



**STRENGTHENING THE EVIDENCE  
ON THE CORRELATION  
BETWEEN  
FISCAL EQUITY  
AND SOCIAL  
OUTCOMES  
FOR CHILDREN**



## **STRENGTHENING THE EVIDENCE ON THE CORRELATION BETWEEN FISCAL EQUITY AND SOCIAL OUTCOMES FOR CHILDREN**

Research note

## Copyright

All rights to this publication and the accompanying material remain with the United Nations Children's Fund (UNICEF). Any part of the report may be freely reproduced with the appropriate acknowledgement.

© United Nations Children's Fund, April 2021.

## Cover Photo

© UNICEF/UN016293/Gilbertson

(Wearing yellow shirt) Muhammad Modu, 15, an internally displaced person from Malori, digs through a rubbish dump in a gated compound just off the main road that runs through the Mairi Garage Market in Maiduguri, Nigeria for saleable items on March 24, 2016. Muhammad sifts through the smouldering refuse of his middle class surroundings. With the sun pounding down on him and the smoke eating at his plastic flip-flops, his body feels like it's on fire. But the hardest part, he says, is waiting for the trash to arrive. You never know if you'll find much to make the wait worthwhile. After two to three days of this painstaking work, Muhammad gathers enough material to sell for N150-200, or 75 cents to a dollar.



# Contents

List of Figures	iv
List of Tables	v
Acknowledgment	vi
Acronyms	vii
Executive summary	1
<b>1 Introduction</b>	<b>7</b>
<b>2 Review of studies on the impact of equity in social spending and taxation on well-being outcomes</b>	<b>11</b>
2.1 Cross-country studies on the relationship between public social spending and well-being outcomes	12
2.2 Studies on the impact of equity in social spending on well-being outcomes within specific countries	13
<b>3 Evidence on broad correlation between fiscal equity and improved outcomes for children</b>	<b>17</b>
3.1 Objectives	18
3.2 Methodology and data	18
3.3 Empirical results	20
<b>4 Evidence on specific correlation between greater fiscal equity and improved outcomes</b>	<b>27</b>
4.1 Objectives	28
4.2 Methodology and data	28
4.3 Empirical results	31
<b>5 Conclusion</b>	<b>47</b>
<b>6 References</b>	<b>51</b>
<b>7 Annex</b>	<b>55</b>

## List of Figures

<b>Figure 1:</b> The impact of equity in social protection spending on absolute poverty and inequality, all countries	22
<b>Figure 2:</b> The impact of equity in social protection spending on absolute poverty and inequality, non-EU countries	24
<b>Figure 3:</b> Mozambique: The redistributive impact of taxes and social transfers by population subgroups (percentage changes in mean per capita disposable income of the group due to taxes and transfers), 2019	35
<b>Figure 4:</b> Zambia: The redistributive impact of taxes and social transfers by population subgroups (percentage changes in mean per capita disposable income of the group due to taxes and transfers), 2019	36
<b>Figure 5:</b> The distributional impact of Covid-19 (changes in poverty and inequality for consumable income compared to baseline scenario, in percentage points), 2020	38
<b>Figure 6:</b> The distributional impact of the Covid-19 crisis by population subgroups (percentage changes in mean consumable income per capita), 2020	39
<b>Figure 7:</b> The distributional impact of the fiscal simulations in Mozambique (percentage changes in poverty and inequality, compared to baseline scenario), 2020	42
<b>Figure 8:</b> The distributional impact of the fiscal simulations in Zambia (changes in poverty and inequality, compared to baseline scenario, in per cent), 2020	43
<b>Figure 9:</b> Mozambique: The distributional impact of the fiscal simulations by population subgroups (percentage changes in mean consumable income per capita), 2020	44
<b>Figure 10:</b> Zambia: The distributional impact of the fiscal simulations by population subgroups (percentage changes in mean consumable income per capita, in per cent), 2020	45

## List of Tables

<b>Table 1:</b> Summary statistics of variables used in regressions, including EU countries	20
<b>Table 2:</b> Summary statistics of variables used in regressions, excluding EU countries	21
<b>Table 3:</b> Summary of simulated policies (2019)	29
<b>Table 4:</b> Mozambique: The redistributive impact of taxes and social transfers, 2019	31
<b>Table 5:</b> Mozambique: The redistributive impact of taxes and social transfers, 2019	32
<b>Table 6:</b> Zambia: The redistributive impact of taxes and social transfers, 2019	33
<b>Table 7:</b> Zambia: The redistributive impact of direct taxes and social transfers, 2019	33
<b>Table 8:</b> The simulated annual amounts of tax revenues and social spending	41
<b>Table A1:</b> The list of countries included in the analysis and number of observations per country	56
<b>Table A2:</b> The list of countries included in the analysis and number of observations per country	57
<b>Table A3:</b> The impact of equity in social protection spending on absolute poverty and inequality, low- and middle-income countries	58
<b>Table A4:</b> Overview of basic population characteristics	59
<b>Table A5:</b> Overview of negative or zero disposable incomes	60
<b>Table A6:</b> Poverty lines in national currency (monthly values), 2019	60
<b>Table A7:</b> Gini index and poverty headcounts based on disposable income, adjusted disposable income and consumption, 2019	61

# Acknowledgment

This publication is a product of the Public Finance and Local Governance Unit, Social Policy and Social Protection Programme Group, UNICEF, New York. Daria Popova, from the Institute for Social and Economic Research in the University of Essex, UK, carried out this research under the overall technical guidance of Joanne Bosworth and Buthaina Al-Iryani. This publication was reviewed by Natalia Winder-Rossi, David Stewart, Enrique Delamónica, Dominic Richardson, and Juliana Nyasha Tirivayi. The Regional Social Policy team in ESARO (Matthew Cummins and Bob Muchabaiwa) and UNICEF Country Offices in Mozambique (Maki Kato) and Zambia (Samson Muradzikwa and Daphne Francois) have provided valuable inputs to the country case studies.

## DISCLAIMER

UNICEF has made every reasonable effort to ensure the accuracy of information in this report, which was written based on data analyzed in 2020. This research note is not a UNICEF position paper. The designations in this publication do not imply an opinion on the legal status of any country or territory, or of its authorities, or the delimitation of frontiers. The country case studies and simulations may not reflect the current or official view of governments.

# Acronyms

<b>COVID-19</b>	Coronavirus Disease of 2019
<b>CPI</b>	Consumer Price Index
<b>EU</b>	European Union
<b>FISP</b>	Farmer Input Support Programme
<b>GDP</b>	Gross Domestic Product
<b>HDI</b>	Human Development Index
<b>IHDI</b>	Inequality-adjusted Human Development Index
<b>ILO</b>	International Labour Organization
<b>MZN</b>	Mozambican Metical
<b>OLS</b>	Ordinary Least Squares
<b>PIT</b>	Personal Income Tax
<b>PPP</b>	Purchasing Power Parity
<b>SCT</b>	Social Cash Transfer
<b>SDG</b>	Sustainable Development Goals
<b>SSA</b>	Sub-Saharan Africa
<b>UNICEF</b>	United Nations Children's Fund
<b>VAT</b>	Value Added Tax
<b>ZMW</b>	Zambian Kwacha



## KEY MESSAGES

- 
- Universal access to social services and social protection is critical to human development and is a right to be realized in an equitable manner by all segments of the society.
  - For a universal agenda to be realized, it is critical to adequately reach the unreached and leave no one behind. This entails protecting and extending coverage to explicitly realise the right of the poorest and most disadvantaged groups to social protection. Fiscal equity is critical for equitable and universal social protection to be realised.
  - The level of social protection spending is correlated with reducing monetary and multidimensional poverty, and the degree of impact is correlated with equity of spending.
  - The share of social protection spending that goes to the poorest quintile has a statistically significant effect on poverty and inequality: a 1 percentage point increase in the share of social protection spending going to the poorest quintile is associated with a 0.34 percentage point reduction in poverty headcount at \$1.90 a day, and with a 0.44 percentage point reduction in Gini index.
  - Countries spending higher share of their GDP on social spending, specifically social protection, have lower absolute poverty and inequality. The poverty and inequality reducing impact of the equity measure is as important as the impact of the share of social protection spending in the GDP.
  - Tax-benefit policies can be successful in reducing poverty and inequality if they are rolled out in a progressive and equitable manner, to ensure that poorest households are not negatively impacted.



**EXECUTIVE SUMMARY**

## EXECUTIVE SUMMARY

- Universal access to social services is fundamental to sustainable human development and yet faces major challenges.** The poorest and most disadvantaged populations are disproportionately impacted when they are unable to access social services, leading to them being left behind in social and economic development. A universal approach can only be achieved if the right to access social services is realised by all segments of the society, and in an equitable manner.
- In recent years, a wealth of evidence was generated on the importance of Universal Social Protection in reducing poverty and inequality and improving well-being.** A universal approach aims to ensure the right to social protection to all segments of the society in an inclusive and equitable manner. To ensure universality, it is key to adopt equity as a key principle and protect the right of the poorest and most disadvantaged groups to social protection.
- The main question this report attempts to answer is whether greater equity in government social spending, specifically, social protection, has a positive impact on equitable access to social services and well-being outcomes.** We focus on measures of income distribution, specifically absolute poverty and inequality, and empirically assess how they are affected by the distribution of social protection spending.
- Although these outcomes reflect just one of the dimensions of well-being, there is strong evidence to suggest that absolute poverty and inequality are negatively associated with other aspects of well-being,** such as children's health, cognitive development and social, emotional and behavioural development. This report combines an analysis at the macro level for a large number of countries and a micro-level analysis of two case studies using microsimulation techniques.
- We have analysed the impact of equity in social protection spending (all government spending on social insurance and assistance benefits) on absolute poverty and inequality, using a large dataset with country-level indicators.** For that purpose, we have compiled a panel dataset of 535 observations from 101 countries over years 1998–2017. Out of these, 326 observations belong to 28 European Union (EU) member states and 209 observations to non-EU countries. Our approach was to regress the measures of distributional outcomes (absolute poverty and inequality) on the indicators of equity in social protection spending, controlling for the level of spending and the country wealth measured by per capita Gross Domestic Product (GDP).
- While it will vary by country, inequity in the distribution of social protection spending results from the composition of spending that tends to favour those in the highest income quintiles.** On average, in the countries covered by this analysis, only 14 percent of overall social protection spending is going to the poorest quintile. This share drops to 9 percent when the EU countries are excluded from the sample. As has been extensively documented, national social protection systems in developing countries tend to provide social protection, especially contributory coverage, to workers in the formal sector of the economy. Although social protection programmes in developing countries have relatively increased in recent years to reach poorest population, such programmes remain far from optimal, and major efforts are needed to reach poorest and most disadvantaged groups with adequate social protection programmes. The inequity of social protection coverage between the richest and poorest quintiles, amplifies rather than reduces inequalities.
- Equity in social protection spending (measured by the share of social protection spending going to the bottom quintile) appears to be a strong predictor of lower poverty measured at Int\$1.90 a day and reduced inequality measured by the Gini index.** Moreover, in non-EU countries the poverty and inequality reducing impact of this equity measure is as important as the impact of the share of social protection spending in the GDP.



© UNICEF/UN0439821/Boro

- More specifically, for non-EU countries we find that a 1 percentage point (pp) increase in the share of social protection spending going to the bottom quintile is associated with a 0.34 pp reduction in poverty headcount at Int\$1.90 a day, and a 0.44 pp reduction in the Gini index.** The two latter findings confirm what proponents of equity in public spending have been arguing: more equitable distribution of social protection spending is critical for reducing absolute poverty and inequality in low- and middle-income countries.
- The presence of a significant gap in equity of social protection spending between the EU member states and non-EU countries included in the study signifies that there is a large potential in improving equity in social protection spending in low- and middle-income countries.** This may take decades to converge to the levels observed in EU countries, even under situations of considerable increases in government social protection spending. Existing distributional inequalities in social protection spending seem to constrain, at least partly, the effectiveness of social spending in low- and middle-income countries.
- The report draws attention to the significant gaps in the availability of data on equity of social protection spending and well-being outcomes in low- and middle-income countries.** Our study has focused on the impact of equity in government social protection spending on the material well-being outcomes, due to the small number of low- and middle-income countries for which the data on equity in other types of social spending (education- and health-related) is available. Another limitation is that we could not include child poverty measures in our analysis due to the lack of data for a sufficiently high number of low- and middle-income countries.
- The report has analysed how the distributional outcomes could be improved through changes in tax-benefit policies, using two countries as case studies.** The countries under examination are Mozambique (a low-income country) and Zambia (a lower-middle-income country). This analysis used the tax-benefit microsimulation models for each country. The use of the common modelling platform enabled comparisons to be made that have not hitherto been possible. For both countries common income concepts, a common time point, international absolute poverty lines and a per capita equivalence scale were used.
- The existing tax-benefit systems of the two countries appear to reduce income inequality to a small extent (by 12 per cent in Mozambique and by 4 per cent in Zambia), yet are mostly ineffective in regard to poverty reduction.** This happens because the tax-benefit policies affect only a small minority of each country's population. Many individuals are largely unaffected by the tax and benefit system, apart from indirect taxes: the benefits are very narrowly targeted, and their amounts are small, and many individuals are too poor to pay direct taxes.





© UNICEF/UN040243/Khetaguri

- **The Zambia tax-benefit system appears to be less progressive compared to Mozambique and causes fiscal impoverishment**, i.e. it causes some of the poor individuals and households to become poorer than they were before taxes and benefits, as the average tax burden is higher than the gain due to social transfers, and due to the strong regressive impact of indirect taxes that in Zambia fall heavily on the bottom deciles.
- **The COVID-19 pandemic reached both countries at a weak moment in their economic histories and represents a further setback to the countries' economic and social development prospects.** The lack of policy space to counteract the COVID-19 economic impact will result in worsening of the distributional outcomes for the populations. According to our simulations of the COVID-19-related economic decline, the child poverty headcount at Int\$1.90 a day for consumable income could increase by 1.2 percentage points in Mozambique. The projection for Zambia shows a 1.9 percentage points increase in the child poverty headcount.
- **The harmonised models also provide a platform from which to explore more effective means of redistribution. In this report we did so by introducing two new cash transfers on top of each country's existing arrangements funded from the internal revenues.** The new transfers included a targeted transfer equal to the household poverty gap at the Int\$1.90 a day poverty line, and a universal transfer for each child up to the age of 18 years. Both simulations have been implemented in a budget neutral manner, either through a 3 pp increase in standard value added tax (VAT) rate or a 1.1 pp increase in all personal income tax (PIT) and turnover tax rates.
- **Both types of new cash transfers, being progressive in nature, are effective in reducing national and child poverty gaps.** The net winners of both reforms are children under 18 years and the most vulnerable household types: couples with 3+ children and lone parents with 3+ children. However, the reforms that we have implemented will require a much larger budget allocated to cash transfers to be more effective in reducing both child poverty headcount and poverty gap, in order to compensate for the increased tax burden.
- **It is important to stress that these simulations make significant assumptions.** They enabled us to assess and compare the intended first-order effects of the simulated changes in tax and benefit systems. For example, the results do not account for possible changes in tax compliance and take up of benefits. The practical implementation issues in introducing new social transfers (such as inclusion and exclusion errors) and increasing tax rates also have been left out of the picture. We assume that the available budget remains constant for all types of reforms and that targeting is effective. Evidence suggests that more universal transfers can create stronger political support and better funded and more sustainable programs. Further, targeting has been shown to be frequently inaccurate with significant exclusions errors, and additionally needs to be updated frequently. Nevertheless, analysis such as this helps us to assess the extent to which current policy arrangements achieve redistribution and whether the simulated policy reforms may improve it further.
- **Our findings highlight the importance of examining the distributional effects of various hypothetical reforms prior to their implementation, especially when the financial resources are scarce.** The distributional analyses for Mozambique and Zambia demonstrate that the impact of the same policy simulations on various population subgroups may vary depending on the design and many complex interactions within the existing tax-transfer systems and other characteristics of the population. Thus, it is crucial to study thoroughly any planned tax-transfer and its distributional impact to ensure its progressiveness.
- **To sum up, this report reveals that equity in government social spending is a key determinant to ensure positive impact on well-being outcomes and is key to ensure that all segments of the society realize the right to social protection.** The effectiveness of social protection spending in reducing extreme poverty (measured at \$1.90 a day) and inequality (measured by Gini index) is positively associated with equity; specifically, with the share of overall social protection spending going to the poorest quintile. This finding augments the calls for a progressive and equitable universal social protection approach, where no one is left behind. Moreover, policy reforms targeted at increasing equity in the distribution of taxes and benefits across the population can be an efficient means of reducing child poverty in low- and middle-income countries.



