year (DEEF, 2016; DNEAP, 2010; DNPO, 1998, 2004; INE, 2004, 2010, 2015a).

- ¹³ Based on the technical household budget survey documents issued by INE, the sampling methodology remained essentially the same across different survey rounds, even though relatively minor changes occurred over time: for example, non-essential survey modules were added or dropped depending on the survey year and the list of consumption items changed over time (INE, 2004, 2010, 2015a).
- ¹⁴ Originally, it had been designed so that each household had to be interviewed four times over the four quarters of the year. However, for various reasons Quarter 3 of the IOF14 survey ended up not being implemented, but fieldwork was reinstated in the fourth quarter.
- ¹⁵ Comparing the different sets of results might even offer insights for other settings in which not all three options are available (sectoral GDP and employment effects estimates, for example, might be more readily available in other contexts).
- ¹⁶ This data is not available in the paper but in the underlying excel data sheet.
- ¹⁷ If instead of using the period 2003–2019 we used the years 1992–2019, the estimate decreased only slightly (0.629 versus 0.639). However, we chose to only use the period 2003–19 because the computed values for $\Delta C/\Delta Y$ for the years 1992–2002 were much more volatile.
- ¹⁸ In the IOF14, consumption is only measured at aggregate household level and then divided by the number of household members in order to get consumption per capita. In this regression, we used as dependent variable the logarithm of the nominal consumption per person per day. Hence, the results of the regression could in principle be influenced by changes in the income of other household members not related to changes in the wage of the household member for whom we registered an impact. Therefore, for a more direct link between wage and consumption, we only estimated this regression for households composed of only one household member (i.e. the wage earner).
- ¹⁹ One of the reasons for our choice was that income data within the IOF surveys are of lower quality compared with consumption data. Indeed, the IOF surveys are designed to rigorously capture consumption and thus compute poverty, whereas income data are not the primary focus in these surveys.
- ²⁰ We only take into consideration the seasonal changes in prices, and only for food products, applying a quarterly temporal deflator to the consumption aggregate used. We do not consider here the spatial price changes and the temporal price changes for non-food products (see DEEF, 2016; DNEAP, 2010; DNPO, 1998, 2004, for details on how temporal and spatial deflators are computed and included in the construction of the consumption aggregate).
- ²¹ We are aware that only a relatively small proportion of individuals in Mozambique earn a wage (only about 20% of individuals who declare a (non-zero) income from any working activity in the IOF14 data earns a wage), but in what follows we also discuss the way in which the results with respect to wage workers are applied and generalized to non-wage workers.
- ²² We repeated the random selection 50 times and computed the reduction in consumption due to the loss of job as the average reduction over the 50 repetitions.
- ²³ When we compute the impact from employment loss, we do not limit our analysis to the subset of wage earners, but we consider all income earners in each rural/urban–educational attainment category.
- ²⁴ To measure this broader reduction in consumption, we exploited the panel structure of the IOF14 survey, in which all households, and each individual in each household, were meant to be interviewed three times during the 12-month survey period. Using an individual fixed-effect regression of the type: $\ln c_{it} = \beta_0 + \beta_1 \text{earn_wage}_{it} + \beta_2 \text{hhsiz}_{it} + \alpha_i + \varepsilon_{it}$, where i indicates the individual, t indicates the survey quarter, c is nominal consumption, even though this time we considered the logarithm of total household consumption per day, earn_wage indicates whether individual i earns a wage in survey quarter t , hhsiz is the household size, α represents individual fixed effects, and ε is the error term. Sample weights and survey-specific sample design characteristics were also applied. We estimated the average drop in consumption experienced by those households in which one household member lost their job to be about 15%. Subsequently, we applied this estimate to the simulation exercise (i.e. individuals who were randomly selected to lose their job were assigned a drop in income of 100%, but the consumption level for the associated household members was forced to reduce by about 15%).
- ²⁵ We performed the calculation for the case in which a household member lost their salaried job and for the case in which a household member lost their source of income (not limited to a wage/salary). Results were very close (in the range 15–18%). Calculations are available upon request.
- ²⁶ Khamis et al. (2021) found that the correlation between sectoral GDP drop and employment or income effects was surprisingly low, especially in countries in Sub-Saharan Africa. This issue is further discussed in the results section.
- ²⁷ This emerges clearly when Tables 1–3 are compared.
- ²⁸ As for the first approach, the estimates obtained using the second approach could be immediately computed for wage workers. However, assuming that the reduction in wages for each sector/industry was a good approximation for the

