



LEAVING NO ONE BEHIND: CAN TAX-FUNDED TRANSFER PROGRAMS PROVIDE INCOME FLOORS IN SUB-SAHARAN AFRICA?

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The CEQ logo is a stylized graphical representation of a Lorenz curve for a fairly unequal distribution of income (the bottom part of the C, below the diagonal) and a concentration curve for a very progressive transfer (the top part of the C).



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ABSTRACT

We use results from nine different country-based Commitment to Equity (CEQ) Assessments in sub-Saharan Africa to demonstrate the welfare impact in low- and middle-income countries of policy scenarios which (a) redirect current subsidy expenditures to direct cash transfer programs; (b) establish income floors to be funded from both current subsidy expenditure as well as from additional revenues generated through current direct and indirect tax instruments; and (c) target direct cash transfer spending to poor populations or to general populations (a "universal" transfer). Results indicate that at baseline the existing combination of taxes and transfers increases post-fiscal poverty in all countries but upper middle-income Namibia and South Africa. This result - which we call fiscal impoverishment - is most often due to the fact that the poor pay consumption taxes but receive very little in cash transfers and an exceedingly

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† PovcalNet <http://iresearch.worldbank.org/PovcalNet/povDuplicateWB.aspx>. Consulted April 5, 2019.

small share of total subsidies. Reallocating expenditures on general price subsidies to targeted transfers would yield better poverty outcomes in most countries, but a portion of the not-so-poor would then receive no transfers at all. Results also show that setting income floors equivalent to international poverty lines and funding the necessary transfers with direct taxes from individuals is often not feasible for two reasons: there is extreme reranking of individuals (from pre- to post-fiscal income) and negative post-fiscal incomes for tax-paying individuals and the tax burden on the nonpoor would be significantly higher. Scenarios establishing income floors are more likely to be feasible when the required additional funding is financed by a proportional increase in indirect taxes.

JEL Classification: H22, I38, D31

Keywords: fiscal impoverishment, fiscal policy, fiscal incidence, social spending, inequality, poverty, taxes

**Leaving No One Behind:
Can Tax-funded Transfer Programs Provide Income Floors in Sub-Saharan Africa?¹**

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I. Introduction

Sub-Saharan Africa has experienced remarkable growth since the mid-1990s. Real economic activity in the region grew 4.6 percent per year during the 20-year period between 1996 and 2016. Many countries in the region grew at a rate that exceeded 5 percent per year. The gains from greater growth in Sub-Saharan Africa were achieved not only by resource-rich countries but also by non-resource-rich low-income countries. However, while the share of the population living below the international poverty line of \$1.90 a day declined from 55 percent in 1990 to 41 percent in 2015,³ population growth alone brought the absolute number of poor people from 280 million in 1990 to 413 million in 2015. Furthermore, Sub-Saharan Africa was the only developing region that did not attain the MDG1 of halving extreme poverty by 2015.

Given that economic growth alone will take a long time to substantially reduce poverty, could countries in SSA rely on tax-funded cash transfers to provide income floors in the meantime? Leaving aside the politics of tax and subsidies reforms and the administrative challenges faced by large-scale cash transfers programs, the answer crucially depends on whether the resources required to provide an adequate income floor are “feasible.” There are two obvious sources: subsidies and taxes. In

¹ This working paper appears as chapter 9 in *No One Left Behind* edited by H. Kharas, J. W. McArthur and I. Ohno, Brookings Institution Press, forthcoming. An earlier version of this replace was presented at the conference “Leave No One Behind,” the Brookings Institution, April 15, 2019. The authors are very grateful to David Coady, Homi Kharas, Landry Signé and other participants for their invaluable comments and suggestions. We are also very grateful to Stephen Arriz and Haley Renda for excellent research assistantship. The empirical results presented in Section II come from the background document “Fiscal Policy in Africa: Welfare Impacts and Policy Effectiveness” by Alejandro de la Fuente, Jon Jellema and Nora Lustig. The authors are most grateful to the country-specific teams at the World Bank that shared data and useful inputs and for their thoughtful comments and advice. The findings, interpretations, and conclusions in this replace are entirely those of the authors. The findings do not necessarily represent the view of the World Bank Group, its Executive Directors, or the countries they represent.

