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Gasior, Katrin, Tasseva, Iva V. & Wright, Gemma (2025) The impact of social protection on poverty through normal times and times of crisis: evidence from Ghana, Mozambique, Tanzania, Uganda, and Zambia. In Jouste, M., Kanbur, R., Pirttilä, J. & Rattenhuber, P. (Eds.), *Poor Protection: The Role of Taxes and Social Benefits in the Developing World During Crises* (pp. 49 - 76). Oxford University Press. <https://doi.org/10.1093/9780198909453.003.0003>

<https://researchonline.lse.ac.uk/id/eprint/137213/>

Version: Published Version

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PART I

PERFORMANCE OF TAX-BENEFIT  
SYSTEMS DURING CRISES

# The impact of social protection on poverty through normal times and times of crisis

Evidence from Ghana, Mozambique, Tanzania, Uganda, and Zambia

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## 3.1 Introduction

Households use different strategies to cope with negative shocks. But there are limits to these strategies, especially when the shock strikes everyone at the same time. Private insurance against a job loss usually does not exist and the ability of individuals to rely on financial support from family members, their community, or wider civil society is constrained when there is a widespread increase in need. Furthermore, although households may try to save to insure themselves against a shock, many struggle to do so in normal times and are therefore particularly vulnerable during periods of economic crisis. Government policy responses via social protection benefits are thus key for redistributing resources and providing social assistance and social insurance (Romer and Romer 2022).

A number of papers have used household micro-data to study the performance of social protection in sub-Saharan African countries. Though some studies show that a large share of existing benefits go to the poor (e.g. Coady et al. 2004; Handa et al. 2012), many studies highlight the limited benefit coverage of the poor and the limited effectiveness of systems to redistribute resources and reduce poverty (e.g. Adu-Ababio 2022; Bargain et al. 2021; Brown et al. 2018; Gasior et al. 2021a; Inchauste and Lustig 2017; Warwick et al. 2022; World Bank 2022). The number of poor people in sub-Saharan Africa is increasing due to the COVID-19 pandemic and rising prices (Mahler et al. 2022), but government spending on social protection remains low (International Labour Organization 2021).

Recent work by Bowen et al. (2020) and O'Brien et al. (2018) emphasizes the need for developing 'adaptive' or 'shock-responsive' social protection—i.e. benefit automatic stabilizers—to improve households' resilience to crises. Automatic

stabilizers (AS) describe the in-built flexibility of benefit systems to respond automatically to the expansion and contraction of the economy; e.g. through unemployment insurance or means-tested social assistance. Existing evidence shows the importance of benefits as AS for reducing the volatility in household incomes (Dolls et al. 2012) and consumption (Browning and Crossley 2001), including during the Great Recession (Fernández Salgado et al. 2014) and COVID-19 pandemic (e.g. Brewer and Tasseva 2021; Cantó et al. 2021; Jara et al. 2021; Lastunen et al. 2021). Means-tested benefits play an important role in reducing poverty volatility over the business cycle (Bitler and Hoynes 2016) and redistributing resources (Paulus and Tasseva 2020). However, with exceptions such as Lastunen et al. (2021) and Adu-Ababio (2022), most of the literature has focused on high-income economies.

In this chapter, we examine two lower-middle-income countries (LMICs)—Ghana and Tanzania—and three low-income countries (LICs)—Mozambique, Uganda, and Zambia. Though the size and development of the benefit system (Clement 2020) and the mix of policies vary, all of these countries spend less as a per cent of GDP on social protection than the average for sub-Saharan Africa. Our approach uses new tax–benefit models for sub-Saharan African countries (SOUTHMOD models) combined with nationally representative household surveys (Gasior et al. 2021a). It allows us to calculate household benefit entitlements, tax liabilities, and net incomes in pre-pandemic 2019 (what we call ‘normal’ times). We then stress-test the benefit systems (Atkinson 2009) by simulating hypothetical reductions to household earnings or employment and assess the impact of these shocks on household benefits and net incomes. We also study the effects of benefits on household consumption.

Our chapter has two goals. The first is to explore the extent to which social protection systems in the five countries provide support to households in ‘normal’ times. The better the coverage and adequacy of the systems in normal times, the better people are prepared to face an economic shock. We add to the literature by comparing in-depth systems across the five countries and examining their impact on consumption poverty, as typically done in the literature, as well as income poverty measures to get a more comprehensive picture of household resources. Our second goal is to examine the extent to which social protection systems are reactive to an economic crisis: a well-designed system with strong AS should be flexible to respond quickly and accurately to changes in people’s circumstances. The more responsive the benefits are, the more insurance and income/consumption smoothing they provide.

There are several advantages to AS in comparison to the discretionary government’s response. First, AS reduce the time costs needed to design and implement new policies as AS respond automatically to changes in incomes. Second, income support is provided for as long as needed and targeted to those in need. Third, the provision of AS can be facilitated via the existing administration

and infrastructure, removing the need to set up new infrastructure for new policies. Fourth, policymakers are freed up to focus on the idiosyncratic and unanticipated aspects of crisis (Orszag et al. 2022).

However, there are policy challenges facing LICs and LMICs that can seriously limit how effective AS are in mitigating shocks to households. By design, policies may not respond to fluctuations in household incomes or only respond with a delay. An example is proxy means-tested benefits, which have eligibility criteria linked to indicators correlated with income, not income itself, and the assessment period can take prolonged periods of time. The effectiveness of AS can be also limited if there are limitations to existing policies; e.g. if the value of benefit payments is low providing insufficient support to households or there are gaps in benefit coverage due to a large informal sector. Lastly, some countries may have limited fiscal space to expand spending in crisis; e.g. due to the inability to borrow, limiting the impact of existing policies.

We document that benefit coverage varies substantially across the countries: while one in two individuals live in households in receipt of social protection benefits in Ghana and Zambia, the rate is much lower in the other countries: less than one in ten in Mozambique and Tanzania and one in twenty in Uganda. A large proportion of the consumption-poorest 20% of the population receives benefits in Ghana (74%), Zambia (68%), and Tanzania (40%). But, though an important source of income for some in poverty, benefits do relatively little to reduce the number of people living below international \$1.9 per day and the depth of poverty. The highest consumption and income poverty reductions are estimated in Ghana and Zambia, respectively, while benefits have a negligible impact on poverty in Mozambique, Tanzania, and Uganda.

Furthermore, benefit AS show only a limited response to reductions in household earnings or employment due to the prevalence of proxy means-testing and/or tight eligibility criteria. However, the relatively high benefit coverage in Ghana and Zambia in 'normal' times means that many households at the bottom of the income distribution are protected by an income floor when a shock strikes. This is not the case for Mozambique, Tanzania, and Uganda, where social protection is vastly more limited. Our results add to the existing literature by providing novel evidence on the effectiveness of benefit AS in LIC and LMIC settings and comparing their magnitude across countries.