# 1

## INTRODUCTION

## 1. INTRODUCTION

Universal access to social services is critical to human development. For a universal agenda to be realised, it is critical to reach the unreached and leave no one behind. This entails protecting the right of the poorest and most disadvantaged groups to access social services. Focusing on fiscal equity is critical for equitable and universal social services to be realised. The importance of investments in the social sectors has long been recognised by the international community. The Millennium Development Goals, established in 2000, comprised explicit targets to tackle extreme poverty and promote human development. The Sustainable Development Goals (SDGs) articulates the importance of adequate investments in social sectors, as clearly stated by SDG 1.a.2<sup>1</sup>, which measures the proportion of total government spending on essential services (education, health, and social protection). Equity of social spending is also at the core of the 2030 Agenda and is clearly articulated with the Pro-Poor Public Social Spending indicator, 1.b.1<sup>2</sup>, which focuses on the proportion of government spending towards health, education and direct social transfers that benefit the poor. Another related Sustainable Development Goal (SDG) indicator is 10.4.2, the Redistributive Impact of Fiscal Policy indicator, which measures the distributional impact of fiscal policies aimed at achieving greater equality and aims to track overall inequality at national level.<sup>3</sup> The UNICEF child rights mandate dictates the importance of leaving no child behind and ensuring that the poorest and most vulnerable children have a fair chance in life. The UNICEF Public Finance for Children (PF4C) programming aims to address, among other things, challenges of inequity in public expenditure. Furthermore, UNICEF has committed to report on the volume and equitable distribution of public expenditure in three sectors (health, education and social protection) in its Strategic Plan 2018–2021 (UNICEF 2018, UNICEF 2020). The Convention on the Rights of the Child (CRC) and the General comment No. 19 (2016) on public budgeting for the realization of children's rights (art. 4) defines UNICEF's efforts towards sustainable impact on the effectiveness, efficiency, equity, transparency and sustainability of public budgets to finance key social sectors for children at all times, including

times of crisis. The goal is to ensure the universal right to social services by all children, which is far from reality in many countries, and major global efforts are to be undertaken to reach universalism. Ensuring that the poorest and most disadvantaged children access social services is key to ensure a universal approach, and thus focusing on fiscal equity is a key determinant to ensure every child realize the right to social services.

To this end, much of the increase in development assistance has been directed towards the social sectors (Addison, Niño-Zarazúa et al. 2015), while a growing number of low- and middle-income countries have improved the effectiveness of their tax systems and developed new social benefit schemes in an effort to reduce the inequality and poverty levels of the general population and, children in particular. However, despite the considerable effort in the cross-country literature geared towards assessing the impact of social spending on well-being outcomes, such analyses rarely account for the distribution of social spending across the population. An improvement in social spending does not necessarily imply that the poor are on the receiving end of the benefits. The few existing studies that have attempted to address this question for low- and middle-income countries show that success in fiscal redistribution is driven both by redistributive efforts (share of social spending to GDP) and their progressivity, i.e. the degree to which tax burdens and benefit entitlements rise or fall with household income (Lustig 2016, 2017, 2018).

The present study builds on the existing literature on the effectiveness of social spending as regards to well-being outcomes, to empirically test the proposition that greater equity in social spending is strongly associated with positive changes in aggregate welfare. Due to the limitations related to the data and modelling approach we use, we focus on the material well-being outcomes, such as poverty and inequality. These outcomes reflect just one of the dimensions of well-being. Nevertheless, there is strong evidence to suggest that income poverty and inequality are negatively associated with other aspects of well-being, such as children's health, cognitive development and social, emotional

<sup>1</sup> See: SDG 1.a.2 Metadata: <https://unstats.un.org/sdgs/metadata/files/Metadata-01-0a-01.pdf>

<sup>2</sup> See: <https://unstats.un.org/sdgs/metadata/files/Metadata-01-0b-01.pdf>.

<sup>3</sup> See: <https://unstats.un.org/sdgs/metadata/>

and behavioural development (Pickett and Wilkinson 2007, UNICEF 2007, Richardson, Hoelscher et al. 2008, OECD 2009). A large number of studies have confirmed that income poverty has causal effects on children's life chances, especially in terms of educational and cognitive outcomes, and that the causal relationship is likely to be stronger early in the life-course (Duncan, Yeung et al. 1998, Phipps 1999, Conti and Heckmann 2012, Cooper and Stewart 2013).

The analysis presented in this report consists of two parts: the report combines an analysis at the macro level for a large number of countries and a micro-level analysis of two case studies using microsimulation techniques. Social spending on social protection is the key focus of this report, given the availability of data, and the strong correlation between social protection and positive outcomes for children.

Social protection, or social security, is defined as the set of policies and programmes designed to reduce and prevent poverty and vulnerability across the life cycle. Social protection includes the following areas: child and family benefits, maternity protection, unemployment support, employment injury benefits, sickness benefits, health protection, old-age benefits, disability benefits and survivors' benefits. Social protection systems address all these policy areas by a mix of contributory schemes (social insurance) and non-contributory tax financed social assistance.

Universal social protection is a human right, and to ensure this right is universally realised, all segments of the society should have equitable access to social protection, including the poorest and most disadvantaged. However, data reveals that major global efforts are yet to be undertaken to realize universal social protection. Despite improvements over the past decades, it is estimated that only 45 per cent of the world's population is effectively covered by at least one social protection scheme.<sup>4</sup> SDG 1.3, which calls for implementing nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable, illustrates the 2030 agenda focus on social protection. The explicit focus of SDG 1.3 on the poor and vulnerable is not only rights based, but also crucial to achieve universality. The major obstacle facing universality is that many public budgets are yet

to be equitable and reach the poorest. Fiscal equity, specifically equity in social protection spending is thus crucial to achieve SDG 1.3 and universal social protection, where no one is left behind.

The question we seek to answer in the first part is **whether social protection spending has a stronger (positive) impact on well-being outcomes in countries with higher equity in social protection spending**. Our approach in this study is to regress the poverty and inequality outcomes on two indicators of equity in social spending (the share of the bottom quintile in the total spending and the gap in spending accrued to the top and bottom quintiles), controlling for the level of spending and the country wealth measured by per capita GDP. For that purpose, we have compiled a dataset which consists of 535 observations from 101 countries over the years 1998–2017. To test the validity of the findings we have repeated the analysis, having excluded the EU member states.

The second part of the report looks at **how the distributional outcomes could be improved though changes in tax-benefit policies, using the two countries as case studies**. The countries under examination are Mozambique (a low-income country) and Zambia (a lower-middle-income country). In particular, we aim to answer the following questions: (i) What is the distributional impact of the existing tax-benefit policies in the selected countries? (ii) What is the distributional impact of the COVID-19 recession in the selected countries? (iii) Which types of policy reforms can bring about better distributional outcomes in the selected countries and how much will they cost?

The remainder of this report is organised as follows: section 2 provides a brief overview of the empirical literature on the link between social spending and welfare outcomes at the macro-level (section 2.1) and at the micro-level, i.e. within specific countries, (section 2.2). Section 3 presents the evidence on the impact of equity in social protection spending on poverty and inequality, using a regression analysis on the cross-country dataset we have compiled. Section 4 examines how the distributional outcomes could be improved though changes in tax-benefit policies in the two countries, using microsimulation techniques. Section 5 concludes with reflections on policy.

<sup>4</sup> (ILO, 2017a) <https://www.social-protection.org/gimi/RessourcePDFaction?id=54888>



# 2

## REVIEW OF STUDIES ON THE IMPACT OF EQUITY IN SOCIAL SPENDING AND TAXATION ON WELL-BEING OUTCOMES

## 2 REVIEW OF STUDIES ON THE IMPACT OF EQUITY IN SOCIAL SPENDING AND TAXATION ON WELL-BEING OUTCOMES

### 2.1 Cross-country studies on the relationship between public social spending and well-being outcomes

There has been a fair amount of research in the literature investigating the impact of social spending on poverty and inequality. However, it has mainly focused on high-income countries such as member states of the EU and the Organization for Economic Cooperation and Development (OECD). Overall, these studies have confirmed that higher social protection spending is poverty and inequality reducing (Kenworthy 1999, Adema, Fron et al. 2014, ILO 2017, Cammeraat 2020), in particular in nations with a broad and egalitarian provision of social services and cash transfers (Korpi and Palme 1998, Jacques and Noël 2018). One expenditure type found to be particularly effective in reducing both poverty and inequality is expenditure on cash benefits for families and children (Nygård, Lindberg et al. 2019, Cammeraat 2020). Bárcena-Martín, Lacomba et al. (2014) found a strong and negative relationship between social spending and child deprivation in European countries. Having investigated the effect of the post-2008 recession on child poverty across 30 European countries, Chzhen (2017) found that children were significantly less likely to be poor in countries with higher social protection spending, even after controlling for the socio-demographic structure of the population, per capita GDP and the working-age unemployment rate.

Research on the distributional impacts of social protection spending in low- and middle-income countries is rare and more ambiguous. Although social protection programs of one kind or another have been established in the majority of developing countries, only 29 percent of the global population are covered by comprehensive social protection systems that include the full range of benefits, from child and family benefits to old-age pensions (ILO 2017). The prevailing forms of social protection in many developing countries are usually social insurance programmes such as

employer mandates<sup>5</sup> or provident funds,<sup>6</sup> and to a lesser extent measures to safeguard consumption through, for example, cash transfers. As has been extensively documented, national social protection systems in developing countries provide contributory coverage to workers in the formal sector of the economy, often leaving behind the rural population, those working in informal sector, and women in particular (Hall, Midgley et al. 2004, Van Ginneken 2010). Although non-contributory social protection programmes in developing countries have relatively increased in recent years to reach poorest population, such programmes remain far from optimal. The low coverage of social protection schemes amplifies rather than reduces inequalities. Consequently, some countries in Sub-Saharan Africa, South Asia, and some of East Asia have been categorised as 'Insecurity Regimes' or 'Informal Security Regimes' (Gough, Wood et al. 2004). In contrast to modern social protection systems based on the principles of citizen's rights and clear entitlement rules (Esping-Andersen (1990) family of welfare state regimes<sup>7</sup> found in Europe and among the OECD member states), provision in 'Informal Security Regimes' is entirely discretionary, makes recipients dependent on those who provide assistance, 'Insecurity Regimes' doesn't provide people with effective social protection against economic shocks and natural disasters.

The findings of the research on effectiveness of social spending in low- and middle-income countries show that increased social spending on education and health is correlated with the improved health and education outcomes (Anand and Ravallion 1993, Gupta, Verhoeven et al. 2002, Baldacci, Guin-Siu et al. 2003, Gupta, Verhoeven et al. 2003), especially when institutional capacity and good governance are in place to ensure optimal utilization towards improved service delivery (Filmer, Hammer et al. 2000, Rajkumar and Swaroop 2008, Makuta and O'Hare 2015). A recent study by Haile and Niño-Zarazúa (2018) examined the causal effect of government

<sup>5</sup> Employer mandates are designed to meet specific contingencies though legal mandates imposed on employers by government (for example, compensation for injury).

<sup>6</sup> Provident funds are similar to social insurance financed by employees and sometimes employers contributions but contributions are not pooled and used to pay benefits to other workers.

<sup>7</sup> The welfare state refers to an ideal model of provision, whereby the state accepts responsibility for the provision of comprehensive and universal welfare for its citizens.

spending in all social sectors (health, education and social protection) on three measures of well-being outcomes: the Human Development Index (HDI), the Inequality-adjusted Human Development Index (IHDI) and child mortality rates, using longitudinal data from 55 low- and middle-income countries from 1990 to 2009. Their analysis supports the proposition that government social spending has played a significant role in improving well-being outcomes in the developing world.

Based on the tax and benefit incidence analysis for a large number of low- and middle-income countries, Lustig (2016), Inchauste and Lustig (2017), Lustig (2018) have shown that success in fiscal redistribution is driven both by the level of spending (share of social spending to GDP) and their progressivity, i.e. the degree to which tax burdens and benefit entitlements rise or fall with household income. Direct taxes and direct cash transfers are generally progressive and equalizing. The marginal contribution of direct transfers to inequality reduction is usually larger than that of direct taxes. Indirect taxes are often but not always unequalizing. Importantly, while tax-transfer systems can reduce inequality, this is not the case with poverty, typically due to consumption taxes on basic goods paid by the poor (Higgins and Lustig 2016). As far as spending on in-kind benefits (healthcare and education) is concerned, it is either pro-poor or neutral.

### 2.2 Studies on the impact of equity in social spending on well-being outcomes within specific countries

The assessments of the distributional impact of public policies, examination of the effects of various measures or projections of the shape of the income distribution after the implementation of hypothetical reforms can be carried out with the help of microsimulation methods (Bourguignon and Sparado 2006, Sutherland and Figari 2013, O'Donoghue 2014, Figari, Paulus et al. 2015). The research tools and methods recently developed by the CEQ<sup>8</sup> and SOUTHMOD<sup>9</sup> projects allow similar analysis to be undertaken for a number of low- and middle-income countries across the world. The examples of such studies are reviewed below.

Several studies by the CEQ Institute have recently analysed whether better distributional outcomes could be achieved in African countries due to the expansion of cash transfer programmes and whether these programmes could be funded from national sources. In the study for Ghana and Tanzania, Younger (2017) determined that the existing energy subsidies in these countries, while very popular, were regressive. Their simulation exercise showed that the removal of energy subsidies accompanied by a simultaneous expansion of cash transfer programmes for the poor could have the same poverty reducing effect at a significantly lower cost. Phillips, Warwick et al. (2018) have estimated the distributional impact of preferential VAT rates in Ghana, Ethiopia, Zambia and Senegal and concluded that they are not well targeted towards poor households. Introduction of a Universal Basic Income funded by the revenue gains from a broader VAT base would create larger net gains for poor households. Jellema, Lustig et al. (2019) have simulated policy scenarios for nine sub-Saharan countries: Comoros, Ghana, Ivory Coast, Namibia, South Africa, Tanzania, Togo, Uganda and Zambia. They assess if these countries could rely on cash transfers to provide income floors to their citizens. The results show that setting income floors equal to the country-specific poverty lines and financed with an increase in indirect taxes is feasible for a number of countries. The required increase in indirect taxes paid by the non-poor, however, could still be steep, thus making this reform either economically inefficient (e.g. due to reduced consumption) or politically unrealistic, in all countries included in the study.

Microsimulation studies based on SOUTHMOD models have been instrumental in exploring issues that are at the forefront of the policy agenda in a number of low- and middle-income countries. Gasior, Leventi et al. (2018) have assessed the distributional effects of existing taxes and benefits using SOUTHMOD models for six African countries: Ethiopia, Ghana, Mozambique, South Africa, Tanzania and Zambia. They found that apart from South Africa, these countries' tax-benefit systems have few poverty-reducing properties. This undesirable result is broadly due to the fact that the poor pay consumption taxes but

<sup>8</sup> Commitment to Equity (CEQ) – a database of the studies of the impact of taxation and social spending on inequality and poverty for low- and middle-income countries developed by the CEQ Institute. See: [www.commitmenttoequity.org](http://www.commitmenttoequity.org)

<sup>9</sup> SOUTHMOD – a multi-country tax-benefit microsimulation model for the Global South developed by UNU-WIDER, the EUROMOD team at the University of Essex, and Southern African Social Policy Research Institute (SASPRI). See: <https://www.wider.unu.edu/project/southmod-simulating-tax-and-benefit-policiesdevelopment>



receive very little in the form of cash transfers, the phenomenon which has been referred to as fiscal impoverishment (Higgins and Lustig 2016). Amores and Jara (2018) assessed the current needs of old-age adults in Ecuador, and making use of the tax-benefit microsimulation model ECUAMOD evaluated the effect of covering those needs through a hypothetical increase in pension assistance. Rattenhuber and Jouste (2019) used four SOUTHMOD tax-benefit microsimulation models (for Ecuador, Ghana, Tanzania and South Africa) to evaluate ex ante the expansion of a universal old-age pension. They show that universal pensions would significantly reduce poverty and inequality in settings in which no means-tested old-age pensions exist (such as Ghana and Tanzania), however at substantial costs. Wright, Leyaro et al. (2019) explore the eligibility criteria for cash transfer programmes in Tanzania. Given that these criteria are complex and at times either opaque and/or discretionary, the authors simulate several categorical benefit alternatives which overcome many of the challenges of the current design, including a revenue neutral option that is more effective at reducing poverty and inequality and enhances the transparency of the system. Bargain, Jara et al. (2017) use models for Ecuador and Colombia to swap tax-benefit systems of

these two countries to produce counterfactual simulations whereby the system of one country is applied to the population of the other. The study concludes that if the more redistributive Ecuadorean system was applied to the Colombian population, the Gini coefficient would be reduced by 1.7 points in Colombia.