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countries where subsidies (especially energy subsidies) are still common, would income floors be achievable by eliminating subsidies and reallocating the resources to cash transfers? Otherwise, how much would taxes need to be increased to finance the income floor?

In this replace, we estimate the poverty impact and the incidence of taxes of implementing alternative scenarios of income floors through cash transfers in nine Sub-Saharan African countries: Comoros, Ghana, Ivory Coast, Namibia, South Africa, Tanzania, Togo, Uganda, and Zambia. The “income floors” were defined in two ways: using the same World Bank International Poverty Line of US\$1.90 a day (in 2011 PPP)⁴ for all countries and using the World Bank Income Class International Poverty Lines which vary by countries’ income levels (Jolliffe and Prydz, 2016). Specifically, there are three income class-specific poverty lines: US\$1.90 a day for low income countries (Comoros, Tanzania, Togo and Uganda); US\$3.20 a day for lower middle-income countries (Ghana, Ivory Coast and Zambia); and, US\$5.50 a day for upper middle-income countries (Namibia and South Africa).

Although results vary by country, they are not encouraging. Providing an income floor by raising domestic taxes often imply such large increases in additional taxes that disincentives and the efficiency costs associated with them could potentially be huge. In some cases, the options are outright not feasible because taxes would have to be increased so much that a portion of individuals would be left with negative incomes.

The main source of information used in this replace are the fiscal incidence analyses housed in the CEQ Data Center on Fiscal Redistribution (CEQ Data Center).⁵ The household surveys used in the fiscal incidence studies span from 2010 to 2015.⁶ One important advantage is that these studies used the common methodological framework described in Lustig (2018) and, thus, one can make comparisons across countries with more confidence.⁷

While the choice of countries is based on data availability in the CEQ Data Center, our sample covers countries with diversity in some relevant characteristics. According to the World Bank classification system, for example, four are low-income countries (Comoros, Tanzania, Togo and Uganda), three lower middle-income countries (Ghana, Ivory Coast and Zambia), and two upper middle-income ones

⁴ This International Poverty Line is used to track progress of Goal 1, Target 1 of the Sustainable Development Goals.

⁵ The data is housed in the Commitment to Equity Institute and is available upon request except in the cases in which authors or other organizations have proprietary rights. In these cases, the request must be placed directly to the author or organization. For information, please contact Jon Jellema (jon.jellema@ceqinstitute.org). For a country-specific description of the fiscal systems and assumptions, please see Comoros (World Bank, 2017), Ghana (Younger, Osei-Assibey and Oppong, 2017); Ivory Coast (forthcoming); Namibia (Namibia Statistics Agency and World Bank, 2017); South Africa (Inchauste et al., 2017); Tanzania (Younger, Myamba and Mdadila, 2016); Togo (Jellema and Tassot, 2018); Uganda (Jellema et al., 2018); Zambia (2017).

⁶ The household surveys are: Comoros: Enquête sur L’emploi, le Secteur Informel et la Consommation des Ménages aux Comores (2014); Ghana: Living Standards Survey (2012/13); Ivory Coast: Enquête sur le Niveau de Vie des Ménages (2015); Namibia Household Income and Expenditure Survey (2009-2010); South Africa: Income and Expenditure Survey (2010/2011); Tanzania: Household Budget Survey (2011/12); Togo: Questionnaire des Indicateurs de Base du Bien-être (2015); Uganda: National Household Survey (2012-2013); and, Zambia: Living Conditions Monitoring Survey (2015). Except for South Africa’s household survey which reports on incomes and expenditures, the rest of the countries’ surveys report consumption. Whether income or consumption, the welfare measure includes consumption of own production (except for South Africa) and imputed rent for owner’s occupied housing (except for Tanzania).

⁷ For details, see chapters 1, 4, 6 and 8 in Lustig (2018).