### 3.2 Country profiles and policy background

This section starts by comparing key demographic and economic characteristics across the five sub-Saharan countries included in this study: Ghana, Mozambique, Tanzania, Uganda, and Zambia. It then compares the main social protection benefits across countries. As we examine household net incomes as well

as consumption, the section also lists the main direct taxes and social insurance contribution (SIC) policies that affect incomes and hence consumption in both normal times and during crises.

The countries we examine vary substantially in demographic, social, and economic characteristics. Their populations range from 18.4 million in Zambia, around 31 million in Ghana and Mozambique, 45.7 million in Uganda, to 59.7 million in Tanzania. The median age is low, ranging from 15.7 in Uganda to 20.2 in Ghana, compared to the world average of 29.7. Life expectancy at birth is also relatively low, between 61 years in Mozambique and 66 in Tanzania, with a world average of 72. All countries spend little on social protection as a percentage of GDP: 1.7% in Ghana and Tanzania, compared to an average of 2.5% in LMICs, and less than 1% in Mozambique, Uganda, and Zambia, compared to 1.1% on average in LICs. Countries' spending is also significantly lower than the average in Africa (3.8%), and the world (12.9%). Social protection expenditure is twice as high in Ghana and Tanzania compared to the other three countries, partly reflecting their lower-middle-income (rather than low-income) status. Despite countries' lower-income status and thus potentially limited fiscal space to expand spending in crises, all countries (except Tanzania for which there are no data at the time of writing) raised debt to GDP levels substantially through the COVID-19 pandemic (between 19% in Uganda and 32% in Zambia in 2020 compared to 2019) to provide support to households and businesses, highlighting the importance of assessing the effectiveness of existing social protection in responding to crises.<sup>1</sup>

Social protection programmes in sub-Saharan Africa have undergone substantial development since they were first introduced. While during colonial times social protection was available for a small, privileged group (expatriates and local officials in colonial administration), expenditure for social protection has been steadily increasing, in particular since the 2000s, as a share of governments' budgets (UNDP 2019). For example, in Ghana the social assistance programme targeted at poor families—the LEAP transfer programme—was piloted in 2013 and expanded in several waves since then. Similarly, the social assistance programme in Zambia—the Social Cash Transfer—was first introduced as a pilot in selected districts and rolled out to the whole country in 2016. In Mozambique, the Basic Social Subsidy Programme was transformed and expanded in 2010. In Uganda, the senior citizens' grant started as a pilot in the most vulnerable region

<sup>1</sup> Population and median age in 2020: UN World Population Prospects 2022 (<https://population.un.org/wpp/Download/Standard/MostUsed/>). Life expectancy at birth in 2020: World Bank Data. (<https://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=ZG>). Social protection expenditure (excluding health) in 2020 or the nearest available year: table A4.3 in International Labour Organization (2021). Central government debt in 2019 and 2020: IMF Global Debt Database (<https://www.imf.org/external/datamapper/datasets/GDD>).

of the country before being gradually extended and nationally rolled out by 2020 to all persons older than 80 years.

Table 3.1 gives an overview of the main social protection programmes captured in our analysis. *Means-tested benefits* are typically targeted at poorer groups who have to meet a range of eligibility criteria related to, for example, family characteristics, consumption, or income. *Non-means-tested benefits* are typically universal and available to everyone within a certain demographic group, such as children. *Social insurance pensions* are available to workers who have previously paid SIC and met, for example, retirement criteria. Ghana, Mozambique, and Zambia operate a mix of benefit programmes and so different and/or overlapping population groups can be covered. In comparison, Tanzania and Uganda have one main means-tested and non-means-tested benefit programme, respectively, providing more targeted support.

Eligibility for means-tested benefits includes an income test in Mozambique (the Basic Social Subsidy Programme) and Tanzania (the Productive Social Safety Net). However, across countries, eligibility for many of the means-tested benefits is generally linked to proxies of income, and not income itself, and/or eligibility criteria are tight. Proxies are linked to, for example, food insecurity (Mozambique, Zambia) or vulnerability/extreme poverty index (Ghana, Zambia), combined with checks for the presence of children in the household (Ghana, Tanzania, and Zambia), disabled or chronically ill people (Ghana, Mozambique, Zambia), or elderly people (Ghana, Zambia) (see Gasior et al. 2022 for details). Though not explicitly targeted by social protection programmes, unemployed individuals can receive support if they meet criteria for means-tested or non-means-tested benefits, or live in households where other members are benefit recipients. Unemployment insurance programmes generally do not exist.<sup>2</sup>

Table 3.1 furthermore provides an overview of the countries' direct taxes and SIC.<sup>3</sup> All countries operate a personal income tax, a presumptive tax for small-business owners (e.g. street vendors), and an SIC. Payment of SIC is used to determine entitlement to social insurance pensions where these exist and can be levied to both formal and informal income. The direct tax schedules are broadly progressive in all countries (i.e. tax liabilities go up as a proportion of income with rises in gross (pre-tax) income taxes). SIC is levied as a proportional tax (i.e. the same rate applies to all earnings).

<sup>2</sup> The only exception is Tanzania, which runs a small-scale unemployment insurance programme. The programme is not captured in our analysis due to data limitations.

<sup>3</sup> As our focus is on incomes and how changes to income (earnings) affect household consumption, we therefore examine direct taxes and SIC. Indirect taxes and excise duties which do not affect household incomes directly are thus not captured in the analysis.

**Table 3.1** Overview of social protection benefits, direct taxes, and SIC in 2019

Ghana	Mozambique	Tanzania	Uganda	Zambia
Non-means-tested benefits (NMTB)				
Children, youth School Feeding Programme; Free Senior High School policy				Home Grown School Meal Programme
Old-age			Senior Citizens' Grant	
Farmers				Electronic-Farmer Input Support Programme
<i>Means-tested benefits (MTB)</i>				
Social assistance LEAP transfer Programme	Basic Social Subsidy Programme	Productive Social Safety Net		Social Cash Transfer; Keeping Girls in School; Supporting Women's Livelihood
Farmers				Food Security Pack
<i>Social insurance pensions (P)</i>				
Old-age	Old-age; Survivor			Old-age; Invalidity
<i>Direct taxes and SIC</i>				
Direct taxes				
Personal income tax; Presumptive tax;	Personal income tax; Presumptive tax;	Personal income tax; Presumptive tax	Personal income tax; Presumptive tax	Personal income tax; Presumptive tax;
Capital income tax	Other personal income tax			Local service tax; Rental income tax
SIC Employee SIC– pension and health	Employee SIC	Employee SIC– pension and health	Employee SIC	Employee SIC– pension

Source: Authors' representation based on the SOUTHMOD Country Reports (Adu-Ababio et al. 2022; Castelo et al. 2022; Kalikeka et al. 2022; Leyaro et al. 2022; Waiswa et al. 2022).