The CEQ methodology has been recently refined to apply it to children as a specific population group by Cuesta, Jellema et al. (2018). Their study for Uganda tracked child-relevant benefits, turned children into the unit of analysis, and used multidimensional child poverty metrics as the outcome measure. The impact of the child-relevant budgets in Uganda was found to be modest due to low spending as well as their design. Policy simulations undertaken in the study show that the fiscal cost of ending educational enrolment deprivation in Uganda is relatively modest (337 billion UGSh per 1 pp of child poverty reduction) and can reduce multidimensional poverty by approximately 2.5 pp. A 2 pp reduction in monetary poverty can be achieved by elimination of child-unrelated and regressive consumption subsidies<sup>10</sup> and VAT exemptions,<sup>11</sup> and by targeting these fiscal savings to monetarily poor children.

<sup>10</sup> Consumer/consumption subsidies commonly reduce the price of goods and services to the consumer. In case of Uganda, those included water, electricity and agricultural subsidies.

<sup>11</sup> Although the VAT rate in Uganda is uniform, there are various exemptions and zero-rated products. These are targeted on goods that have been identified as consumption goods among the poor. Examples of exempt goods are unprocessed foodstuffs, agricultural products (except for wheat grain), and the supply of various agricultural inputs.



© UNICEF/UNI76580/Holmes

# 3

**EVIDENCE ON BROAD  
CORRELATION BETWEEN  
FISCAL EQUITY AND IMPROVED  
OUTCOMES FOR CHILDREN**



## 3 EVIDENCE ON BROAD CORRELATION BETWEEN FISCAL EQUITY AND IMPROVED OUTCOMES FOR CHILDREN

### 3.1 Objectives

The main objective of every country that undertakes social spending is to improve the well-being outcomes of its citizens. However, despite the considerable effort in the cross-country literature geared towards assessing the impact of social spending on the well-being outcomes (summarised in section 2.1 of this report), such analyses rarely account for the distribution of social spending across the population. However, an improvement in social spending does not necessarily imply that the poor are on the receiving end of the benefits. The present study builds on the existing literature on the effectiveness of social spending as regards to well-being outcomes to empirically test the proposition that higher equity in social spending strongly predicts positive changes in aggregate welfare.

Our approach in this study is to regress the outcomes on the indicators of equity in social spending, controlling for the level of spending and the country wealth measured by per capita GDP. The question that we ask is whether social spending has a stronger (positive) impact on outcomes in countries with higher equity in social spending. This analysis allows us to empirically examine whether social spending is more effective in improving well-being outcomes in countries with more equitable distribution of social spending. Due to the limited sample of countries that have data on equity in social spending, we will look at the impact of equity in social protection spending on inequality and poverty. Currently, there are not enough data on equity in education and health expenditure and the related outcomes to perform any analysis beyond running simple correlations.<sup>12</sup>

### 3.2 Methodology and data

Our empirical analysis uses country-level data for 101 countries over the period 1998–2017. We include all countries and years for which all variables are available, which results in a total sample of 535 observations. Out of these, 326 observations belong to the 28 EU member states for which the data on all indicators we use are available over long periods of time and without gaps in series. The remaining 209 observations are non-EU countries (see Table A1 for details). To make sure that our estimates are not driven by the presence of the large number of observations for the EU countries, we run our models on two samples, one including the EU countries and one excluding them. The number of observations (years) per country varies from 1 to 15.

We study the impact of equity in public social protection spending on absolute poverty and inequality. On equity in social protection spending, we use two measures: (i) share of social protection spending going to the first (poorest) quintile relative to the total spending, and (ii) ratio of social protection benefits going to the top (richest) quintile and the bottom (poorest) quintile. These are derived using the household survey data. Social protection comprises spending on cash and near-cash social assistance and social insurance benefits (including public pensions), both contributory and non-contributory. For the 28 EU countries, and a number of non-EU countries, these have been calculated using EUROMOD<sup>13</sup> and SOUTHMOD<sup>14</sup> tax-benefit microsimulation models made available by the University of Essex and UNU-WIDER, respectively. For the rest we use the indicators published by the World Bank Atlas

of Social Protection Indicators of Resilience and Equity (ASPIRE)<sup>15</sup> and the Commitment to Equity Institute Data centre.<sup>16</sup> Our key spending variable is total public social protection expenditure as per cent of GDP, which is available for a large cross-section of countries from the ILO Social Protection Report (ILO 2017). If not available in the ILO report, the variable was taken from the Commitment to Equity Data Centre and from Eurostat.<sup>17</sup> The definition of social protection spending is broadly consistent across these databases. In this case expenditure on social protection comprises expenditure on social benefits, administration costs and other miscellaneous expenditure by social protection schemes. The ILO social expenditure data covers the period 2005–2015 with an up to five-year gap in between. Interpolation was used to fill in the missing observations of the social protection spending variable (in total 97 out of 535 observations were imputed using interpolation). We use GDP per capita in purchasing power parity (PPP)-adjusted dollars in order to control for the general living standard and economic development. These data come from the World Development Indicators database.<sup>18</sup>

The four outcome measures we use are widely used in international comparisons of poverty and inequality. They are available in the World Development Indicators database. To assess inequality effects, we use the Gini coefficient. To analyse poverty, we use the following poverty thresholds:

- International Poverty Line: Int\$1.90 PPP.
- Lower-Middle-Income Class Poverty Line: Int\$3.20 PPP.
- Upper-Middle-Income Class Poverty Line: Int\$5.50 PPP.

Currently, the international poverty headcounts cannot be disaggregated by age for a sufficiently high number of low- and middle-income countries. Therefore, we could not include child poverty headcounts in our analysis. A recent joint report by the World Bank Group and UNICEF contains the estimates of child poverty for 149 countries pertaining to 2017 (Silwal, Engilbertsdottir et al. 2020). These estimates could be included in the regression analysis in the future if the number of observations is increased to at least 200.

For social protection spending we estimate the following functional form:

$$Poverty/Inequality Outcome_{i,t} = \delta_0 + \delta_1 Equity\ in\ social\ protection\ spending_{i,t} + \delta_2 Social\ spending\ as\ percentage\ of\ GDP_{i,t} + \delta_3 GDP\ per\ capita_{i,t} + \varepsilon_{i,t} \quad (1)$$

where the variables for country  $i$  are:

*Poverty outcome* – poverty headcount (per cent of population) at three poverty lines measured in PPP-adjusted dollars: (i) Int\$1.90 a day; (ii) Int\$3.20 a day; (iii) Int\$5.50 a day;

*Inequality outcome* – Gini index\*100;

*GDP per capita* – per capita gross domestic product converted to international dollars using PPP rates; data are in constant 2017 international dollars;

*Social protection spending* – measured as share of social protection spending in GDP; social protection spending comprise spending on cash and near-cash social assistance and social insurance benefits (including public pensions);

*Equity in social protection spending* – measured as (i) share of social protection spending going to the bottom quintile; (ii) ratio of social protection spending going to the top and bottom quintiles;

$\varepsilon$  - an error term.

<sup>12</sup> We have attempted to gather the data on the effectiveness of education and health spending, yet in both cases the sample did not exceed 100 observations. The data on equity in education spending is available from a tool developed by UNICEF. The tool draws on information from multiple sources to provide country specific data, including the World Inequality Database on Education and UNESCO Institute for Statistics. For a small number of countries the data on equity in education spending can be obtained from the CEQ data centre. The education outcomes data can be taken from the World Development Indicators database. The number of available observations (country-years) for the public education expenditure and equity measures amounted to 83 (71 countries with measurements taken between 2003 and 2017). At the time of writing, the only source of data on equity in education spending is the CEQ institute. The available sample currently has fewer than 30 cases.

<sup>13</sup> See: <https://www.euromod.ac.uk/using-euromod/statistics>

<sup>14</sup> See: <https://www.wider.unu.edu/project/southmod-simulating-tax-and-benefit-policies-development>

<sup>15</sup> See: <https://databank.worldbank.org/source/the-atlas-of-social-protection-indicators-of-resilience-and-equity>

<sup>16</sup> See: <https://commitmenttoequity.org/datacenter>

<sup>17</sup> See: <https://ec.europa.eu/eurostat/web/social-protection/data/database>

<sup>18</sup> See: <https://databank.worldbank.org/source/world-development-indicators>



### 3.3 Empirical results

Our poverty headcount and inequality regressions for all countries use a sample of 535 observations from 101 countries over years 1998–2017 (see Table 1). The mean value of poverty headcounts is 4.2 per cent at Int\$1.90 a day (in 2011 international dollars, PPP adjusted), 9.19 per cent at Int\$3.20 a day and 17.5 per cent at Int\$5.50 a day. The mean value of the Gini index

is 35.7 per cent. The average share of social protection spending in GDP is about 13.4 per cent, and ranges from 0.1 per cent to over 27 per cent of GDP. The mean values for the equity indicators – the share of the bottom quintile and ratio of public social protection spending going to the top and bottom quintiles – are 14 per cent and 7.7 times, respectively. Finally, on average, a typical country in our dataset has a per capita GDP of 28,650 PPP-adjusted dollars.

**Table 1:**  
Summary statistics of variables used in regressions, including EU countries.

	Observations	Mean	Std. Dev.	Min	Max
<b>Equity measures:</b>					
Share of social protection spending going to the bottom quintile, per cent	535	14.02	7.725	0.124	35.49
Ratio of social protection spending going to the top and bottom quintiles, times	535	7.671	42.77	0.00786	705.9
<b>Controls:</b>					
GDP per capita in PPP dollars/1000	535	28.65	19.56	0.758	115.4
Social protection spending as per cent of GDP	535	13.44	6.046	0.0952	27.16
<b>Outcomes:</b>					
Poverty headcount at Int\$1.90 a day, per cent of population	535	4.234	11.09	0.000	94.10
Poverty headcount at Int\$3.20 a day, per cent of population	535	9.153	17.55	0.000	98.50
Poverty headcount at Int\$5.50 a day, per cent of population	535	17.51	25.06	0.000	99.70
<b>Gini index*100</b>	<b>535</b>	<b>35.68</b>	<b>7.897</b>	<b>23.70</b>	<b>64.80</b>

Regressions for non-EU countries (with the EU countries excluded) use a sample of 209 observations from 73 countries (see Table 2). This sample has considerably higher poverty and inequality levels. The mean value of poverty headcounts is 10 per cent at Int\$1.90 a day, 21.4 per cent at Int\$3.20 a day and 40 per cent at Int\$5.50 a day. The average value of the Gini index is 42.1 per cent. The average share of social protection spending in the GDP is lower (about

8.7 per cent) and social protection spending is distributed in a less equitable way when the EU countries are removed from the sample. The mean share of the bottom quintile in social protection spending is 8.9 per cent, while the ratio of social protection spending going to the top and bottom quintiles amounts to 19.4 times. The per capita GDP in this sample is 2.5 times as low as in the sample for all countries (\$11,640 PPP on average).

**Table 2:**  
Summary statistics of variables used in regressions, excluding EU countries.

	Observations	Mean	Std. Dev.	Min	Max
<b>Equity measures:</b>					
Share of social protection spending going to the bottom quintile, per cent	209	8.922	6.496	0.124	35.49
Ratio of social protection spending going to the top and bottom quintiles, times	209	19.39	66.85	0.115	705.9
<b>Controls:</b>					
GDP per capita in PPP dollars/1000	209	11.64	6.782	0.758	29.34
Social protection spending as per cent of GDP	209	8.677	5.716	0.0952	27.16
<b>Outcomes:</b>					
Poverty headcount at Int\$1.90 a day, per cent of population	209	9.862	16.17	0.00	94.10
Poverty headcount at Int\$3.20 a day, per cent of population	209	21.44	23.08	0.00	98.50
Poverty headcount at Int\$5.50 a day, per cent of population	209	40.11	26.96	0.700	99.70
<b>Gini index*100</b>	<b>209</b>	<b>42.10</b>	<b>8.486</b>	<b>24.60</b>	<b>64.80</b>

We begin testing the model given in Eq. (1), using the pooled cross-section time-series Ordinary Least Squares (OLS) regressions with robust standard errors. This is aimed at capturing country-specific effects that persist over time (Beck and Katz 1995). It is possible that variables for the same country may be correlated over time. If so, and without appropriate adjustments, using several years of data would then be similar to multiplying the number of observations by the number of years, resulting in artificially high t-statistics. We use OLS regressions with panel-corrected standard errors (the Stata command `xtpcse`) to adjust the standard errors appropriately. In order to check the robustness of the impact of equity in social protection spending on poverty and inequality, we ran regressions first by using each equity measure separately and then with both equity measures in the same model. The regressions were first run on the full sample (with a dummy variable indicating the EU countries) and on the sample of non-EU countries only.



© UNICEF/UNI230959/Estey

**Figure 1:**  
The impact of equity in social protection spending on absolute poverty and inequality, all countries.

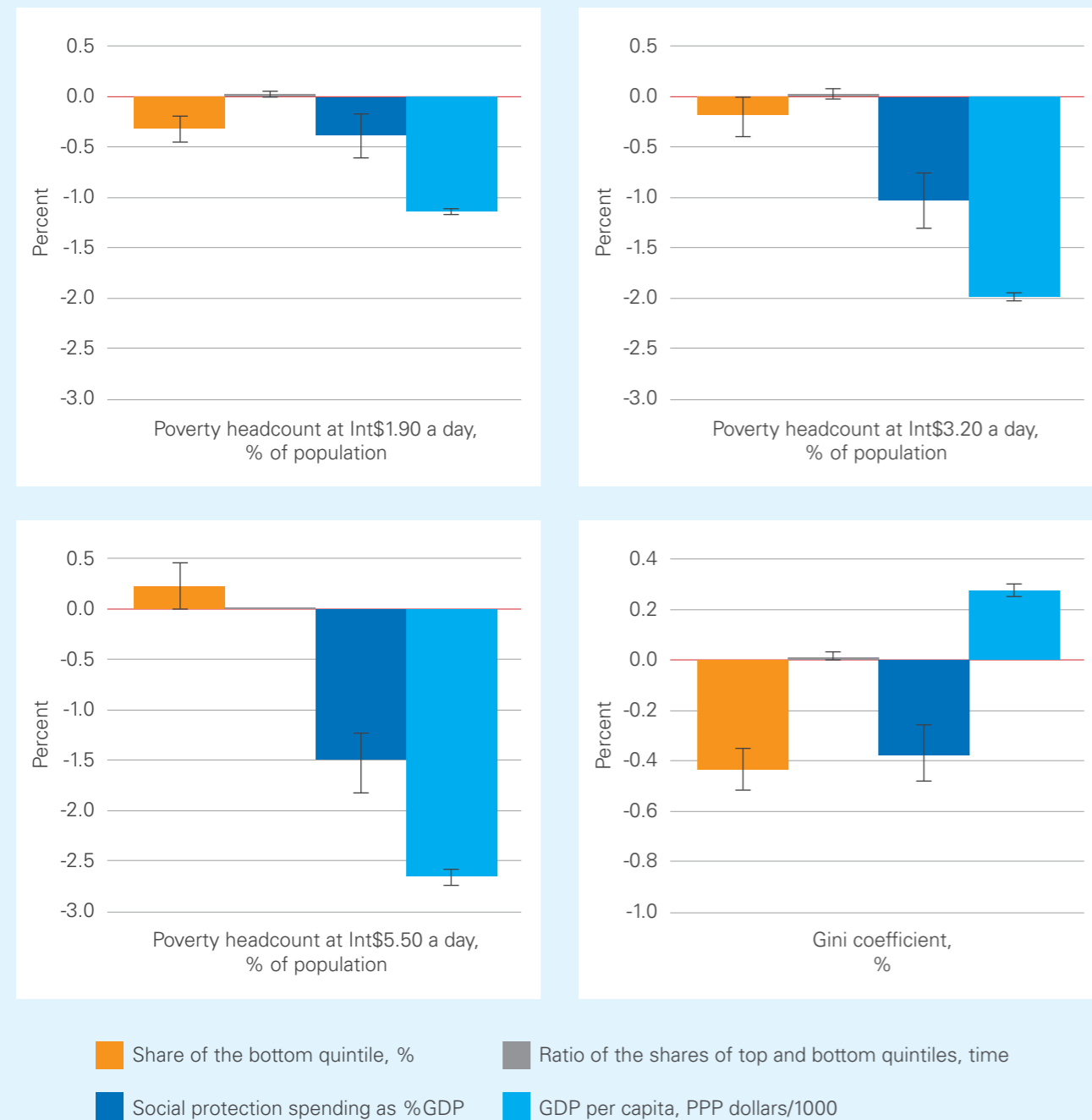


**Note:** This figure shows unstandardised  $\beta$ -coefficients and their confidence intervals from pooled OLS regressions for each of the four outcomes. See Model 3 from Table A2.