reduction in incomes for the individuals working in these sectors/industries but not receiving a fixed wage (such as self-employed or family workers), we could then estimate the consumption and poverty effects over all workers in these sectors. Likewise, only the estimates with respect to the larger sample of all workers are presented in Section 7, while those restricted to the wage workers are only shown in the Appendix.

- ²⁹ These data are not available in the paper but in the underlying excel data sheet.
- ³⁰ We considered a broad definition of income here that includes wages from main activity, wages from secondary activity, imputed values of wages in kind, net income from the commercialization of products (agricultural, livestock, forestry, fishing, or other types of products), net income from other business activities, and income from rental or sale of the house or from rental of the farmland, among other sources of income.
- ³¹ In this case, the estimates obtained using the third approach could be directly computed with respect to the individuals living in households with some source of income, which is basically equivalent to considering the entire population.
- ³² Poverty rates coincide with the results found in DEEF (2016), whereas the average consumption levels for the different categories differ from those in DEEF (2016), since here we consider the consumption aggregates in nominal terms.
- ³³ These projections were based on the 2017 census (see INE, 2021d).
- ³⁴ See Baez et al. (2018).
- ³⁵ Discrepancies between macroeconomic projections and micro data were also found by Khamis et al. (2021). Referring to high-frequency phone survey data, the authors highlighted that, especially in SSA, GDP projections did not fully capture the effect of the crisis 'on the ground'. This might have been especially true for countries with high levels of informality, such as Mozambique.
- ³⁶ In their optimistic scenario, which is closer to our estimates in terms of simulated poverty rates, consumption was reduced by a value between 5% and 10% for the whole population, and then additional assumptions were included regarding the level of poverty recorded in the last assessment, the household size, and whether the household was located in an area affected by the recent cyclones or insurgencies. These assumptions, not described in detail in the paper, may well have led to further increases in the poverty rate.
- ³⁷ This is very close to the average drop in consumption obtained here, equal to -10.2% .
- ³⁸ This difference—about 600,000 people—is consistent with the fact that we estimate an increase in the national poverty rate about 1.8 percentage points higher than the one in World Bank (2021).
- ³⁹ This number is different from the one shown in DEEF (2016), because here we used the consumption aggregate expressed in nominal terms, whereas the consumption aggregate used in DEEF (2016) is first spatially and temporally deflated. Nonetheless, results are substantially unchanged if the spatially and temporally deflated consumption aggregate is used.

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APPENDIX A

TABLE A1 Baseline consumption poverty rates (%) and average consumption levels (meticaís/person/day)

	Consumption poverty rates (%)	Average consumption (meticaís/person/day/)
National	46.1	47.1
Urban	37.4	82.3
Rural	50.1	30.8
Province		
Niassa	60.6	32.7
Cabo Delgado	44.8	43.4
Nampula	57.1	28.1
Zambezia	56.6	26.3
Tete	31.7	41.3
Manica	41.0	41.2
Sofala	44.1	38.9
Inhambane	48.5	45.8
Gaza	51.2	43.0
Maputo Province	18.9	111.3
Maputo City	11.7	180.5
Consumption quintile		
Q1	100	10.6
Q2	100	19.1
Q3	30.4	27.8
Q4	0	42.0
Q5	0	135.9
Educational attainment		
No education/incomplete primary education	50.1	36.9
Complete primary/incomplete secondary education	29.5	68.9
Incomplete/complete second cycle of secondary education	13.8	125.9
Incomplete/complete tertiary education	1.7	418.7
Gender		
Female	45.8	46.5
Male	46.4	47.7
Main occupation		
Senior manager	3.3	681.7
University staff/technician	8.0	228.1
Non-university staff/technician	8.4	194.0
Administration staff	4.8	193.6
Non-agricultural workers	27.3	78.6
Self-employed craftsman	55.0	33.5
Small trader	25.4	81.9