### 3.3 Methodology and data

#### 3.3.1 Simulation of shocks

To measure the extent to which social protection benefits respond to an adverse shock and cushion its effect on people's incomes and consumption, we stress-test the benefit system (Atkinson 2009). Two types of shock are simulated in each country, as per Dolls et al. (2012): (1) a shock to employment leading to some earners losing all of their earnings, with aggregate earnings falling by 10%; and (2) a proportional reduction to earnings of 10%—that is, everyone's earnings are affected equally.<sup>4</sup> Rather than studying the development of incomes over an actual episode of crisis like the COVID-19 pandemic, the advantages of simulating stylized shocks are threefold. First, they provide a controlled experiment in which we can keep the size of shocks the same to explore cross-country differences in population characteristics and benefit policies. Second, they allow us to focus on the response of benefit stabilizers, abstracting from any interactions with discretionary, emergency benefit policies that governments may introduce during an actual crisis. Third, comparing the impact of different types of shock can inform to what extent the type of shock matters for benefit responsiveness and which policies are particularly important in dealing with that shock.

Both types of shock can be expected to trigger a response from benefit stabilizers, if their design allows that, leading to an increase in the number of benefit recipients and total benefit spending. For example, a proportional reduction to earnings can trigger a response from income-related benefits such as means-tested benefits targeted at poor families, while a loss of employment can trigger a response from income-related benefits as well as unemployment-related benefits such as unemployment insurance.

#### 3.3.2 Outcome measures

To examine how comprehensive the benefit system is, we estimate the coverage of social protection benefits. Benefit coverage equals the number of people living in households receiving benefits, as a proportion of the whole population. We present coverage rates for receipt of all benefits as well as broken down by benefit type, differentiating between means-tested benefits, non-means-tested benefits, and social insurance pensions (see Section 3.3).

<sup>4</sup> Earnings are defined as the sum of earnings from employment and self-employment and agricultural income. In case (1), earners are selected randomly from the country's population to be affected by the employment shock.

To assess the poverty relief that benefits provide, we examine the Foster–Greer–Thorbecke (FGT) poverty headcount and gap. The poverty headcount is the share of the population living below the poverty line. The poverty gap is the mean shortfall of the total population from the poverty line (with the non-poor having a zero shortfall) as a percentage of the poverty line. The poverty line is the international poverty definition of US\$1.9 per day (in 2011 purchasing power parity (PPP)).<sup>5</sup> To quantify the impact of benefits on poverty, we apply an approach commonly used in distributional analysis and official poverty statistics by comparing poverty estimates using alternative resource measures. For income poverty, we approximate the poverty impact of benefits by comparing poverty rates using net income versus income before benefits but after taxes and SIC. Similarly, for consumption poverty, we compare the poverty rates using household consumption versus household consumption before accounting for benefits receipt. To calculate the effect of benefits on consumption, and hence on consumption poverty, we assume a marginal propensity to consume of 1, i.e. all of an increase in income is consumed.

To measure the responsiveness of benefits to crises, we assess changes to benefit coverage and the effectiveness of benefits to mitigate losses in incomes and increases in income/consumption poverty due to shocks.

### 3.3.3 The data and SOUTHMOD tax–benefit models

Our approach relies on the use of the new SOUTHMOD tax-benefit microsimulation models (Decoster et al. 2019) developed jointly by the United Nations University World Institute for Development Economics Research (UNU-WIDER), the Southern African Social Policy Research Insights (SASPRI), the University of Essex, and national partners in each country.<sup>6</sup> The tax-benefit models rely on nationally representative household budget surveys.<sup>7</sup> The tax-benefit models contain the tax-benefit rules of countries over time. The models use the information in the survey data on individual and household gross (pre-tax) market incomes, consumption, and characteristics (such as labour market or informality status) to identify assessment units (e.g. individuals or households) eligible for benefits/liable for taxes and SIC. Finally, the models calculate, using the policy rules, individual and household amounts of social protection benefits, direct tax liabilities, SIC, and net income. The data have undergone careful

<sup>5</sup> The international definition refers to living standards in 2011 and is updated for country-specific changes in PPP from over 2011–19 (Ferreira et al. 2016). PPP conversion factors and changes in consumer price index over 2011–19 are from the World Bank's World Development Indicators database.

<sup>6</sup> GHAMOD v2.5 for Ghana, MOZMOD v2.9 for Mozambique, TAZMOD v2.5 for Tanzania, UGAMOD v1.8 for Uganda, and MicroZAMOD v2.12 for Zambia.

<sup>7</sup> The 2017 Ghana Living Standard Survey, 2015 Household Budget Survey (Inquérito sobre o Orçamento Familiar, IOF) for Mozambique, 2017/18 Household Budget Survey for Tanzania, 2016/17 National Household Survey for Uganda, and 2015 Living Conditions Monitoring Survey for Zambia.

consistency checks (McLennan et al. 2021). All models are developed based on a common framework (EUROMOD) used initially for tax-benefit modelling and comparative distributional analysis for the European Union countries (Sutherland and Figari 2013). The survey data and tax-benefit simulations are thus harmonized to facilitate meaningful, cross-country comparative research. This also allows us to simulate hypothetical reductions in earnings and employment and assess the effects on benefit entitlements, net incomes, and consumption across countries.

Some key definitions and assumptions are as follows: first, the models calculate entitlement to social protection benefits, which are part of national programmes or programmes that are rolled out to most areas of the country. Second, we uprate the financial value of the income data in the surveys to 2019, to account for growth in average gross market incomes and certain benefits to which entitlement is not simulated by the models (i.e. due to lack of information to determine eligibility). We also uprate, by the consumer price index, household consumption reported in the survey to 2019 levels and adjust it to account for the impact of changes to market incomes, direct taxes, and benefits between the survey data year and 2019. We do not account for population or labour market changes since the survey data year. Third, our baseline, or what we call ‘normal times’, is pre-pandemic 2019, with tax-benefit policies that were in place on 30 June (1 July for Uganda and Zambia). Fourth, the simulation results are carefully validated against and adjusted, if necessary, to match 2019 official figures on the number of benefit recipients. Detailed information on the benefit programmes, data, model simulations, and assumptions is available in the SOUTHMOD Country Reports (Adu-Ababio et al. 2022; Castelo et al. 2022; Kalikeka et al. 2022; Leyaro et al. 2022; Waiswa et al. 2022).