Table A2 contains the estimates of our model given in Eq. (1) for the three poverty variables and Gini coefficient on the full sample that includes the EU countries. It shows unstandardised  $\beta$ -coefficients, panel-corrected standard errors and levels of statistical significance from pooled OLS regressions of the four outcomes on measures of equity in social spending, while controlling for the overall level of spending as percentage of GDP and GDP per capita. Models 1 and 2 demonstrate that both equity measures have statistically significant coefficients in all models for absolute poverty and inequality. Figure 1 shows the estimates from Model 3, which contains both equity measures, for the four outcomes. It indicates that controlling for the GDP per capita, a 1 pp increase in social protection spending is associated with a 0.6 pp reduction in poverty at Int\$1.90 a day. At the same time, a 1 pp increase in the share of social protection spending going to the bottom quintile is linked with a 0.24 pp reduction in poverty at Int\$1.90 a day, while a one point increase in the ratio of expenditure going to the top and bottom quintiles leads to a 0.04 pp increase in poverty headcount. Overall, for the full sample of countries the effect of the share of social protection spending in GDP on extreme poverty is much larger than that of the measures of equity in social protection spending. Yet both equity measures have a statistically significant impact on extreme poverty. The effect of the share of spending going to the bottom quintile is stronger than the effect of the ratio of spending going to the top and bottom quintiles.



**Figure 2:**  
The impact of equity in social protection spending on absolute poverty and inequality, non-EU countries.



**Note:** This figure shows unstandardised  $\beta$ -coefficients and their confidence intervals from pooled OLS regressions for each of the four outcomes. See Model 3 from Table A3.

In the models for poverty headcounts at Int\$3.20 a day and at Int\$5.50 a day, the poverty reducing effect of the share of the bottom quintile in social protection spending goes up to 0.31 pp and remains statistically significant, while the second measure of equity (ratio of the top and bottom quintiles) is no longer statistically significant. In both models the most important poverty reducing factor is being one of the EU countries.

A similar result is obtained when the same models are run with the Gini coefficient as an outcome. In the model which contains all predictors, the coefficient of the share of the bottom quintile is significant and negative (-0.325). The impact of this equity indicator on inequality is as large as the impact of the share of social spending in GDP (-0.320). The second equity measure (ratio of the top and bottom quintiles) is no longer statistically significant, controlling for the GDP per capita and the share of social spending in GDP.

Table A3 contains the estimates of our model given in Eq. (1) for the three poverty variables and Gini coefficient on the sample of non-EU countries. Figure 2, below, shows Model 3. It contains both equity measures. The second equity indicator is not significant in any of the models, while in the models for poverty headcounts at Int\$3.20 a day and at Int\$5.50 a day none of the equity indicators is statistically significant. One of the explanations for the lack of the effect of these measures is that these poverty lines may be set too high to represent a poverty standard in this sample of countries. As we can see from Table 1B, on average 21 per cent and 40 per cent of the population of these countries can be considered poor using Int\$3.20 a day and Int\$5.50 a day poverty lines, respectively.

In contrast, in the model for poverty at Int\$1.90 a day the effect of the share of the bottom quintile is statistically significant and much larger compared

to the same model run on the sample including EU countries (see Table A2). Controlling for the GDP per capita, a 1 pp increase in the share of social protection spending going to the bottom quintile is linked with a 0.34 pp reduction in poverty headcount, while a 1 pp increase in social protection spending is associated with a 0.39 pp reduction in poverty. The effects of the level and equity in social protection spending are therefore almost equally important.

The share of the bottom quintile in social spending has a statistically significant effect on the Gini index, and the size of the negative effect of this equity measure (-0.44) is higher than that of the share of social spending in GDP (-0.38). It is worth noting that for low- and middle-income countries inequality is positively associated with the GDP per capita.

Overall, the results of our analysis presented for Figures 1 and 2 support SDG1.3<sup>19</sup> and supports global efforts to realize a universal social protection coverage, and articulates the following: (i) the EU countries and countries spending a higher share of their GDP on social protection programmes have lower absolute poverty and inequality; (ii) when it comes to extreme poverty (measured at Int\$1.90 a day) and inequality (measured by the Gini index), the effectiveness of social protection spending in lowering poverty and inequality is positively related with the equity in spending, specifically with the share of social protection spending going to the bottom quintile; (iii) in non-EU countries poverty and inequality reducing the impact of this equity measure is as strong as the impact of the share of social protection spending in GDP. The two latter findings confirm what proponents of equity in public spending have been arguing: more equitable distribution of social protection spending is critical for reducing poverty and inequality, and is key to achieve substantial coverage of the poor and vulnerable and thus brings us close to achieving universal social protection.

<sup>19</sup> SDG 1.3. Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable.



# 4

**EVIDENCE ON SPECIFIC  
CORRELATION BETWEEN  
GREATER FISCAL EQUITY  
AND IMPROVED OUTCOMES**

## 4 EVIDENCE ON SPECIFIC CORRELATION BETWEEN GREATER FISCAL EQUITY AND IMPROVED OUTCOMES

### 4.1 Objectives

Many low- and middle-income countries face a situation of high economic growth rates that barely impact on poverty levels (Arndt, McKay et al. 2016). In the majority of developed economies poverty is successfully reduced due to the existence of generous social transfers and progressive income taxes, which ensure a fairer distribution of the gains from economic growth. For instance, in the EU-28 in 2020 direct taxes and social transfers reduced poverty headcount by 55%, and Gini index by 42 percent.<sup>20</sup> Cash transfers for children have expanded in low- and middle-income countries over the past decades. However, coverage and benefit levels often remain insufficient. In Africa, for instance, only 18 per cent of the population is covered by at least one social protection benefit, compared with 45 per cent globally (ILO 2017).

The main objective of this study is to look at how the distributional equity can be improved through changes in tax-benefit policies using the two countries as case studies for the microsimulations. The countries under examination are Mozambique (a low-income country) and Zambia (a lower-middle-income country). In particular, we aim to answer the following questions:

- What is the distributional impact of the existing tax-benefit policies in the selected countries?
- What is the distributional impact of the COVID-19 recession in the selected countries?
- Which types of policy reforms can bring about better distributional outcomes in the selected countries and how much will they cost?

We make use of two tax-benefit microsimulation models, recently developed under the auspices of

the SOUTHMOD project carried out by UNU-WIDER.<sup>21</sup> Both models were built using a common platform (i.e. the EUROMOD platform) and methodological approach. EUROMOD is a widely used tax-benefit model for all EU countries; its flexibility in terms of approach and software makes it easy to adapt and thus shortcuts the process of building tax-benefit models with comparable outputs for any other country or region. The common framework is based on a standard set of protocols that have been thoroughly tested in more than 40 countries worldwide, guaranteeing a maximum degree of cross-country consistency and comparability of results.<sup>22</sup>

### 4.2 Methodology and data

The microsimulation models used for this research are MOZMOD v2.6 for Mozambique (Castelo, Castigo et al. 2019) and MicroZAMOD for Zambia (Nakamba-Kabaso, Nalishebo et al. 2020). The models use microdata on gross incomes,<sup>23</sup> labour market status and other characteristics of individuals and households (which they then apply to the tax and benefit rules in place in order to simulate direct and indirect taxes), social insurance contributions (SIC) and cash transfers. The simulations assume full direct tax compliance in the formal sector, full indirect tax compliance across the distribution, and full take-up of benefits. The provision of publicly funded healthcare, education, care for the elderly, and childcare falls outside the scope of the models. The (limited) in-kind benefits that are included are presented in Table 3, and have been assigned a cash-equivalent amount in the model. These in-kind benefits are different from the services listed above and more similar to means-tested cash transfers. In both countries the last available year of policy simulations is 2019. The policies that have been simulated in each of the countries are presented in Table 3.

<sup>20</sup> Calculated based on the EUROMOD data. See: [https://euromod-web.jrc.ec.europa.eu/sites/default/files/2020-12/WebStats\\_Y11\\_2017-2020\\_v1.xls](https://euromod-web.jrc.ec.europa.eu/sites/default/files/2020-12/WebStats_Y11_2017-2020_v1.xls)

<sup>21</sup> See: <https://www.wider.unu.edu/project/southmod-simulating-tax-and-benefit-policies-development>.

<sup>22</sup> A list of all non-EU models developed using the EUROMOD platform can be found here: <https://www.microsimulation.ac.uk/euromod/models/>.

<sup>23</sup> Gross incomes were imputed from net income data for Mozambique.

**Table 3:** Summary of simulated policies (2019).

	Mozambique	Zambia
<b>Cash benefits</b>	Basic Social Subsidy Programme (PSSP)	Social cash transfer (SCT) for rural and urban areas; E-FISP (Electronic-Farmer Input Support Programme)
<b>In-kind benefits</b>	Direct Social Assistance Programme (PASD)	Home Grown School Feeding Programme
<b>SIC</b>	Private sector, public sector, and self-employed SIC	Employee SIC
<b>Direct taxes</b>	PIT, simplified tax	PIT, turnover tax
<b>Indirect taxes</b>	VAT, selected excise duties	VAT, selected excise duties

Source: Authors' representation based on SOUTHMOD models.

The MOZMOD input data comes from the Household Budget Survey (Inquérito ao Orçamento Familiar, IOF) 2014–2015 provided by the National Institute of Statistics (Instituto Nacional de Estatística), allowing for representative results at the national level. The MicroZAMOD input data comes from the Living Conditions Monitoring Survey (LCMS) 2015 provided by the Zambia Central Statistical Office, allowing for representative results on the national and sub-national level.

Baseline simulations were carried out on the basis of the tax-benefit rules in place on 30 June 2019. Gross market incomes were updated from the micro-data income reference period to the target period (2019) using appropriate indices (updating factors), such as administrative or survey statistics. Consumer Price Index (CPI) was the most commonly used index for this purpose. Information on income components that could not be calculated by the models (such as pensions and other benefits in kind) was taken directly from the microdata and updated to 2019, along with market incomes.

Some basic descriptive characteristics of the surveyed populations are provided in the Appendix (Table A4). The outputs of our simulations reveal a large number of individuals/households with negative or zero disposable incomes (Table A5, panel A). The issue of zero disposable incomes is particularly pronounced in the case of Mozambique and has been attributed to such factors as non-reporting of incomes in the surveys (especially of agricultural income) and the structure of taxes, such as presumptive and turnover taxes which are levied on self-employment income without taking business-related expenses into account (Gasior, Leventi et al. 2018). Therefore, for the analysis in this paper we have constructed an adjusted measure of market income, which differs from the one that is produced by the model by default (Table A5, panel B). First, we have added to market income the imputed value of own produce for households that reported it. Second, we have subtracted the reported household disposable income from household consumption; if the difference was positive it was treated as unreported income and added to the market income.

All monetary results are presented in international dollars using the Purchasing Power Parity (PPP) conversion factor provided by the World Bank. An overview of these thresholds is presented in Table A6. In order to enable meaningful comparisons, we opted for the use of the per capita income/expenditures for both countries. Table A7 shows the Gini coefficient and three poverty headcount measures for the non-adjusted and adjusted per capita disposable income in 2019. Inequality and poverty measures using consumption (as observed in the data) are used as a benchmark, so that our results can be compared to the countries' official poverty and inequality estimates published by the World Bank. The consumption-based Gini coefficient and poverty headcount estimates for Mozambique are similar to the ones available in the WDI database. For Zambia, the consumption-based Gini coefficient and poverty headcounts at Int\$1.90 and Int\$3.20 a day appear to be higher than those reported in the WDI database. When non-adjusted disposable income is used as welfare aggregate, we overestimate inequality and poverty headcounts at Int\$1.90 a day compared to consumption-based measures – especially in the case of Mozambique, where these results are driven by a large number of households reporting zero incomes. The calculations based on adjusted disposable income are more in line with those based on consumption measures.

The analysis of the distributional impact of taxes and transfers performed is therefore based on the adjusted income measure expressed in per capita terms. Given that about 60 per cent of the population in Mozambique and over 65 per cent in Zambia would be considered poor according to the Int\$1.90 PPP a day poverty line, the more generous poverty lines are not used in the subsequent analysis. We have calculated the poverty headcount using this line for the whole population and for children up to 18 years. Following the standard approach of fiscal incidence analysis, these poverty measures and the Gini index have been calculated for the three income concepts. Our starting point is market income, i.e. household income before any tax-benefit interventions have taken place. It comprises income from all forms of employment, capital income (rent and dividends), private transfers, the imputed value of own produce and unreported income. By subtracting direct taxes and social insurance contributions and adding direct cash transfers (pensions and other social benefits) we arrive at disposable income. Contributory pensions are treated as direct transfer; contributions to the pension system are subtracted



from market income. By subtracting indirect taxes (VAT and excises) from disposable income we arrive at post-fiscal or consumable income, which reflects the actual amount of market goods and services consumed by households.

We use tax-benefit microsimulation analysis in a comparative way across the two countries to assess the distributional impact of the following scenarios:

- The existing tax-benefit policies (as of 2019).
- The impact of the COVID19 pandemic on employment and incomes.
- Hypothetical policy reforms benefiting children.

The analysis used here is point-in-time and does not incorporate behavioural or general equilibrium effects. The analysis is based on economic rather than statutory tax incidence. For example, it is assumed that personal income taxes and contributions by employees and employers are borne by labour in the formal sector. Individuals who are not contributing to social security are assumed to pay neither direct taxes nor contributions. Consumption taxes are fully shifted forward to consumers. Finally, it is worth noticing that the annual amounts of tax revenues and social spending simulated in the model using the survey data do not necessarily coincide with those found in other sources, in particular national accounts, although care was taken by the SOUTHMOD developers to explain any discrepancies between the two sources in the country reports for MOZMOD (Castelo, Castigo et al. 2019) and MicroZAMOD (Nakamba-Kabaso, Nalishebo et al. 2020).

## 4.3 Empirical results

### 4.3.1 The distributional impact of taxes and social transfers in 2019

The estimates of the redistributive impact of the two countries' tax-benefit system are shown in Tables 4–5 for Mozambique and Tables 6–7 for Zambia. In Mozambique, inequality of market incomes as measured by the Gini coefficient is 0.589, and this falls to 0.519 after the impact on incomes of all taxes and transfers are taken into account – a decrease of 0.070 Gini points or 11.9 per cent (Table 4). Most of the inequality reduction comes through direct taxes and transfers, which altogether reduce the Gini index by 0.062 points or 10.5 per cent. In terms of poverty reduction, the impact of the Mozambique tax-benefit policies is negligible. The poverty headcount of market incomes amounts to 61.5 per cent, and while this

value goes down by 1.9 pp due to direct taxes and transfers, after the indirect taxes are included the poverty headcount for consumable income goes back to its original value of 61.5 per cent (Table 4). The same occurs with the child poverty headcount, which remains at the level of over 67 per cent before and after all fiscal interventions. Table 5 shows the contribution of direct taxes, social insurance contributions and direct transfers in the distribution of disposable income. Disposable income is computed as market income plus pensions and transfers minus social contributions and direct taxes. When pensions and transfers are removed from disposable income, the Gini coefficient at disposable income goes up by 0.049 Gini points and the national and child poverty headcounts by 3.7 pp and 3.9 pp, respectively. The redistributive impact of direct taxes and social contributions is much lower than that of direct transfers and pensions.

**Table 4:** Mozambique: The redistributive impact of taxes and social transfers, 2019.

	Market income	Disposable income	Consumable income
<b>Poverty headcount</b>	61.5%	59.6%	61.5%
Absolute change with respect to original income, pp		-1.9	0.0
Relative change with respect to original income, per cent		-3.0	0.0
<b>Child poverty headcount</b>	67.3%	65.3%	67.2%
Absolute change with respect to original income, pp		-2.0	-0.1
Relative change with respect to original income, per cent		-3.0	-0.2
<b>Gini index</b>	0.589	0.527	0.519
Absolute change with respect to original income, pp		-0.062	-0.070
Relative change with respect to original income, per cent		-10.5	-11.9

**Note:** The results are based on adjusted per capita income. Poverty headcount is measured using an Int\$1.90 PPP a day poverty line. Consumable income = disposable income – indirect taxes.