(Continues)

TABLE A1 (Continued)

	Consumption poverty rates (%)	Average consumption (meticais/person/day/)
Service staff	21.3	84.1
Domestic employee	26.4	89.0
Smallholder/peasant	48.4	31.3
Agricultural worker	40.6	41.7
Other occupations	35.0	57.0
Type of employer		
Public administration	9.2	150.7
Local administration	16.3	138.2
Public company	13.6	188.7
Private company	24.3	110.8
Cooperative	23.6	70.4
Non-profit institutions	10.8	179.9
Private house	28.4	84.9
Self-employed with employees	23.5	120.2
Self-employed without employees	43.9	39.4
Family worker without remuneration and domestic workers	49.5	31.1
International organization/embassy	24.6	935.3
Sector of economic activity		
Agriculture, forestry, and fishing	48.0	32.0
Mining and quarrying	29.4	78.9
Manufacturing	34.3	67.5
Electricity, gas, and water	11.7	300.6
Construction	22.5	80.0
Transport, storage and communication	14.5	115.6
Trade, catering and accommodation and finance	24.7	96.4
General government services	10.4	175.5
Personal services and other services	20.1	119.6

Note: pp, percentage point. Data represent percentage of poor people over the total population for different areas. The Mozambican metical (MZN) is the national currency; its plural, spelled as meticais, is used here as unit of measurement for consumption. Source: authors' elaboration based on DEEF (2016) and IOF14.

TABLE A2 Consumption reduction (%) at national and urban/rural levels, for wage workers and for all workers/entire population

	Approach 1	Approach 2	Approach 3	Approach 1–3 average
(a)				
Only wage workers				
National	–6.7	–11.1	–14.0	–10.6
Urban	–9.5	–10.5	–12.5	–10.8
Rural	–5.6	–12.2	–14.6	–10.8
All workers/entire population				
National	–7.1	–14.4	–9.2	–10.2
Urban	–9.9	–13.4	–7.6	–10.3
Rural	–5.8	–14.8	–10.0	–10.2
(b)				
Only wage workers				
National	–5.9	–11.0	–12.7	–9.9
Urban	–8.7	–10.5	–11.1	–10.1
Rural	–4.7	–12.1	–13.3	–10.0
All workers/entire population				
National	–6.2	–14.3	–7.7	–9.4
Urban	–9.0	–13.3	–5.9	–9.4
Rural	–4.9	–14.6	–8.6	–9.4

Note: In Panel (a) we show the estimates for the three approaches obtained using the consumption–income elasticity from the method based on national accounts data; in Panel (b) we show the estimates for the three approaches obtained using the consumption–income elasticity from the regression-based method based on the IOF14 data. In the column labelled ‘Approach 1–3 average’, we present the averages from the three approaches. *Source:* authors’ calculations based on IOF14.

TABLE A3 Poverty rate increase at national and urban/rural levels (pp), for wage workers and for all workers/entire population

	Approach 1	Approach 2	Approach 3	Approach 1–3 average
(a)				
Only wage workers				
National	4.1	5.1	9.5	6.2
Urban	4.5	4.4	6.3	5.1
Rural	3.9	6.7	10.8	7.1
All workers/entire population				
National	4.3	9.9	6.2	6.8
Urban	5.0	6.8	3.8	5.2
Rural	4.0	10.9	7.3	7.4
(b)				
Only wage workers				
National	3.5	5.0	8.5	5.7
Urban	4.1	4.4	5.4	4.6
Rural	3.3	6.4	9.8	6.5
All workers/entire population				
National	3.7	9.7	5.3	6.2
Urban	4.6	6.7	2.9	4.7
Rural	3.3	10.7	6.4	6.8

Note: In Panel (a) we show the estimates for the three approaches obtained using the consumption–income elasticity from the method based on national accounts data; in Panel (b) we show the estimates for the three approaches obtained using the consumption–income elasticity from the regression-based method based on the IOF14 data. In the column labelled ‘Approach 1–3 average’, we present the averages from the three approaches. Source: authors’ calculations based on IOF14.