Throughout the analysis, we measure income and consumption at the household level and apply a per-capita equivalence scale to make households of different sizes comparable with each other. Household net income is the sum of gross (pre-tax) market income—that is, income from employment and self-employment, agricultural income, income from rent, investment income, private transfers paid to/from other households—plus social protection benefits minus direct income taxes and SIC. Household consumption expenditure is the sum of the market value of goods and services purchased by households and derived from own production, received as gifts, and in-kind payments.

### 3.4 Results

We start with assessing the role of benefits in ‘normal’ times (i.e. 2019 prior to the COVID-19 pandemic), estimating benefits coverage and their effectiveness in reducing income and consumption poverty. We then examine the extent to which benefits respond to simulated shocks (crises) by mitigating losses to household incomes and increases in income and consumption poverty.

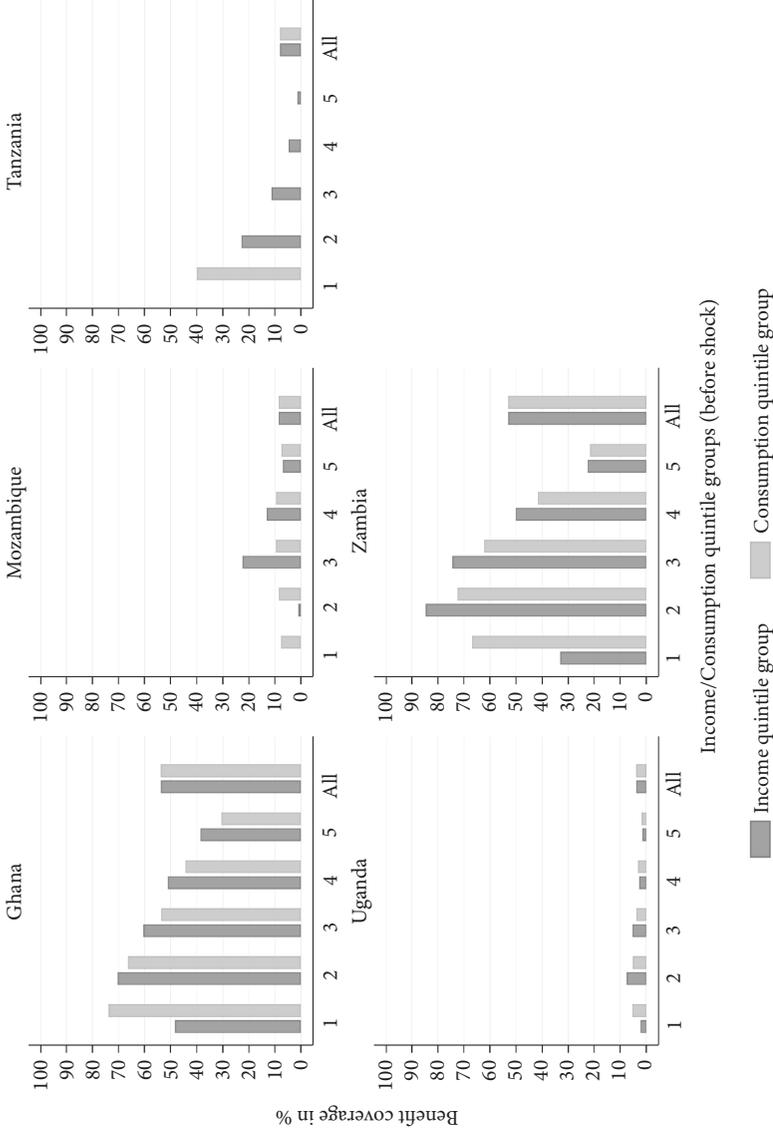
### 3.4.1 Benefits coverage and impact on poverty in normal times

We begin by documenting in Figure 3.1 the benefit coverage rate in ‘normal’ times—that is, the number of individuals living in households receiving social protection benefits as a share of the total population (*All*), as well as by income (dark grey bars) and consumption quintile group (light grey bars). We estimate that Ghana and Zambia have the highest coverage of the total population (53.7% and 53%, respectively), followed by Mozambique (8.5%), Tanzania (8%), and Uganda (3.8%). The high coverage (not shown in the figure) in Ghana is achieved almost exclusively by non-means-tested benefits, whereas there is a split between means-tested and non-means-tested benefits in Zambia (39.7% and 23.4%, respectively). The high prevalence of non-means-tested benefits in these two countries is to a large extent due to categorical benefits that provide school meals to children as well as agricultural benefits in Zambia. For the other countries, Uganda’s coverage is driven by non-means-tested benefits (the senior citizens’ grant, which is a universal benefit for older individuals), while most of the coverage in Mozambique and Tanzania is due to means-tested benefits. Social insurance pensions play a small role in all five countries, with the highest coverage rate of 2% in Mozambique.

Looking at the distribution of benefits, coverage rates decrease by consumption quintile group only in Ghana. However, the results for Ghana by income quintile group, and for the other four countries by both income and consumption quintile group, do not conform with this pattern. There are two main reasons for this. First, receipt of income support from social protection shifts some households out of the lowest income quintile group, where instead ineligible households feature, and into the higher quintile groups; this occurs across all five countries as the coverage rates are lower in the first than the second income quintile group. Second, benefits are targeted at groups based on characteristics that are not all correlated with income/consumption; for example, in Mozambique, the Basic Social Subsidy Programme although comprising an income test also selects specific groups of the population that exclude many of the poorest in society.

To further understand the role of benefits in supporting incomes and consumption, we look at how effective benefits are in lifting recipients out of poverty (the poverty headcount) or closer to the poverty line (the poverty gap). We look at estimates of income poverty—as a key measure of household resources and for assessing the distributional role of the social protection system—as well as consumption poverty—which is the standard measure of poverty used in LICs and LMICs.

Table 3.2 shows the income poverty rate and poverty gap using different income definitions (pre- and post-benefit receipt) and the effectiveness of benefits in reducing poverty. The income poverty headcount using household net incomes (column ‘Total’) in normal times is highest in Mozambique (82.1%), followed by Uganda (74.7%), Zambia (72.3%), and Tanzania (71.8%), and is significantly



**Figure 3.1** Benefit coverage as a percentage of the population by income/consumption quintile group

*Note:* The figure shows benefit coverage for the total population and by quintile groups of equivalized household net income/consumption in the baseline. Benefit coverage is the number of individuals living in households in receipt of social protection benefits, as a proportion of the total population/population in the respective quintile group.