**Source:** Authors' calculations based on SOUTHMOD models.

**Table 5:**  
**Mozambique: The redistributive impact of taxes and social transfers, 2019.**

	Disposable income (DI)	DI + Social contributions	DI + Direct taxes	DI + Pensions and transfers
<b>Poverty headcount</b>	59.6%	59.2%	57.8%	63.3%
Absolute change with respect to original income, pp		-0.4	-1.8	3.7
Relative change with respect to original income, per cent		-0.7	-3.0	6.2
<b>Child poverty headcount</b>	65.3%	64.9%	63.4%	69.2%
Absolute change with respect to original income, pp		-0.4	-1.9	3.9
Relative change with respect to original income, per cent		-0.6	-2.9	6.0
<b>Gini index</b>	0.527	0.533	0.538	0.576
Absolute change with respect to original income, pp		0.007	0.011	0.049
Relative change with respect to original income, per cent		1.3	2.1	9.4

**Note:** The results are based on adjusted per capita income. Poverty headcount is measured using an Int\$1.90 PPP a day poverty line. Disposable income = market income + pensions and transfers – social contributions – direct taxes.

**Source:** Authors' calculations based on SOUTHMOD models.

Table 6 shows the impact of the overall tax-benefit system on inequality and poverty in Zambia. Our estimates suggest that the Zambia tax-benefit system has inequality reducing properties, but it is not poverty reducing. The market income Gini index (0.736) drops by 0.035 Gini points due to direct taxes and transfers but goes up by 0.005 Gini points for consumable income (that is, once indirect taxes are deducted). The policy instrument that brings about the largest inequality reduction is direct taxes; their removal from disposable income increases the Gini coefficient by 0.020 Gini points (Table 7). The removal of social contributions

and social transfers increase the Gini coefficient by 0.010 and 0.013 Gini points, respectively. The poverty headcount for market income amounts to 65.1 per cent, remains at almost the same level as disposable income and goes up to 66.6 per cent for consumable income. The child poverty headcount increases from 70.1 per cent at market income to 71.7 per cent at consumable income. This phenomenon, whereby the tax-benefit system causes some individuals to become poor or to be made poorer, is referred to as 'fiscal impoverishment' by Higgins and Lustig (2016).

**Table 6:**  
**Zambia: The redistributive impact of taxes and social transfers, 2019.**

	Market income	Disposable income	Consumable income
<b>Poverty headcount</b>	65.1%	65.3%	66.6%
Absolute change with respect to original income, pp		0.2	1.5
Relative change with respect to original income, per cent		0.3	2.4
<b>Child poverty headcount</b>	70.1%	70.5%	71.7%
Absolute change with respect to original income, pp		0.4	1.6
Relative change with respect to original income, per cent		0.5	2.2
<b>Gini index</b>	0.736	0.701	0.706
Absolute change with respect to original income, pp		-0.035	-0.030
Relative change with respect to original income, per cent		-4.8	-4.0

**Note:** The results are based on adjusted per capita income. Poverty headcount is measured using an Int\$1.90 PPP a day poverty line. Consumable income = disposable income – indirect taxes.

**Source:** Authors' calculations based on SOUTHMOD models.

**Table 7:**  
**Zambia: The redistributive impact of direct taxes and social transfers, 2019.**

	Disposable income	DI + Social contributions	DI + Direct taxes	DI + pensions and transfers
<b>Poverty headcount</b>	65.3%	64.9%	64.8%	65.8%
Absolute change with respect to original income, pp		-0.4	-0.4	0.5
Relative change with respect to original income, per cent		-0.6	-0.7	0.7
<b>Child poverty headcount</b>	70.5%	70.1%	70.1%	70.8%
Absolute change with respect to original income, pp		-0.4	-0.4	0.3
Relative change with respect to original income, per cent		-0.6	-0.6	0.4
<b>Gini index</b>	0.701	0.710	0.721	0.714
Absolute change with respect to original income, pp		0.010	0.020	0.013
Relative change with respect to original income, per cent		1.4	2.9	1.9

**Note:** The results are based on adjusted per capita income. Poverty headcount is measured using an Int\$1.90 PPP a day poverty line. Disposable income = market income + pensions and transfers – social contributions – direct taxes.

**Source:** Authors' calculations based on SOUTHMOD models.

The distribution by decile shows that there is high progressivity in the Mozambique tax-benefit system, because government social transfers are targeted at the lower income deciles (Figure 3). On average, the population of Mozambique does not benefit from the tax-benefit system, mainly due to the regressive impact of indirect taxes. In other words, at the average income the tax burden is higher than the gain due to social transfers. The bottom five deciles are net beneficiaries from the system, while the top four deciles are net payers to the system. The sixth decile ends with zero gains and losses. Tax-benefit policy also has important distributional implications for groups defined by characteristics other than income. If indirect taxes are taken into account, however, most household types appear to be net losers. The only group of households that experiences a slight gain from the tax-benefit system is lone parent with 3+ children whose consumable income is higher than market income, mainly due to the social transfers they receive. The age group that ends with the lowest loss is individuals aged 60+ years. The province of Inhambane is the biggest beneficiary from the budget, while the rest of the provinces are net payers. Among those, the population of the province Tete appears to be the largest donor to the budget.

The Zambia tax-benefit system appears to be progressive when the distribution by income

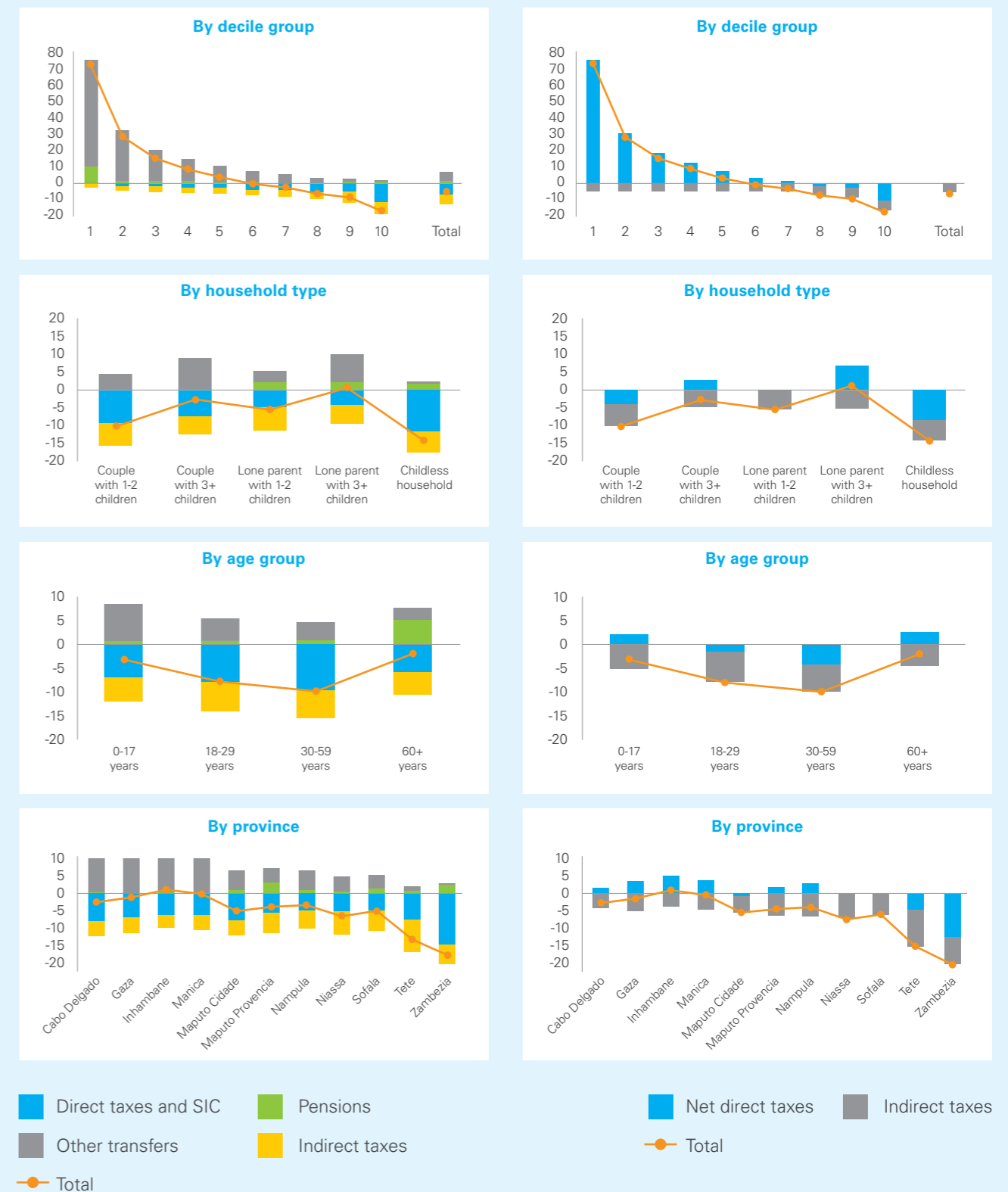
decile is considered, but less so compared to Mozambique (Figure 4). On average, the population of Zambia does not benefit from the tax-benefit system, mainly due to the negative impact of direct taxes, which are particularly high for the top (tenth) decile of the income distribution and the regressive indirect taxes that fall heavily on the bottom deciles. In the case of Zambia, the top six deciles, as well as all household types and age groups are net losers (i.e. their incomes are reduced after taxes and benefits are applied). Lone parents with 3+ children and individuals aged 60+ years are the two categories that experience the lowest reduction in income, because the negative effect of taxes is partially offset by social transfers they receive. All the provinces contribute to the budget more than what they receive in benefits, with Copperbelt, Lusaka and Northern regions paying the highest share of their income in direct taxes.

To sum up, the existing tax-benefit systems of the two countries appear to reduce income inequality to a small extent and are mostly ineffective in regard to poverty reduction. This happens because the tax-benefit policies affect only a small minority of each country's population. Many individuals are largely unaffected by the tax and benefit system, apart from the indirect taxes: the benefits are very narrowly targeted, their amounts are small, and many individuals are too poor to pay direct taxes.



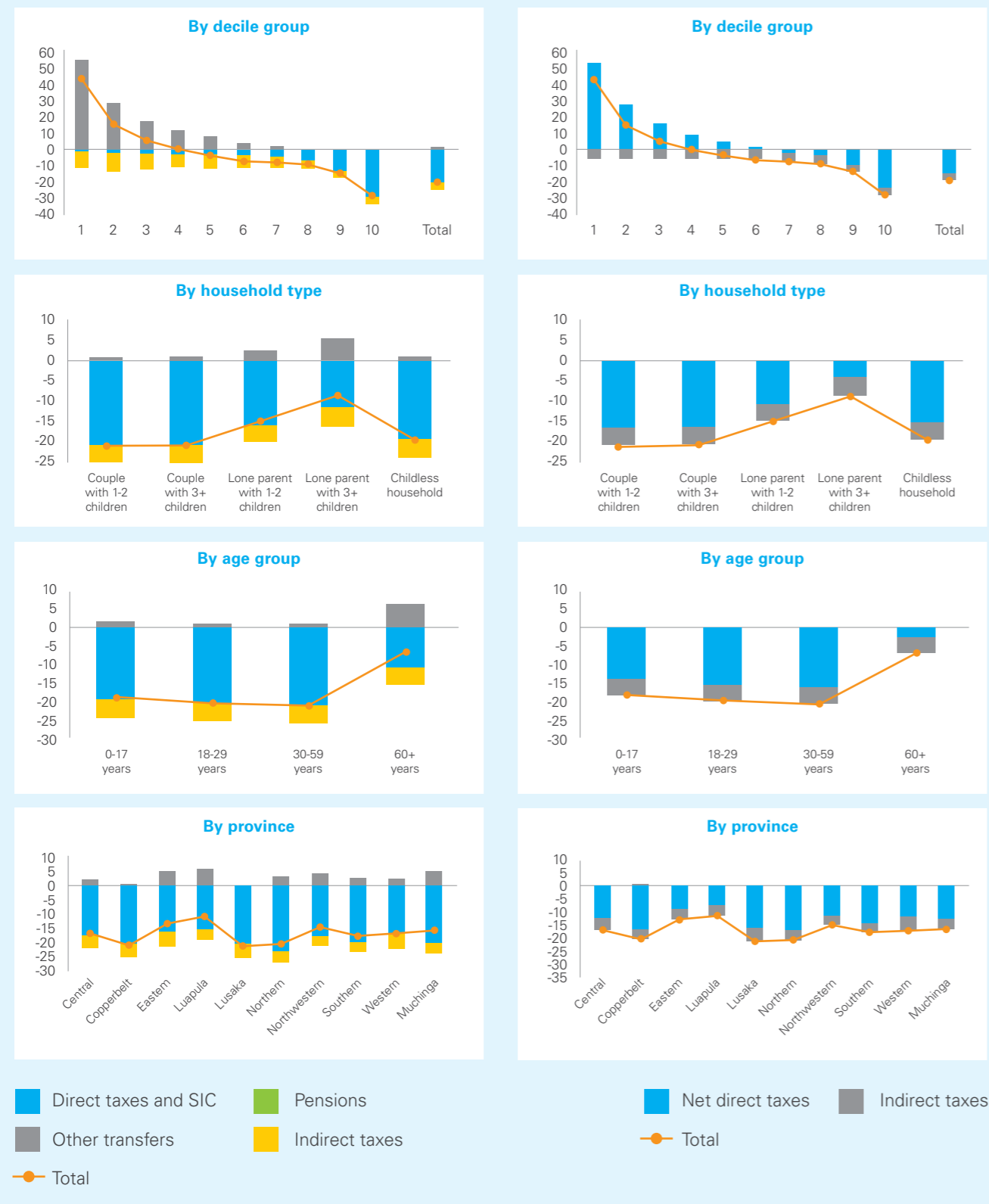
© UNICEF/UN0402434/Acland

**Figure 3:** Mozambique: The redistributive impact of taxes and social transfers by population subgroups (percentage changes in mean per capita disposable income of the group due to taxes and transfers), 2019.





**Figure 4: Zambia: The redistributive impact of taxes and social transfers by population subgroups (percentage changes in mean per capita disposable income of the group due to taxes and transfers), 2019.**



### 4.3.2 The distributional impact of the COVID-19 pandemic

The COVID-19 pandemic reached both countries at a weak moment in their economic histories; the pandemic therefore presents a further setback to the countries' economic and social development prospects. The COVID-19 crisis have been creating a heavy impact on economic activity as containment measures directly affect demand for goods and services. In addition, both economies are adversely impacted by the large decline in commodity prices (gas and coal being the two key industries for Mozambique, copper being the key industry for Zambia). For this reason, it is critical for countries to embark in policy responses to counteract the COVID-19 economic impact, as delaying such responses will result in worsening the distributional outcomes for the population. In the recent projections by UNICEF and Save the Children (as of 29 June 2020), the current pandemic could increase the number of children living in households experiencing monetary poverty (as measured by national poverty lines) by more than 117 million, or 15 per cent, globally.<sup>24, 25</sup>

According to World Bank projections (2020) for Mozambique, the expected economic growth in 2020 is 1.3 per cent. The annual GDP per capita growth in real terms is expected to be negative (-1.6 per cent). In terms of the fiscal response,<sup>26</sup> the Government has asked Mozambique's development partners for US\$700 million to help deal with the economic impact of the pandemic. This fiscal package would finance (i) temporary and well-targeted tax exemptions to support families and the health sector (VAT and import tariff exemptions on food, medicine and medical equipment), and (ii) higher spending to respond to the health crisis and humanitarian needs, including higher health-related spending on goods and services, and higher cash transfers and subsidies to the poorest households, as well as micro-businesses and SMEs.

Zambia's economy is projected to grow in 2020 by 1.6 per cent, while the annual GDP per capita growth is expected to be negative (-1.3 per cent), according to World Bank projections (2020). In terms of fiscal response, the Government has suspended customs duties and VAT on some medical supplies and medical-related commodities. It has also removed provisions related to claiming VAT on imported spare parts, lubricants and stationery, in order to ease pressure on companies. The Government has also issued an 8-billion-kwacha bond (2.4 per cent of GDP) to finance COVID-19-related expenses, including health spending, arrears clearance and grain purchases, as well as a recapitalization of the development bank (NATSAVE).