TABLE A 4 Poverty rate increase (pp) and consumption reduction (%) at different levels and for different categories

	Poverty rate increase (pp)			Consumption reduction (%)			
	Approach 1	Approach 2	Approach 3	Approach 1	Approach 2	Approach 3	Approach 1–3 average
National	4.3	9.9	6.2	6.8	6.8	6.2	6.8
Urban	5.0	6.8	3.8	5.2	5.2	3.8	5.2
Rural	4.0	10.9	7.3	7.4	7.4	5.8	7.4
Province							
Niassa	4.4	10.3	6.1	6.9	6.9	6.8	6.9
Cabo Delgado	4.5	10.5	7.0	7.3	7.3	6.7	7.3
Nampula	4.3	10.0	5.9	6.7	6.7	7.0	6.7
Zambezia	3.8	8.9	5.8	6.2	6.2	6.5	6.2
Tete	5.3	13.9	9.4	9.5	9.5	6.2	9.5
Manica	5.0	11.8	7.9	8.2	8.2	7.1	8.2
Sofala	4.7	9.7	6.0	6.8	6.8	7.7	6.8
Inhambane	4.4	9.8	6.5	6.9	6.9	6.8	6.9
Gaza	2.8	8.6	5.3	5.6	5.6	7.1	5.6
Maputo Province	4.4	6.6	4.0	5.0	5.0	8.5	5.0
Maputo City	4.6	4.6	2.6	3.9	3.9	9.8	3.9
Consumption quintile							
Q1							
Q2							
Q3							
Q4							
Q5							
Educational attainment							
No education/incomplete primary education	4.4	10.5	6.4	7.1	7.1	6.9	7.1
Complete primary/incomplete secondary education	4.6	8.9	6.4	6.6	6.6	8.2	6.6

(Continues)

TABLE A4 (Continued)

	Poverty rate increase (pp)			Consumption reduction (%)				
	Approach 1	Approach 2	Approach 3	Approach 1	Approach 2	Approach 3	Approach 1-3 average	
Incomplete/complete second cycle of secondary education	2.9	4.3	3.0	3.4	-8.7	-12.0	-8.5	-9.7
Incomplete/complete tertiary education	0.9	1.0	0.9	0.9	-6.7	-8.5	-7.8	-7.7
Gender								
Female	4.3	10.1	6.3	6.9	-7.1	-14.5	-9.3	-10.3
Male	4.3	9.6	6.1	6.7	-7.1	-14.3	-9.1	-10.2
Main occupation								
Senior manager	1.7	2.3	1.5	1.8	-6.8	-8.9	-9.4	-8.4
University staff/technician	2.1	2.1	2.3	2.2	-7.3	-6.8	-8.1	-7.4
Non-university staff/technician	2.0	2.7	2.4	2.4	-7.9	-8.2	-8.9	-8.3
Administration staff	2.0	2.8	2.3	2.4	-8.4	-9.9	-10.2	-9.5
Non-agricultural workers	4.4	7.2	7.6	6.4	-8.3	-13.8	-13.3	-11.8
Self-employed craftsman	3.8	3.8	3.8	3.8	-5.8	-17.0	-16.1	-13.0
Small trader	4.2	9.7	7.8	7.2	-8.6	-18.0	-14.7	-13.8
Service staff	4.5	5.0	5.5	5.0	-8.7	-9.7	-10.0	-9.5
Domestic employee	3.5	3.3	3.8	3.5	-8.9	-8.6	-8.6	-8.7
Smallholder/peasant	3.9	10.8	11.1	8.6	-6.1	-14.8	-15.2	-12.0
Agricultural worker	4.5	10.2	10.6	8.4	-6.4	-14.2	-14.7	-11.8
Other occupations	5.6	9.9	9.8	8.4	-7.8	-12.7	-12.9	-11.1
Type of employer								
Public administration	2.6	2.4	2.7	2.6	-7.7	-6.6	-8.0	-7.4
Local administration	4.7	4.2	4.8	4.6	-8.9	-7.3	-8.6	-8.3
Public company	2.6	4.6	3.9	3.7	-8.3	-11.2	-11.4	-10.3
Private company	4.3	6.7	6.6	5.9	-8.1	-13.4	-12.9	-11.5
Cooperative	4.3	5.7	5.7	5.2	-6.0	-14.9	-15.1	-12.0