*Source:* Authors' calculations.

lower in Ghana (47.8%). Strikingly, the impact of the combined receipt of benefits on the income poverty headcount (column 'B') is low across all countries: without the receipt of benefits, poverty in Ghana would be 2.4 percentage points (pp) higher, compared to 1 pp higher in Zambia and 0.5 pp in Mozambique. The impact of benefits on poverty is (close to) zero in Tanzania and Uganda. Social protection programmes are somewhat more effective in lowering the poverty gap, but the impact is still small. The income poverty gap increases most in Zambia with the removal of benefits (by 4.8 pp or 9.2%), followed by Ghana (3.7 pp or 11.7%) and Mozambique (1.2 pp or 1.8%). The impact is less than 1 pp in the other two countries.

Table 3.3 repeats the above analysis for poverty using consumption. Estimates of consumption poverty are substantially lower than those of income poverty, reflecting the importance of inter-household in-kind transfers (see, e.g. Gasior et al. 2021a). Except for Ghana, with a poverty headcount of 21%, poverty estimates for all other countries are higher than the rate of 38.33% for sub-Saharan Africa.<sup>8</sup> Uganda has the highest poverty rate, estimated at 70.4%, followed by Zambia (55.2%), Mozambique (51.7%), and Tanzania (48.6%). Consistent with the results for income, the impact of social protection on consumption poverty is smallest in Tanzania and Uganda, and greatest in Ghana and Zambia. The relative reduction in poverty is bigger for consumption than for income measures. But except for Ghana, where benefits have a somewhat sizeable effect on consumption poverty, reducing the headcount by 2.4 pp (11.4%) and gap by 1.7 pp (22.7%), benefits in the other countries have an overall limited impact on poverty.

### 3.5 The role of benefit automatic stabilizers during a crisis

To assess the extent to which benefit AS cushion negative shocks, we simulate (1) an employment shock by transitioning individuals out of employment, so aggregate earnings fall by 10% and (2) an earnings shock by reducing individuals' earnings by 10%. For each of the scenarios, Figure 3.2 shows how net incomes are affected by the shock. The total change in mean household net income/consumption (black circle) is estimated for the whole population and by quintile of baseline, pre-shock net income. The total change is broken down by income source (the bars add up to the black circle) to show the separate contribution of changes to: gross (pre-tax) market incomes (i.e. earnings), means-tested benefits, non-means-tested benefits, social insurance pensions, income tax, and SIC.

Figure 3.2 shows that across countries, household net income on average falls by about 8% as a result of the employment/earnings shock. But countries differ by how different income groups are affected by the shocks, reflecting differences in

<sup>8</sup> Our World in Data, Share of population living in extreme poverty: 2011 vs. 2017 prices, 1987 to 2019: <https://ourworldindata.org/from-1-90-to-2-15-a-day-the-updated-international-poverty-line>.

Table 3.2 Income poverty in 'normal' times

	Levels (%)				$\Delta$ (% points) due to				
	Total	Pre-B	Pre-NMTB	Pre-MTB	Pre-P	B	NMTB	MTB	P
<b>A. Poverty headcount</b>									
Ghana	47.8*** (0.595)	50.2*** (0.608)	49.7*** (0.606)	47.8*** (0.595)	48.2*** (0.599)	-2.4*** (.220)	-1.9*** (.214)	-0.0 (0.001)	-0.5*** (0.065)
Mozambique	82.1*** (0.305)	82.6*** (0.302)	82.1*** (0.305)	82.2*** (0.301)	82.5*** (0.305)	-0.5*** (0.048)	0.0 (0.000)	-0.1*** (0.023)	-0.4*** (0.044)
Tanzania	71.8*** (0.635)	71.8*** (0.634)	71.8*** (0.635)	71.8*** (0.634)	71.8*** (0.635)	-0.0 (0.015)	0.0 (0.000)	-0.0 (0.015)	0.0 (0.000)
Uganda	74.7*** (0.557)	74.7*** (0.558)	74.7*** (0.558)	74.7*** (0.557)	74.7*** (0.557)	-0.0*** (0.006)	-0.0*** (0.006)	0.0 (0.000)	0.0 (0.000)
Zambia	72.3*** (685.0)	73.3*** (0.587)	72.8*** (0.585)	72.6*** (0.592)	72.4*** (0.588)	-1.0*** (0.108)	-0.5*** (0.076)	-0.3*** (0.059)	-0.1** (0.029)

Continued

Table 3.2 Continued

	Levels (%)				$\Delta$ (% points) due to				
	Total	Pre-B	Pre-NMTB	Pre-MTB	Pre-P	B	NMTB	MTB	P
<b>B. Poverty gap</b>									
Ghana	31.5*** (0.481)	35.2*** (0.513)	34.7*** (0.510)	31.6*** (0.481)	31.8*** (0.482)	-3.7*** (0.106)	-3.3*** (0.086)	-0.1*** (0.006)	-0.3*** (0.050)
Mozambique	67.2*** (0.327)	68.4*** (0.329)	67.2*** (0.327)	67.9*** (0.329)	67.7*** (0.328)	-1.2*** (0.045)	0.0 (0.000)	-0.6*** (0.023)	-0.5*** (0.039)
Tanzania	54.3*** (0.566)	54.8*** (0.570)	54.3*** (0.566)	54.8*** (0.570)	54.3*** (0.566)	-0.5*** (0.020)	0.0 (0.000)	-0.5*** (0.020)	0.0 (0.000)
Uganda	51.7*** (0.457)	52.0*** (0.458)	52.0*** (0.458)	51.7*** (0.457)	51.7*** (0.457)	-0.3*** (0.013)	-0.3*** (0.013)	0.0 (0.000)	0.0 (0.000)
Zambia	52.1*** (0.497)	56.8*** (0.519)	54.6*** (0.513)	54.1*** (0.500)	52.1*** (0.499)	-4.8*** (0.081)	-2.6*** (0.052)	-2.1*** (0.050)	-0.1*** (0.026)

Note: The poverty line equals international-\$1.9 per day (2011 PPP). The poverty headcount is the proportion (%) of the population living below the poverty line. The poverty gap is the mean shortfall of the total population from the poverty line (with the non-poor having a zero shortfall), as a percentage of the poverty line. Equivalized household incomes using per-capita equivalence scale and adjusted for PPP per US\$. Total = total net incomes. B = all benefits (NMTB + MTB + P). NMTB = non-means-tested benefits. MTB = means-tested benefits. P = social insurance pensions. For example, Pre-All-B refers to the poverty estimates based on incomes before adding all benefits;  $\Delta$  due to B indicates the reduction to poverty due to all benefits (i.e. the difference in poverty based on Total versus Pre-B incomes). Standard errors at a confidence level of 95% are shown in parentheses. Bootstrapped standard errors after 200 replications. Significance levels indicated as \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ . Source: Authors' calculations.