The major challenge in both countries is the rising unemployment rate for formal sector workers and the loss of income in the informal sector, and among the self-employed and small/micro business owners. In order to assess the distributional impact of the COVID-19 crisis we have estimated a counterfactual post-pandemic scenario and compared it to the baseline scenario for 2019 described in the previous section. The impact of the pandemic is modelled through the general decline in all employment income to reflect the GDP per capita contraction and a 30 per cent job loss in services and sales.

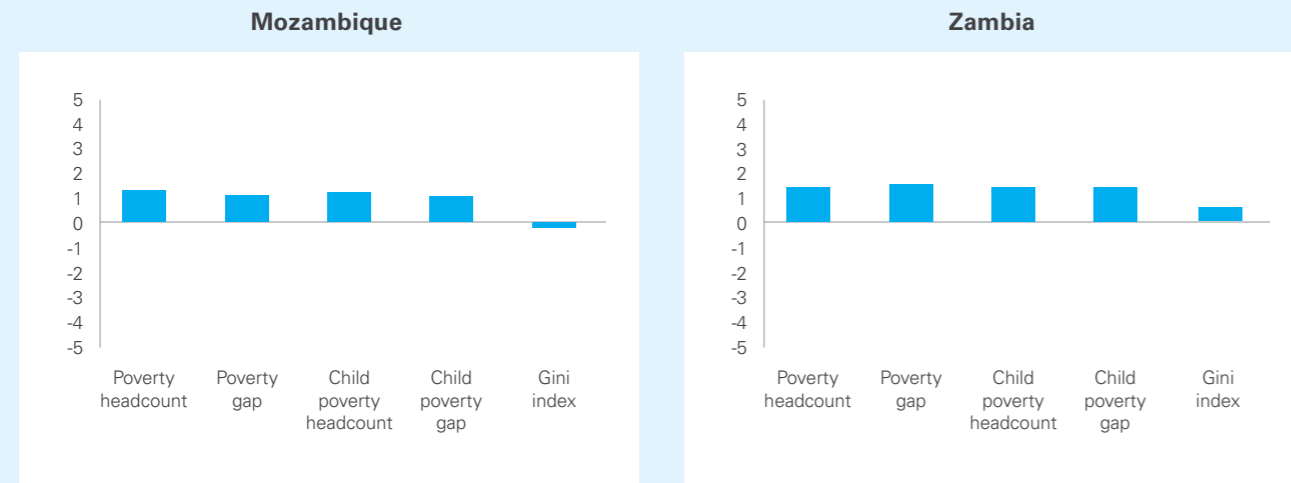
According to the simulations of the economic decline due to the pandemic in Mozambique, the national poverty rate for consumable income would increase by 1.3 pp from what would have been the baseline projection for 2020, the child poverty headcount would increase by 1.2 pp, while the Gini coefficient would decline by 0.15 pp (Figure 5). The projection for 2020 for Zambia shows a 2.1 pp increase in the national poverty headcount, a 1.95 pp increase in the child poverty headcount and a 0.79 pp increase in the Gini coefficient.

<sup>24</sup> See: <https://data.unicef.org/resources/children-in-monetary-poor-households-and-covid-19/>.

<sup>25</sup> It is worth noting that the measures of monetary poverty provide only a partial (and indirect) assessment of the experiences of poverty among children as compared to a multidimensional poverty measure incorporating the actual deprivations suffered by children in education, health, housing, nutrition, sanitation and water. The two dimensions that are affected most by the pandemic in the short run are education (due to the immediate effect of school closures) and health (due to the disruption of health services). See: <https://data.unicef.org/resources/impact-of-covid-19-on-multidimensional-child-poverty/>

<sup>26</sup> The International Monetary Fund Policy Tracker, [www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19](http://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19)

**Figure 5:** The distributional impact of Covid-19 (changes in poverty and inequality for consumable income compared to baseline scenario, in percentage points), 2020.



The differential impact of the crisis across demographic groups is shown in Figure 6. In both countries the crisis affects negatively incomes of all deciles, and especially so incomes of the bottom decile. In Mozambique, the losses from the crisis go up as income increases. In Zambia, in addition to the bottom decile the largest negative impact of the crisis is experienced by the seventh and eighth deciles of income distribution. Other panels in Figure 6 illustrate that the crisis has had a larger negative impact on couples with 1-2 children and childless households in Mozambique, while in Zambia the household types that have experienced the largest reduction in mean consumable incomes are couples with 1-2 children and lone parents with 3+ children. In both countries individuals aged 60+ years, who are most likely not working, have had the smallest reduction in incomes as compared to the working age individuals and children up to 18 years. In terms of regional impacts of the crisis, the largest declines in incomes are observed in the Mozambique provinces of Tete and Zambezia, and in the Zambia province of Lusaka.



**Figure 6:** The distributional impact of the Covid-19 crisis by population subgroups (percentage changes in mean consumable income per capita), 2020.



**Note:** Deciles are defined based on per capita disposable income and fixed at the baseline level (i.e. refer to household's initial decile position in pre-pandemic income distribution for 2020).

### 4.3.3 The distributional impact of policy reform simulations

This section reports fiscal policy simulations that could improve the distributional outcomes in Mozambique and Zambia. It should be noted that the proposed exercises mainly serve a theoretical purpose, i.e. are aimed at analysing how the distributional outcomes could be improved through changes in tax-benefit policies using domestic resources. Given the economic slowdown the two countries are facing in 2020 the increases in taxes for households and firms might not be feasible from the economic and political point of view. Promoting both consumption and production could be more desirable in 2020 to counteract the adverse impact of the COVID-19 pandemic on the economy.<sup>27</sup>

Two types of hypothetical reforms have been implemented:

- A means-tested transfer equal to the household poverty gap relative to the Int\$1.90 a day poverty line (reform 1).
- A non-means-tested transfer for each child up to the age of 18 (reform 2).

Both simulations have been implemented in a budget neutral manner. The budget neutrality was achieved by either increasing VAT or PIT. Firstly, we assumed that new benefits could be funded by a 3 pp increase in the standard VAT rate (that is the increase from 17 per cent to 20 per cent in Mozambique and from 16 per cent to 19 per cent in Zambia). The size of the transfers was reduced accordingly to match the amount of additional tax revenues collected through the increase in VAT. Secondly, we implemented a proportional increase in PIT and turnover tax rates to match the amount of additional tax revenues collected through a 3 pp increase in VAT. This implied raising all existing PIT

rates and turnover tax rates by approximately 1.1 pp in both countries. The fiscal and distributional impact of all hypothetical reforms was estimated relative to the post-pandemic 2020 scenario.

There are a number of other assumptions that drive the results of this modelling. Among those are no behavioural response – namely, individuals and household do not change their economic behaviour due to changes in taxes and transfers. Other important assumptions are that economic incidence of direct taxes falls completely on workers, while the incidence of consumption taxes falls completely on consumers. These simulations do not account for additional administrative costs such as, for example, establishing a targeting system or tax administration, which could be large, as the relevant infrastructure in both countries is far from optimal. Strictly targeted transfers, in particular, are known for generating a number of problems (they produce errors of inclusion and exclusion, hinder social cohesion, decrease incentives to work, etc. (Oorschot van 2002)). The other consideration that should not be ignored is a trade-off between the degree of low-income targeting and the size of redistributive budgets. Our simulations assume that the budget is constant. In reality, targeting and budgets are not independent: the budget tends to decrease when targeting increases, as middle class voters are less inclined to support the programs from which they do not have any benefit (Pritchett 2005).

The total amounts of revenues and spending simulated by the model are shown in Table 8. Either the increase in the standard VAT rate by 3 pp or the increase in the direct taxes rates by 1.1 pp could bring about additional MZN5,270 million of tax revenues in Mozambique and ZMW761 million in Zambia. The total additional spending on means-tested benefits (in the case of reform 1) and on non-means-tested benefits (in the case of reform 2) are matched to these additional revenues.

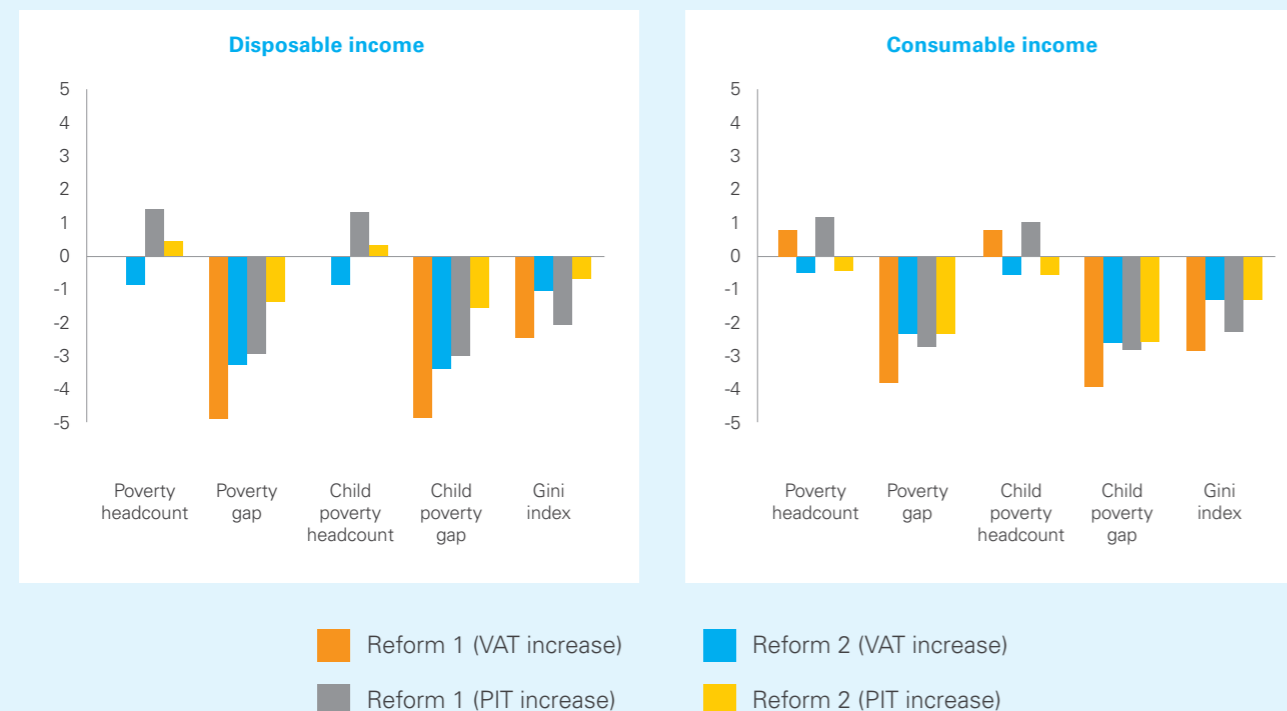
<sup>27</sup> For instance, policy proposals in Zambia are currently around spurring consumption and production and range from an increase in SCT and FISP allocations to providing incentives for local manufacturing through the introduction on high import taxes on goods that are locally produced, and the reduction in taxes on the importation of intermediate goods for production. The current policy proposals in Mozambique include financing social transfers from new sources of revenue (to be generated from the liquefied natural gas [LNG] sector).

**Table 8:**  
The simulated annual amounts of tax revenues and social spending.

	Baseline scenario (2020), bln national currency*	Fiscal simulations, difference to baseline			
		reform 1 (VAT increase)	reform 2 (VAT increase)	reform 1 (PIT increase)	reform 2 (PIT increase)
<b>Mozambique</b>					
Original income	610.724	0.000	0.000	0.000	0.000
SIC	13.647	0.000	0.000	0.000	0.000
Direct taxes	32.766	0.000	0.000	5.270	5.270
Pensions	6.968	0.000	0.000	0.000	0.000
Non-means-tested benefits	0.000	0.000	5.270	0.000	5.270
Means-tested benefits	35.237	5.270	0.000	5.270	0.000
Disposable income	610.736	5.270	5.270	0.000	0.001
Indirect taxes	35.468	5.270	5.270	0.000	0.000
Consumable income	575.267	0.000	0.000	0.000	0.000
<b>Total budget balance</b>	<b>39.676</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.001</b>
<b>Zambia</b>					
Original income	97.091	0.000	0.000	0.000	0.000
SIC	5.638	0.000	0.000	0.000	0.000
Direct taxes	11.022	0.000	0.000	0.761	0.761
Pensions	0.000	0.000	0.000	0.000	0.000
Non-means-tested benefits	0.387	0.000	0.761	0.000	0.761
Means-tested benefits	0.880	0.761	0.000	0.761	0.000
Disposable income	84.518	0.761	0.761	0.001	0.001
Indirect taxes	4.448	0.761	0.761	0.000	0.000
Consumable income	80.070	0.000	0.001	0.001	0.001
<b>Total budget balance</b>	<b>19.841</b>	<b>0.000</b>	<b>-0.001</b>	<b>-0.001</b>	<b>-0.001</b>

Note: \* The metical for Mozambique; the kwacha for Zambia.

**Figure 7:**  
The distributional impact of the fiscal simulations in Mozambique (percentage changes in poverty and inequality, compared to baseline scenario), 2020.



The expected poverty and distributional changes resulting from these simulated policy alternatives are shown in Figure 7 for Mozambique and Figure 8 for Zambia. Figures 9 and 10 summarise the distributional impact of both reforms by population subgroups.

In Mozambique, the new means-tested allowance for poor households (reform 1) is effective in terms of reducing the national and child poverty gap but has negative impact on the poverty headcounts at disposable income if funded by a proportional increase in PIT rates (Figure 7). When consumable income is used as welfare aggregate, the impact of this allowance on poverty headcounts becomes negative for both funding schemes. The outcomes of reform 2, which introduces a flat rate non-means-tested child allowance, on poverty gap measures are similar in terms of their direction, but lower in terms of magnitude. In addition, they result in lower poverty headcounts if funded by a 3 pp VAT rate increase.

Figure 9 shows that in Mozambique both reforms have no significant impact on household incomes at the mean. The introduction of the means-tested allowance (reform 1) significantly increases the incomes of the bottom decile, while the rest of the income distribution experiences losses, which are distributed in a progressive way (i.e. the richer deciles lose a larger share of their income). The losses are larger if this reform is funded by a proportional increase in PIT rates. The introduction of the non-means-tested child allowance (reform 2) is beneficial for larger segments of the income distribution (up to the seventh decile), the eighth decile neither gains nor loses from this reform, while the top two deciles experience losses which are lower if the reform is funded by the proportional increase in direct taxes. In terms of demographic profile, the net winners of both reforms are children under 18 years and the most vulnerable household types, such as couples with 3+ children and lone parents with 3+ children. Other age groups and household types see a reduction in their consumable incomes.

**Figure 8:**  
The distributional impact of the fiscal simulations in Zambia (changes in poverty and inequality, compared to baseline scenario, in per cent), 2020.



In Zambia, the introduction of the means-tested allowance for all poor households (reform 1) is effective in terms of reducing poverty gap and child poverty gap both at disposable and consumable income, although the effects at consumable income are smaller (Figure 8). The reform results in a slight increase in poverty headcounts, and this increase is higher if the reform is funded by a VAT increase rather than increase in direct taxes. Reform 2 which introduces a flat rate non-means-tested child allowance appears to be effective in terms of reducing poverty gaps both at disposable and consumable income, and in contrast to the first reform, has no negative impact on poverty headcounts.

As demonstrated by Figure 10, a larger part of the income distribution benefits from reform 2 which helps to offset losses due to the increased VAT or PIT rates. Overall, the losses experienced by the upper deciles are higher if the reform is funded by a 3 pp increase in VAT. In case of reform 1, the net gainers are households of the two bottom deciles, while the rest of income deciles become net losers. The second reform, although progressive in nature, is beneficial for households up to the seventh decile. Similar to Mozambique, in Zambia the net winners of both reforms are children under 18 years in general, couples with 3+ children and lone parents with 3+ children. Other age groups and household types see a reduction in their consumable incomes.

**Figure 9:** Mozambique: The distributional impact of the fiscal simulations by population subgroups (percentage changes in mean consumable income per capita), 2020.



**Note:** Deciles are defined based on per capita disposable income and fixed at the baseline level (i.e. refer to household's initial decile position).