TABLE A4 (Continued)

	Poverty rate increase (pp)			Consumption reduction (%)				
	Approach 1	Approach 2	Approach 3	Approach 1	Approach 2	Approach 3		
			Approach 1-3 average			Approach 1-3 average		
Non-profit institutions	4.0	3.8	4.7	4.2	-8.1	-7.7	-8.9	-8.2
Private house	3.5	4.2	4.1	3.9	-8.6	-9.2	-9.2	-9.0
Self-employed with employees	3.5	6.3	6.4	5.4	-7.2	-14.2	-13.8	-11.7
Self-employed without employees	3.8	9.7	9.8	7.8	-6.4	-14.6	-14.6	-11.9
Family worker without remuneration and domestic workers	4.3	12.3	12.5	9.7	-6.3	-15.5	-15.8	-12.5
International organization/embassy	1.5	0.0	1.5	1.0	-6.7	-8.0	-8.8	-7.8
Sector of economic activity								
Agriculture, forestry and fishing	4.0	6.6	11.1	7.2	-6.1	-17.7	-15.2	-13.0
Mining and quarrying	3.3	9.5	7.3	6.7	-7.0	-15.8	-15.0	-12.6
Manufacturing	4.7	5.2	9.6	6.5	-8.0	-14.1	-14.9	-12.3
Electricity, gas, and water	1.9	5.2	3.3	3.5	-7.9	-15.8	-14.1	-12.6
Construction	3.6	6.4	7.0	5.7	-8.7	-15.0	-15.3	-13.0
Transport, storage, and communication	3.8	9.4	7.0	6.7	-8.7	-18.0	-14.7	-13.8
Trade, catering, and accommodation	4.1	2.3	7.6	4.7	-8.6	-6.6	-14.6	-9.9
General government services	2.7	4.2	2.9	3.3	-8.3	-8.9	-8.2	-8.5
Personal services and other services	3.8	9.9	4.4	6.0	-8.3	-14.4	-9.4	-10.7

Note: pp, percentage points. The results for the increase in poverty rates for different quintiles are not shown because they are not meaningful. The columns labelled as 'Approach 1-3 average' show the average poverty rate increase (in percentage points) and consumption reduction (in percentage) at different levels, where the averages are computed over the three approaches for all workers/entire population. Source: authors' calculations based on IOF14.

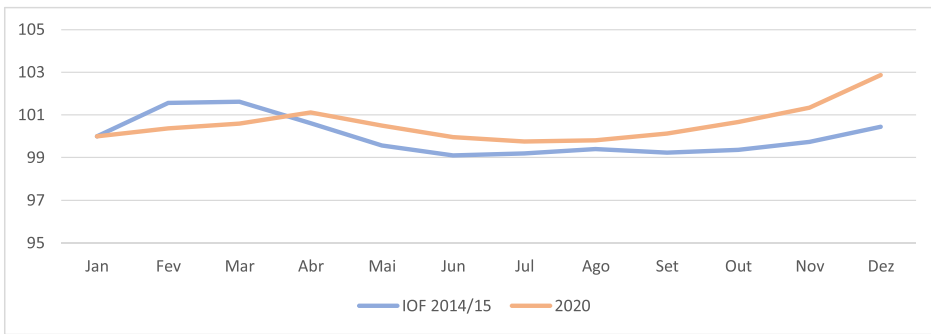


FIGURE A1 Consumer price index during the months of the IOF14 survey and during 2020. *Note:* January 2015 and January 2020 = 100. Price movements during 2020 were limited compared with other periods. Furthermore, price movements were greatly comparable in magnitude with the price changes observed during the months of August 2014 to August 2015, which correspond to the IOF14 survey period, and with the price changes observed during March/April to December 2020, which are the months connected to the COVID-19 shock. *Source:* authors' elaborations based on INE (2015b, 2021c) [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com)]