Table 3.3 Consumption poverty rates in 'normal' times

	Levels (%)				Δ (% points) due to				
	Total	Pre-B	Pre-NMTB	Pre-MTB	Pre-P	B	NMTB	MTB	P
<b>A. Poverty headcount</b>									
Ghana	21.0*** (0.512)	23.5*** (0.543)	23.1*** (0.538)	21.0*** (0.512)	21.4*** (0.518)	-2.4*** (0.188)	-2.1*** (0.179)	0.0 (0.000)	-0.3*** (0.055)
Mozambique	51.7*** (0.501)	52.5*** (0.499)	51.7*** (0.501)	52.0*** (0.501)	52.1*** (0.499)	-0.8*** (0.067)	0.0 (0.000)	-0.4*** (0.047)	-0.4*** (0.045)
Tanzania	48.6*** (0.665)	48.6*** (0.665)	48.6*** (0.665)	48.6*** (0.665)	48.6*** (0.665)	0.0 (0.000)	0.0 (0.000)	0.0 (0.000)	0.0 (0.000)
Uganda	70.4*** (0.563)	70.5*** (0.563)	70.5*** (0.563)	70.4*** (0.563)	70.4*** (0.563)	-0.1*** (0.022)	-0.1*** (0.022)	0.0 (0.000)	0.0 (0.000)
Zambia	55.2*** (0.592)	57.4*** (0.645)	56.4*** (0.653)	56.1*** (0.649)	55.2*** (0.648)	-2.2*** (0.161)	-1.3*** (0.129)	-0.9*** (.106)	-0.1* (.031)

Continued

Table 3.3 Continued

	Levels (%)				Δ (% points) due to				
	Total	Pre-B	Pre-NMTB	Pre-MTB	Pre-P	B	NMTB	MTB	P
<b>B. Poverty gap</b>									
Ghana	7.5*** (0.201)	9.2*** (0.225)	8.9*** (0.218)	7.6*** (0.203)	7.7*** (0.206)	-1.7*** (0.062)	-1.4*** (0.045)	-0.1*** (0.006)	-0.2*** (0.038)
Mozambique	19.7*** (0.251)	20.5*** (0.255)	19.7*** (0.251)	20.1*** (0.254)	20.1*** (0.253)	-0.8*** (0.036)	0.0 (0.000)	-0.4*** (0.019)	-0.4*** (0.031)
Tanzania	15.2*** (0.267)	15.7*** (0.279)	15.2*** (0.267)	15.7*** (0.279)	15.2*** (0.267)	-0.5*** (0.022)	0.0 (0.000)	-0.5*** (0.022)	0.0 (0.000)
Uganda	31.6*** (0.314)	31.8*** (0.315)	31.8*** (0.315)	31.6*** (0.314)	31.6*** (0.314)	-0.3*** (0.013)	-0.3*** (0.013)	0.0 (0.000)	0.0 (0.000)
Zambia	26.9*** (0.408)	30.7*** (0.434)	28.9*** (0.426)	28.6*** (0.417)	26.9*** (0.409)	-3.8*** (0.066)	-2.0*** (0.046)	-1.7*** (0.045)	-0.0*** (0.013)

Note: See Table 3.2. Equivalent household consumption using per-capita equivalence scale and adjusted for PPP per US\$. MPC assumed to be 1. Total = total consumption. For example, Pre-B refers to the poverty estimates based on consumption before accounting for receipt of all benefits; Δ due to B indicates the reduction to poverty due to all benefits (i.e. the difference in poverty based on Total versus Pre-B consumption).  
Source: Authors' calculations.

**Table 3.4** Benefit coverage (% population) in ‘normal’ times and impact of a shock

	‘Normal times’ (%)	Impact of a shock (% points)	
		Employment shock	Earnings shock
Ghana	53.7	0.0	0.0
Mozambique	8.5	0.1	0.1
Tanzania	8.0	0.0	0.0
Uganda	3.8	0.0	0.0
Zambia	53.0	0.0	0.0

*Note:* Benefit coverage is the share of individuals living in households in receipt of social protection benefits—in the baseline and the change to coverage, in percentage points relative to baseline, as a result of a shock.

*Source:* Authors’ calculations.

the number and distribution of earners across quintile groups. The reduction in net income broadly increases with quintile group in Ghana and Zambia, while no losses are observed in the bottom 20% in Mozambique due to a concentration of households with zero baseline income. Losses are more equally spread across the distribution in Tanzania and Uganda. Breaking down the change in net income by source shows that the losses to gross market incomes are not mitigated by benefits. In other words, social protection programmes as currently designed lack in-built flexibility and so fail to respond to the loss in earnings and employment. On the other hand, mostly for the richest 20–40% of households, some of the losses to gross market incomes are mitigated by automatic reductions in income tax liabilities and SIC. Thus, while social protection benefits fail to respond to the negative shocks, income taxes and SIC do so by benefiting households in the upper part of the distribution.

The lack of/limited expansion in benefit coverage between the baseline (normal times) and the employment and earnings shock is also illustrated in Table 3.4. Only Mozambique shows a tiny increase (0.1%) in coverage due to a small increase in the number of eligible households for the Basic Social Subsidy Programme.

Lastly, we look at the impact of the crisis and benefits on poverty. Tables 3.5 and 3.6 present income and consumption poverty rates, respectively, in the baseline (columns 2–4) and the percentage point change in the poverty rates due to the shocks (columns 5–10). The poverty headcount and gap using income/consumption before benefit receipt (‘pre-B’) and after benefit receipt (‘Total’) increase by a similar amount due to the employment and earnings shocks. That means benefits fail to mitigate the increase in poverty due to crises. This is due to the limited expansion in the number of benefit recipients and amounts.

Across countries, the benefits in place largely focus on people in chronic poverty and are designed to target vulnerable groups based on long-term household characteristics. Those in employment who are often better off than others in the

Table 3.5 Income poverty rates in 'normal' times and the impact of a shock

	'Normal' times (%)			Impact of a shock: change (% points) relative to 'normal' times							
	Total	Pre-B	$\Delta B$	Employment shock			Earnings shock				
				Total	Pre-B	$\Delta B$	Total	Pre-B	$\Delta B$		
<b>A. Poverty headcount</b>											
Ghana	47.8*** (0.595)	50.2*** (0.608)	-2.4*** (.220)	4.2*** (0.288)	4.1*** (0.267)	0.2 (0.125)	1.7*** (0.161)	2.0*** (0.213)	-0.2 (0.211)		
Mozambique	82.1*** (0.305)	82.6*** (0.302)	-0.5*** (.048)	1.3*** (0.074)	1.3*** (0.074)	-0.0 (0.011)	1.5*** (0.097)	1.5*** (0.092)	-0.0 (0.032)		
Tanzania	71.8*** (0.635)	71.8*** (0.634)	-0.0 (0.015)	2.3*** (0.213)	2.3*** (0.213)	0.0 (0.000)	1.7*** (0.196)	1.8*** (0.199)	-0.0 (0.031)		
Uganda	74.7*** (0.557)	74.7*** (0.558)	-0.0*** (0.006)	1.8*** (0.137)	1.8*** (0.137)	0.0 (0.000)	1.7*** (0.152)	1.8*** (0.153)	-0.0* (0.017)		
Zambia	72.3*** (0.589)	73.3*** (0.587)	-1.0*** (0.108)	2.3*** (0.195)	2.2*** (0.191)	0.1*** (0.024)	1.4*** (0.174)	1.4*** (0.179)	0.0 (0.103)		