Overall, both types of new cash transfers, being progressive in nature, are effective in reducing national and child poverty gaps. The net winners of both reforms are children under 18 years and the most vulnerable households with children, i.e. couples with 3+ children and lone parents with 3+ children. However, the reforms that we have simulated will require a much larger budget allocated to cash transfers to be more effective in reducing both child poverty headcount and poverty gap, in order to compensate for the increased tax burden.

Our findings highlight the importance of examining the distributional effects of various policy reforms prior to their implementation, especially when the financial resources are scarce. Our simulations for Mozambique and Zambia point out that the impact of the same policy simulations on various population subgroups may vary depending on their design, the many complex interactions within the existing tax-benefit systems, and other characteristics of the population.

**Figure 10:** Zambia: The distributional impact of the fiscal simulations by population subgroups (percentage changes in mean consumable income per capita, in per cent), 2020.



**Note:** Deciles are defined based on per capita disposable income and fixed at the baseline level (i.e. refer to household's initial decile position).



# 5

## CONCLUSIONS

## 5 CONCLUSIONS

This study aims to investigate whether higher equity in government social protection spending strongly predicts positive changes in well-being outcomes, mainly, absolute poverty and inequality. In this study, we have empirically assessed how absolute poverty and inequality are affected by the distribution of social protection spending. While it will vary by country, inequity in the distribution of social protection spending (on cash and near-cash social assistance and social insurance benefits, including public pensions, both contributory and non-contributory) results from the composition of spending that tends to favour those in the highest income quintiles. As has been extensively documented in the literature, national social protection systems in developing countries tend to provide far more coverage to workers in the formal sector of the economy, compared with those working in informal sector. Although social protection programmes in developing countries have relatively increased in recent years to reach poorest population, such programmes remain far from optimal, and major efforts are needed to reach poorest and most disadvantaged groups with adequate social protection.

First, we have analysed **the impact of equity in social protection spending on absolute poverty and inequality, using a large dataset with country-level indicators**. For that purpose, we have compiled a dataset of 535 observations from 101 countries over years 1998–2017, including 209 observations for 74 non-EU countries. Our approach was to regress the well-being outcomes (absolute poverty and inequality) on the indicators of equity in social protection spending, controlling for the level of spending and the country wealth measured by per capita GDP.

Our findings support the proposition that equity in social spending (measured by the share of social protection spending going to the bottom quintile) is a strong predictor of improved well-being outcomes (poverty measured at Int\$1.90 a day and inequality measured by the Gini index). Moreover, in non-EU countries the poverty and inequality reducing impact of this equity measure is as strong as the impact of the share of social protection spending in the GDP. More specifically, we find that in non-EU countries a 1 pp increase in the share of social protection spending going to the bottom quintile is associated with a 0.34 pp reduction in poverty headcount at Int\$1.90 a day and a 0.44 pp

reduction in the Gini index. These findings confirm what proponents of equity in public spending have been arguing: more equitable distribution of social protection spending is critical for reducing poverty and inequality in low- and middle-income countries, and thus key to achieve SDG 1.3 and universal social protection.

The presence of a significant gap in equity of social protection spending between the EU member states and other countries included in the study signifies that there is a large potential in improving equity in social protection spending in low- and middle-income countries. On average, in all the countries covered by this analysis, 14 percent of overall social protection spending is going to the poorest quintile. This share drops to 9 percent when the EU countries are excluded from the sample. The level of equity in social protection spending may take decades to converge to the levels observed in the EU countries, even under situations of considerable increases in government social protection spending. Existing distributional inequalities in social protection spending seem to constrain, at least partly, the effectiveness of social spending in low- and middle-income countries.

The report draws attention to the significant gaps in the availability of data on equity of social spending and well-being outcomes for low- and middle-income countries. Our study has focused on the impact of equity in government social protection spending on the material well-being outcomes due to the small number of non-EU countries for which the data on equity in public spending on education and health is available. Another limitation is that we could not include child poverty headcounts in our analysis due to the lack of data for a sufficiently high number of low- and middle-income countries.

Second, we have assessed **how the distributional outcomes could be improved through changes in tax-benefit policies, using the two case studies**. The countries under examination are Mozambique (a low-income country) and Zambia (a lower-middle-income country). This analysis used the tax-benefit microsimulation models for each of these countries, developed under the auspices of the SOUTHMOD project. The use of the EUROMOD platform in each of the country models enabled comparisons to be made that have not hitherto been possible. For both countries, common income concepts, a common time point, international poverty lines and a per capita equivalence scale were used in the analysis.

The existing tax-benefit systems of these countries appear to reduce income inequality to a small extent (by 12 per cent in Mozambique and by 4 per cent in Zambia), but are mostly ineffective as regards to poverty reduction. Essentially, tax-benefit policies affect only a small minority of each country's population. Many individuals are largely unaffected by the tax and benefit system, apart from indirect taxes: the benefits are very narrowly targeted, and their amounts are small, and many individuals are too poor to pay direct taxes. The Zambia tax-benefit system appears to be less progressive compared to Mozambique and causes fiscal impoverishment, i.e. causes some poor individuals and households to become poorer than they were before taxes and benefits. This happens due to the strong regressive impact of indirect taxes that in Zambia fall heavily on the bottom deciles.

The COVID-19 pandemic reached both countries at a weak moment in their economic histories and presents a further setback to the countries' economic and social development prospects. The COVID-19 crisis will have a heavy impact on economic activity as containment measures affect demand for goods and services. In addition, both economies will be adversely impacted by the large decline in commodity prices (gas and coal being the two key industries for Mozambique; copper being the key industry for Zambia). The lack of policy space to counteract the COVID-19 economic impact will result in a worsening of the distributional outcomes for the population. According to our simulations of the COVID-19-related economic decline, in Mozambique the child poverty headcount for consumable income will increase by 1.2 pp. The projection for Zambia shows a 1.9 pp increase in the child poverty headcount.

The harmonised models also provide a platform from which to explore more effective means of redistribution. In this report we did so by introducing two new transfers on top of each country's existing arrangements: (i) a means-tested transfer equal to the household poverty gap at the Int\$1.90 a day poverty line, and (ii) a non-means-tested transfer for each child up to the age of 18. Both simulations have been implemented in the budget neutral manner, either through a 3 pp increase in standard VAT rate or a 1.1 pp increase in all PIT and turnover tax rates.



Overall, these policy simulations show that both types of allowances, being progressive in nature, are effective in reducing national and child poverty gaps. The net winners of both reforms are children under 18 years and the most vulnerable households with children, i.e. couples with 3+ children and lone parents with 3+ children. However, the reforms that we have simulated will require a much larger budget allocated to cash transfers to be more effective in reducing both child poverty headcounts and poverty gaps, in order to compensate for the increased tax burden.

Our findings highlight the importance of examining the distributional effects of various hypothetical reforms prior to their implementation, especially when the financial resources are scarce. Our simulations for Mozambique and Zambia point out that the impact of the same policy simulations on various population subgroups may vary depending on their design, the many complex interactions within the existing tax-benefit systems and other characteristics of the population.



© UNICEF/UN0410342/Acland

It should be noted that the above simulations have enabled us to assess and compare the intended first-order effects of the hypothetical changes in tax and benefit systems. The simulations assume full direct tax compliance in the formal sector, full indirect tax compliance across the distribution, and full take-up of benefits. Therefore, the results do not account for possible changes in tax compliance and take up of benefits due to changes in tax rates and introduction of new cash allowances. The practical implementation issues in introducing the new social transfers (such as exclusion errors) and increasing tax rates have been left out of the picture as well. We assume that the available budget remains constant for all types of reforms and that targeting in the simulations undertaken are effective. However, it is important to note that evidence suggests that universal transfers are the gold standard to ensure the universal right to social protection is realised. A universal approach can create stronger political support for sustainable funding. Also, targeted schemes, regardless how accurate they are, have been linked with significant exclusions errors, and additionally need to be updated frequently.

Nevertheless, analysis such as this helps us illustrate the importance of fiscal equity in reaching the

poorest and most disadvantaged as articulated by SDG 1.3. This study does not call for targeted social protection. It simply uses simulations to help in understanding the paramount importance of equity in realizing universality. Reaching the unreached and leaving no one behind is core to the 2030 agenda, and fiscal equity is a key determinant to ensure the right of the poorest quintiles to social service and social protection. It also helps us to assess the extent to which current policy arrangements achieve redistribution and whether hypothetical policy reforms may improve it further. The scope of models' applications is not limited to the kind of analysis presented in this report. Alternative analyses could include, for example, investigating the distributional implications of non-cash household income arising from provision of in-kind benefits and public services. Other options include 'policy swaps', i.e. applying the tax-benefit system of one country to another country while holding the population profile constant, thereby facilitating a more direct comparison of different tax-benefit arrangements. Finally, the output of the models can be incorporated into a dynamic modelling framework in order to study the effects of policy reforms in a longer time perspective, for example the effects on labour supply or demographic behaviour of households. This is left for future research.



## 6

## REFERENCES



## 6 REFERENCES

- Addison, T., M. Niño-Zarazúa and F. Tarp (2015). "Aid, Social Policy and Development." *Journal of International Development* 27(8): 1351-1365.
- Adema, W., P. Fron and M. Ladaïque (2014). "How much do OECD countries spend on social protection and how redistributive are their tax/benefit systems?" *International Social Security Review* 67(1): 1-25.
- Amores, L. C. A. and H. X. Jara (2018). Improving income protection for the elderly poor in Ecuador. EUROMOD Working Paper No EM2/18. Colchester, University of Essex
- Anand, S. and M. Ravallion (1993). "Human Development in Poor Countries: On the Role of Private Incomes and Public Services." *Journal of Economic Perspectives* 7(1): 133-150.
- Arndt, C., A. McKay and F. Tarp, Eds. (2016). *Growth and Poverty in Sub-Saharan Africa*. Oxford, Oxford University Press.
- Baldacci, E., M. T. Guin-Siu and L. D. Mello (2003). "More on the effectiveness of public spending on health care and education: a covariance structure model." *Journal of International Development* 15(6): 709-725.
- Bárcena-Martín, E., B. Lacomba, A. I. Moro-Egido and S. Pérez-Moreno (2014). "Country Differences in Material Deprivation in Europe." *Review of Income and Wealth* 60(4): 802-820.
- Bargain, O., H. X. Jara and D. Rodríguez (2017). "Learning from your neighbor: tax-benefit systems swaps in Latin America." *The Journal of Economic Inequality* 15(4): 369-392.
- Beck, N. and J. N. Katz (1995). "What to do (and not to do) with Time-Series Cross-Section Data." *The American Political Science Review* 89(3): 634-647.
- Bourguignon, F. and A. Sparado (2006). "Microsimulation as a tool for evaluating redistribution policies." *Journal of Economic Inequality* 4(1): 77-106.
- Cammeraat, E. (2020). "The relationship between different social expenditure schemes and poverty, inequality and economic growth." *International Social Security Review* 73(2): 101-123.
- Castelo, V., F. Castigo, J. Cardoso, M. Noble and G. Wright (2019). SOUTHMOD Country Report Mozambique - Mozmod V2.3. Helsinki, UNU-WIDER.
- Chzhen, Y. (2017). "Unemployment, social protection spending and child poverty in the European Union during the Great Recession." *Journal of European Social Policy* 27(2): 123-137.
- Conti, G. and J. J. Heckmann (2012). *The economics of child well-being*. NBER Working Paper No. 18466. Cambridge, MA, National Bureau of Economic Research.
- Cooper, K. and K. Stewart (2013). *Does money affect children's outcomes? A systematic review*. York, Joseph Rowntree Foundation.
- Cuesta, J., J. Jellema, Y. Chzhen and L. Ferrone (2018). *Commitment to Equity for Children, CEQ4C: Fiscal policy, multidimensional poverty, and equity in Uganda*. Innocenti Working Paper WP-2018-03. Florence, UNICEF Office of Research.
- Duncan, G. J., W. J. Yeung, J. Brooks-Gunn and J. Smith (1998). "How much does childhood poverty affect the life chances of children?" *American Sociological Review* 63(3): 406-423.
- Esping-Andersen, G. (1990). *The three worlds of welfare capitalism*. Cambridge, Polity Press.
- Figari, F., A. Paulus and H. Sutherland (2015). *Microsimulation and policy analysis. Handbook of income distribution*. A. B. Atkinson and F. Bourguignon. Amsterdam, Elsevier. Vol 2B: 2141-2221.
- Filmer, D., J. S. Hammer and L. H. Pritchett (2000). "Weak Links in the Chain: A Diagnosis of Health Policy in Poor Countries." *The World Bank Research Observer* 15(2): 199-224.

- Gasior, K., C. Leventi, M. Noble, G. Wright and H. Barnes (2018). *The distributional impact of tax and benefit systems in six African countries*. WIDER Working Paper 2018/155. UNU-WIDER.
- Gough, I., G. Wood, A. Barrientos, P. Bevan, P. Davis and G. Room (2004). *Insecurity and Welfare Regimes in Asia, Africa and Latin America: Social Policy in Development Contexts*. Cambridge, Cambridge University Press.
- Gupta, S., M. Verhoeven and E. Tiongson (2002). "The Effectiveness of Government Spending on Education and Health Care in Developing and Transition Economies." *European Journal of Political Economy* 18(4): 717-737.
- Gupta, S., M. Verhoeven and E. R. Tiongson (2003). "Public spending on health care and the poor." *Health Economics* 12(8): 685-696.
- Haile, F. and M. Niño-Zarazúa (2018). "Does Social Spending Improve Welfare in Low-income and Middle-income Countries?" *Journal of International Development* 30(3): 367-398.
- Hall, A., J. Midgley, J. Beall, M. Bhatia and E. Mossialos (2004). *Social Policy for Development*. London, SAGE Publications Ltd.
- Higgins, S. and N. Lustig (2016). "Can a poverty-reducing and progressive tax and transfer system hurt the poor?" *Journal of Development Economics* 122: 63-75.
- ILO (2017). *World Social Protection Report 2017-19. Universal social protection to achieve the Sustainable Development Goals*. Geneva, International Labour Office.
- Inchauste, G. and N. Lustig, Eds. (2017). *The distributional impact of taxes and transfers: Evidence from eight developing countries*. *Directions in Development-Poverty*. Washington, DC, World Bank.
- Jacques, O. and A. Noël (2018). "The case for welfare state universalism, or the lasting relevance of the paradox of redistribution." *Journal of European Social Policy* 28(1): 70-85.
- Jellema, J., N. Lustig and V. Martinez Pabon (2019). *Are Income Floors viable in Sub-Saharan Africa?* CEQ Working Paper 86, CEQ Institute.
- Kenworthy, L. (1999). "Do Social-Welfare Policies Reduce Poverty? A Cross-National Assessment." *Social Forces* 77(3): 1119-1139.
- Korpi, W. and J. Palme (1998). "The Paradox of Redistribution and Strategies of Equality: Welfare State Institutions, Inequality, and Poverty in the Western Countries." *American Sociological Review* 63(5): 661-687.
- Lustig, N. (2016). "Inequality and fiscal redistribution in middle income countries: Brazil, Chile, Colombia, Indonesia, Mexico, Peru and South Africa." *Journal of Globalization and Development* 7(1): 17-60.
- Lustig, N., Ed. (2018). *Commitment to equity handbook. Estimating the impact of fiscal policy on inequality and poverty*, Brookings Institution Press and CEQ Institute, Tulane University.
- Makuta, I. and B. O'Hare (2015). "Quality of governance, public spending on health and health status in Sub Saharan Africa: a panel data regression analysis." *BMC Public Health* 15(1): 932.
- Nakamba-Kabaso, P., S. Nalishabo, F. Muleya, M. Kalikeka, C. Byaruhanga, J. Jele, D. McLennan, M. Noble and G. Wright (2020). SOUTHMOD Country Report Zambia - Microzomod V2.4. Helsinki, UNU-WIDER.
- Nygård, M., M. Lindberg, F. Nyqvist and C. Härtull (2019). "The Role of Cash Benefit and In-Kind Benefit Spending for Child Poverty in Times of Austerity: An Analysis of 22 European Countries 2006-2015." *Social Indicators Research* 146(3): 533-552.
- O'Donoghue, C. (2014). *Handbook of microsimulation modelling*. Bingley, UK, Emerald.
- OECD (2009). *Doing better for children*. Paris, OECD.
- Oorschot van, W. (2002). *Targeting welfare: on the functions and dysfunctions of means testing in social policy*. *World poverty: new policies to defeat an old enemy*. P. Townsend and D. Gordon. Bristol, The Policy Press.