<b>B. Poverty gap</b>										
Ghana	31.5*** (0.481)	35.2*** (0.513)	-3.7*** (0.106)	4.3*** (0.257)	4.5*** (.266)	-0.2*** (0.028)	1.1*** (0.029)	1.2*** (0.033)	-0.2*** (0.016)	
Mozambique	67.2*** (0.327)	68.4*** (0.329)	-1.2*** (0.045)	2.0*** (0.086)	2.0*** (0.086)	-0.0*** (0.004)	1.4*** (0.022)	1.4*** (0.022)	-0.0*** (0.004)	
Tanzania	54.3*** (0.566)	54.8*** (0.570)	-0.5*** (0.020)	3.1*** (0.183)	3.1*** (0.183)	-0.0*** (0.002)	1.6*** (0.035)	1.6*** (0.035)	-0.0*** (0.002)	
Uganda	51.7*** (0.457)	52.0*** (0.458)	-0.3*** (0.013)	3.1*** (0.147)	3.1*** (0.147)	-0.0 (0.001)	1.9*** (0.031)	2.0*** (0.031)	-0.0*** (0.001)	
Zambia	52.1*** (0.497)	56.8*** (0.519)	-4.8*** (0.081)	2.9*** (0.196)	2.9*** (0.196)	-0.0*** (0.009)	1.4*** (0.035)	1.4*** (0.034)	-0.1*** (0.006)	

Note: See Table 3. 2.  
Source: Authors' calculations.

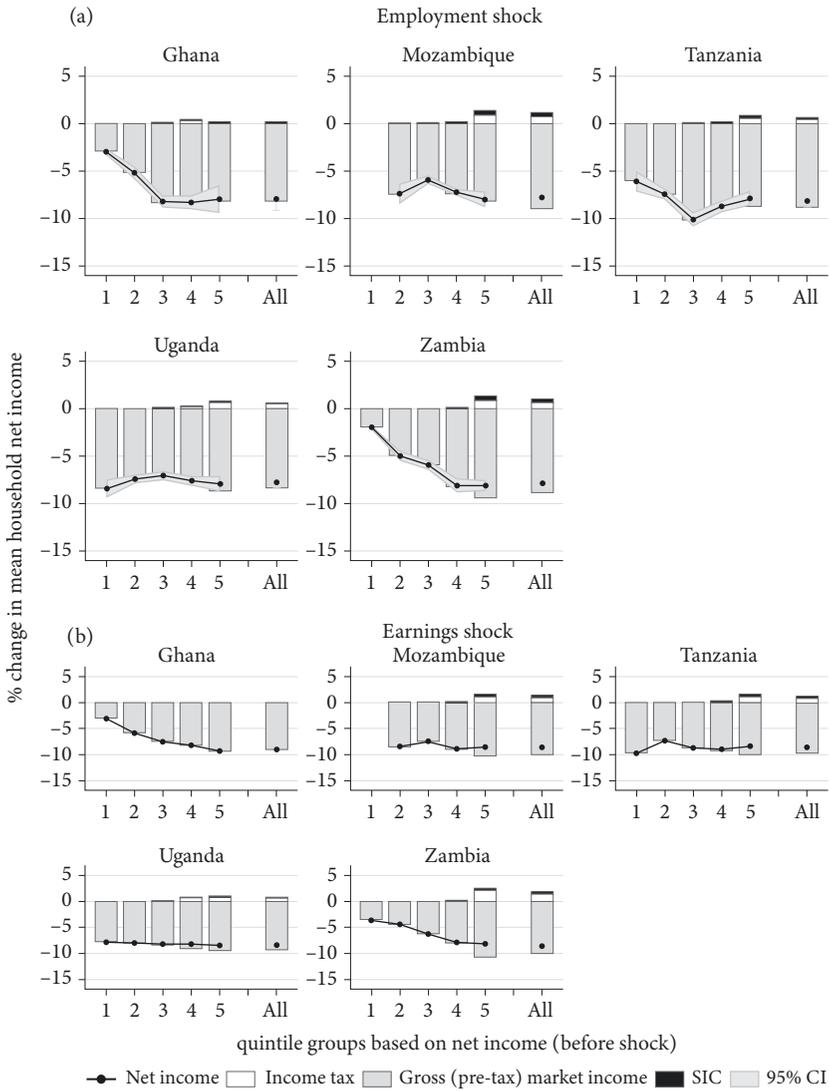
Table 3.6 Consumption poverty rates in 'normal' times and the impact of a shock

	'Normal' times (%)			Impact of a shock: change (% points) relative to 'normal' times							
	Total	Pre-B	ΔB	Employment shock			Earnings shock				
				Total	Pre-B	ΔB	Total	Pre-B	ΔB		
<b>A. Poverty headcount</b>											
Ghana	21.0 <sup>***</sup> (0.512)	23.5 <sup>***</sup> (0.543)	-2.4 <sup>***</sup> (0.188)	3.5 <sup>***</sup> (0.278)	3.6 <sup>***</sup> (0.282)	-0.1 (0.082)	4.9 <sup>***</sup> (0.272)	5.2 <sup>***</sup> (0.280)	-0.4 <sup>*</sup> (0.204)		
Mozambique	51.7 <sup>***</sup> (0.501)	52.5 <sup>***</sup> (0.499)	-0.8 <sup>***</sup> (0.067)	1.5 <sup>***</sup> (0.095)	1.5 <sup>***</sup> (0.092)	.0 (0.022)	2.0 <sup>***</sup> (0.118)	2.0 <sup>***</sup> (0.119)	.0 (0.034)		
Tanzania	48.6 <sup>***</sup> (0.665)	48.6 <sup>***</sup> (0.665)	.0 (0.000)	2.8 <sup>***</sup> (0.233)	2.8 <sup>***</sup> (0.233)	0.0 (0.000)	3.8 <sup>***</sup> (0.260)	3.8 <sup>***</sup> (0.260)	0.0 (0.000)		
Uganda	70.4 <sup>***</sup> (0.593)	70.5 <sup>***</sup> (0.563)	-1 <sup>***</sup> (0.022)	2.2 <sup>***</sup> (0.171)	2.2 <sup>***</sup> (0.171)	0.0 (0.006)	4.0 <sup>***</sup> (0.246)	4.0 <sup>***</sup> (0.243)	0.0 (0.025)		
Zambia	55.2 (0.652)	57.4 <sup>***</sup> (0.645)	-2.2 <sup>***</sup> (0.161)	2.1 <sup>***</sup> (0.193)	2.1 <sup>***</sup> (0.192)	-0.0 (0.050)	1.9 <sup>***</sup> (0.188)	2.0 <sup>***</sup> (0.217)	-0.1 (0.156)		

<b>B. Poverty gap</b>												
Ghana	7.5*** (0.201)	9.2*** (0.225)	-1.7*** (0.062)	3.3*** (0.243)	3.4*** (0.244)	-0.1*** (0.020)	3.1*** (0.186)	3.4*** (0.190)	-0.2*** (0.026)			
Mozambique	19.7*** (0.251)	20.5*** (0.255)	-0.8*** (0.036)	1.4*** (0.067)	1.4*** (0.067)	-0.0*** (0.006)	1.3*** (0.037)	1.3*** (0.037)	-0.0*** (0.003)			
Tanzania	15.2*** (0.267)	15.7*** (0.279)	-0.5*** (0.022)	2.9*** (0.173)	2.9*** (0.172)	0.0*** (0.003)	2.3*** (0.074)	2.3*** (0.074)	0.0 (0.001)			
Uganda	31.6*** (0.314)	31.8*** (0.315)	-0.3*** (0.013)	2.9*** (0.140)	2.9*** (0.140)	0.0 (0.001)	3.4*** (0.089)	3.5*** (0.089)	-0.0** (0.002)			
Zambia	26.9*** (0.408)	30.7*** (0.434)	-3.8*** (0.066)	2.4*** (0.162)	2.4*** (0.161)	0.0 (0.011)	1.5*** (0.059)	1.6*** (0.060)	-0.1*** (0.010)			

Note: See Table 3.3.

Source: Authors' calculations.



**Figure 3.2** Impact of a shock on mean net income by income quintile

*Note:* The figure shows the distributional impact of the shock. Changes in income based on equivalized household net income.

*Source:* Authors' calculations.

population are less likely to be targeted in normal times and cannot rely on a state-provided safety net in times of crisis. This increases the risk of them not only becoming transiently poor in the short term but also becoming chronically poor if the shock lasts longer and those hit by the crisis cannot find new employment.

### 3.6 Conclusions

We examine the social protection arrangements in five sub-Saharan African countries. We have demonstrated that although benefit coverage is fairly high in Ghana and Zambia, the poverty-reducing impact of social protection in all five countries is limited. The small impact on poverty means that the benefits are paid at too low a level to bring households out of poverty using the selected poverty line. Our results highlight the different starting points for improving social protection in the five countries, ranging from better targeting and higher levels of support in countries with already high coverage (Ghana and Zambia) to social protection systems with vastly more limited coverage (Mozambique, Tanzania, and especially Uganda). This is also in line with previous research on single countries showing, for example, that a sizeable share of those living in poverty does not receive support in Zambia (Gasior et al. 2021b) or that the low level of social spending in Uganda leads to a disproportionately higher share of net payers into the system than net recipients from the system (Jellema et al. 2017).

By simulating employment and earnings shocks, we show that the effectiveness of benefits to stabilize incomes and consumption is limited. This chimes with previous research on Ghana showing the lack of automatic stabilization from existing benefits (Adu-Ababio 2022). As currently designed, benefits in the five countries are not responsive to sudden changes in incomes and employment, either (for positive reasons) because the benefits are universal or (problematically) because they rely on inflexible proxy means tests and tight eligibility criteria.

Notwithstanding this overarching point, there is a subtler point to be made regarding the apparent inflexibility of the social insurance schemes. Four of the five countries do not have unemployment insurance and so the fact that people do not transition into social insurance receipt accurately reflects the policy arrangements. However, in the case of Tanzania there is unemployment insurance—the National Social Security Fund for formal workers and self-employed people, and the Public Service Social Security Fund for people working in the public sector—but transitions into social insurance are not simulated in our analysis as part of the shock and so the results will overstate the inflexibility of the social protection arrangements. Nevertheless, coverage of the various schemes is very low and fragmented, suggesting that the poverty impact is similarly low for the majority of the population.

The limited flexibility within the existing arrangements does not necessarily mean that the system cannot respond quickly to a crisis. For example, a government may opt to temporarily increase payments made to existing beneficiaries, increase the number of households eligible to receive a grant by some mechanism other than a means test, or introduce a wholly new type of social protection in the face of a crisis. But this brings with it fresh challenges. Policy responses to the COVID-19 pandemic provide examples of how policymakers may introduce

new forms of support or may vertically and horizontally increase existing support during times of crisis. However, all options require there to be functioning administrative systems in place to be able to deliver the additional support to those in need. The pandemic has furthermore revealed how a policy response in other policy dimensions can lead to adverse effects in social policy, especially when support is provided through in-kind rather than cash benefits. School closures—health-related measures—in Ghana and Zambia led to the pausing of the school feeding programmes in the two countries, putting additional pressure on vulnerable households with school-age children (Lastunen et al. 2021).

Our findings highlight the importance of being able to interrogate the social protection arrangements in a country to estimate their impact on income and consumption poverty and for different subgroups. Without such information, it is difficult to defend the existence of social protection at an aggregate level and to substantiate calls for its expansion.

We encountered a number of methodological challenges during the course of the analysis. First, it was not possible to estimate the quality of the income data, which is used much less than the consumption data in these countries. Second, comparisons between countries depend not only on comparable concepts but also on comparable capture of the social protection policies in place in each country: the inclusion of in-kind benefits has not been exhaustively achieved across the SOUTHMOD models (nor have the types of in-kind support to be captured been explicitly defined). Until the definition and simulation of in-kind support have been harmonized across the SOUTHMOD models, it is possible that some of the observed cross-country differences relating to social protection coverage may simply reflect this issue.

We undertook the analysis using a time point just prior to the onset of the COVID-19 pandemic and the subsequent war between Russia and Ukraine, both of which created economic shocks that affected countries across the world. Tax-benefit microsimulation is a valuable tool for exploring the impact not only of hypothetical shocks but also of real-time shocks as they occur. Cross-country analysis helps shed light on how the arrangements in different countries perform in protecting low-income households from such shocks and can help to facilitate cross-country policy learning.

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