## 6. References

- Phillips, D., R. Warwick, M. Goldman, K. Goraus, G. Inchauste, T. Harris and J. Jellema (2018). Redistribution via VAT and cash transfers: an assessment in four low and middle income countries. CEQ Working Paper 78, Commitment to Equity.
- Phipps, S. (1999). An international comparison of policies and outcomes for young children. Canadian Policy Research Network Study No. F05.
- Pickett, K. and R. Wilkinson (2007). "Child well-being and income inequality in rich societies: ecological cross-sectional study." *British Medical Journal* 225(7629): 1080-1087.
- Pritchett, L. (2005). The political economy of targeted safety nets. Social Protection Discussion Paper Series No. 0501. Washington DC, The World Bank.
- Rajkumar, A. S. and V. Swaroop (2008). "Public spending and outcomes: Does governance matter?" *Journal of Development Economics* 86(1): 96-111.
- Rattenhuber, P. and M. Joste (2019). "A Role For Universal Pension? Simulating Universal Pensions In Ecuador, Ghana, Tanzania And South Africa." *International Journal of Microsimulation* 12(1): 13-51.
- Richardson, J., P. Hoelscher and J. Bradshaw (2008). "Child well-being in Central and Eastern European Countries (CEE) and the Commonwealth of Independent States (CIS)." *Child Indicators Research* 1(3): 211-250.
- Silwal, A. R., S. Engilbertsdottir, J. A. Cuesta Leiva, D. L. Newhouse and D. Stewart (2020). Global Estimate of Children in Monetary Poverty : An Update. Poverty and Equity discussion paper Washington, D.C., World Bank Group.
- Sutherland, H. and F. Figari (2013). "EUROMOD: the European Union tax-benefit microsimulation model." *International Journal of Microsimulation* 6: 4-26.
- UNICEF (2007). An overview of child well-being in rich countries. Report Card No. 7. Florence, UNICEF Innocenti Research Centre.
- UNICEF (2018). UNICEF Strategic Plan 2018–2021. New York, United Nations Children's Fund.
- UNICEF (2020). Midterm review of the UNICEF Strategic Plan, 2018–2021: Lessons learned. UNICEF/2020/EB/7. New York, United Nations Children's Fund.
- Van Ginneken, W. (2010). "Social security coverage extension: A review of recent evidence." *International Social Security Review* 63(1): 57-76.
- World\_Bank (2020). Sab-Saharan Africa: Macro Poverty Outlook. Country by country analysis and projections for the developung world Washington DC, Macroeconomics, Trade and Investment, and the Poverty and Equity Global Practices of the World Bank.
- Wright, G., V. Leyaro, E. Kisanga and C. Byaruhanga (2019). "Policy Transparency In The Public Sector: The Case Of Social Benefits In Tanzania." *International Journal of Microsimulation* 12(1): 83-104.
- Younger, S. D. (2017). The impact of reforming energy subsidies. cash transfers and taxes on inequaliity and poverty in Ghana and Tanzania. CEQ Working Paper 55, Commitment to Equity Institute.

# 7

## ANNEX



**Table A1:**  
The list of countries included in the analysis and number of observations per country.

High-income countries	N	Upper-middle-income countries	N	Lower-middle-income countries	N	Low-income countries	N
Austria	11	Albania	2	Bangladesh	2	Burkina Faso	2
Belgium	13	Argentina	1	Benin	1	Congo, Dem. Rep.	2
Chile	5	Armenia	7	Bhutan	2	Gambia, The	2
Croatia	8	Belarus	6	Bolivia	7	Mozambique	1
Cyprus	12	Botswana	1	Cameroon	1	Rwanda	2
Czechia	13	Brazil	5	Congo Republic	1	Sudan	1
Denmark	11	Bulgaria	11	Cote D'Ivoire	3	Uganda	2
Estonia	13	China	1	Egypt, Arab Rep.	1	<b>Total</b>	<b>12</b>
Finland	11	Colombia	4	El Salvador	7		
France	12	Costa Rica	5	Ghana	2		
Germany	8	Dominican Republic	8	Honduras	4		
Greece	13	Ecuador	7	India	1		
Hungary	13	Fiji	1	Kenya	1		
Ireland	11	Georgia	2	Kiribati	1		
Italy	13	Guatemala	1	Kyrgyz Republic	4		
Latvia	12	Indonesia	2	Lao PDR	1		
Lithuania	13	Jamaica	1	Mauritania	1		
Luxembourg	11	Jordan	2	Moldova	3		
Malta	11	Kazakhstan	4	Mongolia	4		
Mauritius	2	Malaysia	1	Nepal	1		
Netherlands	12	Maldives	1	Nicaragua	2		
Panama	8	Mexico	4	Pakistan	2		
Poland	13	Paraguay	5	Papua New Guinea	1		
Portugal	11	Peru	7	Philippines	2		
Romania	11	Russian Federation	4	Solomon Islands	1		
Slovakia	11	Samoa	1	Sri Lanka	3		
Slovenia	12	Serbia	2	Timor-Leste	1		
Spain	13	South Africa	3	Tunisia	1		
Sweden	12	Thailand	4	Ukraine	5		
United Kingdom	12	Turkey	12	Vietnam	3		
Uruguay	5	<b>Total</b>	<b>115</b>	Zambia	1		
<b>Total</b>	<b>336</b>			Zimbabwe	1		
				Eswatini	1		
				<b>Total</b>	<b>72</b>		

**Note:** Countries are divided into four income groupings (low, lower-middle, upper-middle, and high) according to the World Bank classification for 2020. The data has been accessed at: <http://databank.worldbank.org/data/download/site-content/CLASS.xls>.

**Table A2:**  
The list of countries included in the analysis and number of observations per country.

	Model 1		Model 2		Model 3	
	B	se	B	se	B	se
<b>Poverty headcount at Int\$1.90 a day, % of population</b>						
Share of the bottom quintile, %	-0.2910***	(0.0487)			-0.2421***	(0.0628)
Ratio of the shares of top and bottom quintiles, times			0.0488**	(0.0176)	0.0418*	(0.0180)
Social protection spending as % of GDP	-0.6424***	(0.1057)	-0.5812***	(0.1031)	-0.6026***	(0.1107)
GDP per capita, PPP dollars/1000	-0.0598***	(0.0135)	-0.0724***	(0.0164)	-0.0598***	(0.0133)
EU country	-0.1133	(0.6931)	-1.7328*	(0.7487)	-0.0268	(0.6663)
Constant	18.7282***	(2.5395)	14.8008***	(2.3598)	17.1356***	(2.8329)
Observations	535		535		535	
R-squared	0.2911		0.2952		0.3147	
Number of code_n	101		101		101	
<b>Poverty headcount at Int\$3.20 a day, % of population</b>						
Share of the bottom quintile, %	-0.3742***	(0.0765)			-0.3142**	(0.1010)
Ratio of the shares of top and bottom quintiles, times			0.0604*	(0.0252)	0.0514+	(0.0267)
Social protection spending as % of GDP	-1.2688***	(0.1428)	-1.1921***	(0.1462)	-1.2198***	(0.1531)
GDP per capita, PPP dollars/1000	-0.1073***	(0.0214)	-0.1237***	(0.0249)	-0.1074***	(0.0212)
EU country	-4.1193***	(1.0509)	-6.2274***	(1.3152)	-4.0132***	(1.0141)
Constant	37.0340***	(3.3358)	32.0483***	(3.2795)	35.0786***	(3.9371)
Observations	535		535		535	
R-squared	0.4787		0.4798		0.4929	
Number of code_n	101		101		101	
<b>Poverty headcount at Int\$5.50 a day, % of population</b>						
Share of the bottom quintile, %	-0.3618***	(0.0973)			-0.3146**	(0.1187)
Ratio of the shares of top and bottom quintiles, times			0.0495*	(0.0241)	0.0404	(0.0259)
Social protection spending as % of GDP	-1.7454***	(0.1395)	-1.6791***	(0.1447)	-1.7069***	(0.1452)
GDP per capita, PPP dollars/1000	-0.1969***	(0.0305)	-0.2133***	(0.0329)	-0.1969***	(0.0304)
EU country	-14.9253***	(1.2894)	-17.0589***	(1.8049)	-14.8419***	(1.2725)
Constant	60.7725***	(3.1059)	56.2014***	(3.0327)	59.2356***	(3.6473)
Observations	535		535		535	
R-squared	0.6768		0.6746		0.6811	
Number of code_n	101		101		101	
<b>Gini coefficient, %</b>						
Share of the bottom quintile, %	-0.3333***	(0.0340)			-0.3246***	(0.0370)
Ratio of the shares of top and bottom quintiles, times			0.0168*	(0.0082)	0.0074	(0.0069)
Social protection spending as % of GDP	-0.3274***	(0.0475)	-0.2916***	(0.0529)	-0.3203***	(0.0500)
GDP per capita, PPP dollars/1000	0.0181	(0.0112)	0.0012	(0.0107)	0.0181	(0.0113)
EU country	-5.6918***	(0.5884)	-7.9640***	(0.7229)	-5.6765***	(0.5986)
Constant	47.7050***	(0.7230)	44.2922***	(0.6221)	47.4230***	(0.8838)
Observations	535		535		535	
R-squared	0.5329		0.4650		0.5344	
Number of code_n	101		101		101	

**Note:** Standard errors in parentheses \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.1

**Table A3:**  
The impact of equity in social protection spending on absolute poverty and inequality, low- and middle-income countries.

	Model 1		Model 2		Model 3	
	B	se	B	se	B	se
<b>Poverty headcount at Int\$1.90 a day, % of population</b>						
Share of the bottom quintile, %	-0.3984***	(0.0752)			-0.3397***	(0.1027)
Ratio of the shares of top and bottom quintiles, times			0.0302*	(0.0143)	0.0216	(0.0154)
Social protection spending as % of GDP	-0.4013***	(0.0932)	-0.4396***	(0.0973)	-0.3930***	(0.0937)
GDP per capita, PPP dollars/1000	-1.1796***	(0.1680)	-1.1806***	(0.1835)	-1.1549***	(0.1729)
Constant	30.6301***	(3.4472)	26.8349***	(3.5314)	29.3291***	(3.9349)
Observations	209		209		209	
R-squared	0.3950		0.3856		0.4021	
Number of code_n	73		73		73	
<b>Poverty headcount at Int\$3.20 a day, % of population</b>						
Share of the bottom quintile, %	-0.2619**	(0.0891)			-0.2004	(0.1320)
Ratio of the shares of top and bottom quintiles, times			0.0276	(0.0193)	0.0226	(0.0216)
Social protection spending as % of GDP	-1.0427***	(0.1351)	-1.0615***	(0.1417)	-1.0340***	(0.1371)
GDP per capita, PPP dollars/1000	-2.0048***	(0.1865)	-1.9941***	(0.2042)	-1.9789***	(0.1951)
Constant	56.1576***	(3.6436)	53.3245***	(4.0813)	54.7960***	(4.5337)
Observations	209		209		209	
R-squared	0.5869		0.5879		0.5907	
Number of code_n	73		73		73	
<b>Poverty headcount at Int\$5.50 a day, % of population</b>						
Share of the bottom quintile, %	0.1862+	(0.1005)			0.2203+	(0.1304)
Ratio of the shares of top and bottom quintiles, times			0.0069	(0.0170)	0.0125	(0.0190)
Social protection spending as % of GDP	-1.5348***	(0.1142)	-1.4998***	(0.1181)	-1.5300***	(0.1153)
GDP per capita, PPP dollars/1000	-2.6729***	(0.1321)	-2.6419***	(0.1391)	-2.6586***	(0.1392)
Constant	82.8800***	(2.5474)	83.7412***	(2.5666)	82.1241***	(3.2668)
Observations	209		209		209	
R-squared	0.7514		0.7497		0.7522	
Number of code_n	73		73		73	
<b>Gini coefficient, %</b>						
Share of the bottom quintile, %	-0.4595***	(0.0621)			-0.4369***	(0.0671)
Ratio of the shares of top and bottom quintiles, times			0.0194*	(0.0082)	0.0083	(0.0066)
Social protection spending as % of GDP	-0.3800***	(0.0859)	-0.4367***	(0.1004)	-0.3768***	(0.0877)
GDP per capita, PPP dollars/1000	0.2691***	(0.0750)	0.2455**	(0.0865)	0.2786***	(0.0747)
Constant	46.3653***	(1.1784)	42.6567***	(1.0089)	45.8642***	(1.3695)
Observations	209		209		209	
R-squared	0.1905		0.0952		0.1943	
Number of code_n	73		73		73	

Note: Standard errors in parentheses \*\*\* p<0.001, \*\* p<0.01, \* p<0.05, + p<0.1

**Table A4:**  
Overview of basic population characteristics.

	Mozambique	Zambia
Female (%)	51.9	51.4
Average age (years)	21.0	21.7
0-17 years (%)	54.9	50.8
18-29 years (%)	17.7	21.8
30-59 years (%)	22.6	23.2
60+ years (%)	4.8	4.2
Single (14+ years)	29.5	40.1
Married	32.2	29.5
Divorced/Separated	2.8	1.2
Widowed	3.2	2.1
Average household size	6.2	6.3
Couple with children (%)	63.3	66.7
Lone parent with children (%)	30.8	27.1
Childless household (%)	5.9	6.2
With employment income (%)	8.8	7.6
With self-employment income (%)	5.3	12.3
<b>Sample size</b>	<b>109,107</b>	<b>62,879</b>
<b>Population</b>	<b>27,368,293</b>	<b>15,473,936</b>

Source: Authors' calculations.

**Table A5:**  
Overview of negative or zero disposable incomes.

	Mozambique	Zambia
<b>Panel A. Non-adjusted income</b>		
<b>Negative hh disp. income</b>		
N of individuals	0	1,880
as % of all individuals	0.0	3.3
<b>Zero hh disp. income</b>		
N of individuals	23,589	4,715
as % of all individuals	25.5	7.1
<b>Panel B. Adjusted income</b>		
<b>Negative hh disp. income</b>		
N of individuals	0	0
as % of all individuals	0.0	0.0
<b>Zero hh disp. income</b>		
N of individuals	3	1
as % of all individuals	0.0	0.0
<b>Total N of individuals in the sample</b>	<b>109,107</b>	<b>62,879</b>
<b>Total population</b>	<b>27,368,293</b>	<b>15,473,936</b>

Source: Authors' calculations.

**Table A6:**  
Poverty lines in national currency (monthly values), 2019.

	Mozambique (Metical)	Zambia (Kwacha)
PPP conversion factor, private consumption (LCU per international \$)	22.5	4.8
Int\$1.90/day	1,305.0	275.3
Int\$3.20/day	2,198.0	463.6
Int\$5.50/day	3,777.7	796.8

Source: Int\$1.90, 3.20, and 5.50/day poverty lines based on own calculations using the Purchasing Power Parity conversion factor provided by the World Bank: <https://data.worldbank.org/indicator/PA.NUS.PRVT.PP>.

**Table A7:**  
Gini index and poverty headcounts based on disposable income, adjusted disposable income and consumption, 2019.

	Mozambique	Zambia
<b>Disposable income (not adjusted)</b>		
Gini index	0.759	0.742
Poverty headcount at Int\$1.90/day, %	81.5	68.4
Poverty headcount at Int\$3.20/day, %	89.4	76.9
Poverty headcount at Int\$5.50/day, %	94.6	84.1
<b>Disposable income (adjusted)</b>		
Gini index	0.527	0.701
Poverty headcount at Int\$1.90/day, %	59.6	65.3
Poverty headcount at Int\$3.20/day, %	80.8	75.2
Poverty headcount at Int\$5.50/day, %	91.5	83.4
<b>Consumption</b>		
Gini index	0.480	0.706
Poverty headcount at Int\$1.90/day, %	65.0	66.6
Poverty headcount at Int\$3.20/day, %	85.4	76.1
Poverty headcount at Int\$5.50/day, %	94.5	84.0
<b>Consumption (WDI)</b>		
Gini index	0.456	0.571
Poverty headcount at Int\$1.90/day, %	68.7	57.5
Poverty headcount at Int\$3.20/day, %	88.5	74.3
Poverty headcount at Int\$5.50/day, %	96.2	87.2

Note: All results are in per capita terms; results from WDI refer to different years (2008 for Mozambique and 2015 for Zambia).

Source: Authors' calculations based on SOUTHMOD models and WDI data (World Bank).



**Prepared by**

Programme Division  
United Nations Children's Fund  
3 United Nations Plaza  
New York, NY, 10017, USA

unicef   

---

for every child