(Namibia and South Africa). Comoros, Uganda, and Tanzania are in East Africa; Zambia, South Africa, and Namibia in Southern Africa; and Ghana, Ivory Coast and Togo in West Africa. The nine countries also feature distinct welfare systems. In particular, government spending on cash transfers programs as a percent of prefiscal income ranges from zero or almost zero (Comoros, Ivory Coast, Togo and Uganda); above .1% but less than .5% (Ghana, Tanzania and Zambia); to levels of spending comparable to advanced OECD countries in Namibia and South Africa (4.3% and 6%, respectively). Except for Namibia and South Africa, subsidies (in particular, energy subsidies) represent between 70-100% of government spending in the combined category of transfers and subsidies (Table 1). Note that the size of taxes and transfers with respect to prefiscal income shown in Table 1 is calculated as the ratio of taxes and transfers included in the fiscal incidence analysis to the prefiscal incomes in the household surveys and, thus, will not equal the ratio of taxes and transfers to GDP calculated from administrative data, except by chance.

Table 1. Gross National Income Per Capita, Population and the Size of Taxes and Transfers⁸

Country	Characteristics					Taxes, transfers and subsidies as a share of prefiscal income								
	Development category (2018)	Year of Survey	GNI/capita (2011 ppp)	GNI/capita growth 2013-2017	Population	Direct taxes	Indirect taxes	Total taxes	Indirect taxes as a share of Total Taxes	Direct transfers	Indirect subsidies	Total transfers plus subsidies	Subsidies as a share of Total Transfers	Total transfers plus subsidies as a share of total taxes
Comoros	LI	2014	2,529	0.3%	747,155	1.26%	2.20%	3.46%	63.6%	0.00%	0.00%	0.00%	0%	0.0%
Ghana	LMI	2013	3,724	2.6%	26,347,424	4.55%	6.31%	10.86%	58.1%	0.16%	2.13%	2.28%	93%	21.0%
Ivory Coast	LMI	2015	3,142	5.8%	23,110,501	1.08%	4.22%	5.30%	79.6%	0.00%	0.48%	0.48%	100%	9.1%
Namibia	UMI	2010	8,139	1.8%	2,059,840	7.74%	6.73%	14.47%	46.5%	4.29%	0.85%	5.15%	17%	35.6%
South Africa	UMI	2010	11,639	0.1%	50,423,022	19.54%	13.70%	33.23%	41.2%	5.94%	0.91%	6.84%	13%	20.6%
Tanzania	LI	2011	2,169	3.9%	42,270,137	4.33%	6.69%	11.03%	60.7%	0.42%	1.08%	1.50%	72%	13.6%
Togo	LI	2015	1,520	3.4%	7,008,900	0.94%	12.08%	13.02%	92.8%	0.00%	0.20%	0.20%	100%	1.5%
Uganda	LI	2012	1,576	1.0%	32,250,627	2.68%	2.03%	4.71%	43.2%	0.09%	0.26%	0.35%	73%	7.5%
Zambia	LMI	2015	NA	NA	15,403,570	0.70%	6.60%	7.31%	90.4%	0.28%	1.81%	2.09%	87%	28.6%
Average (except for population)			4,305	2.4%	199,621,177	4.76%	6.73%	11.49%	64.01%	1.24%	0.86%	2.10%	41%	15.3%

Source: Source: Comoros (Belghith et al., 2017); Ghana (Younger, Osei-Assibey and Oppong, 2016); Ivory Coast (Tassot and Jellema, 2019); Namibia (Sulla, Zikhali and Jellema, 2016); South Africa (Inchauste et al., 2017); Tanzania (Younger, Myamba and Mdadila, 2016); Togo (Tassot and Jellema, 2018); Uganda (Jellema et al., 2016); Zambia (de la Fuente, Jellema and Rosales, 2018); GNI and population: WDI (URL: <https://data.worldbank.org/indicator/SI.POV.NAHC>).

Note: Taxes and transfers are shown as a share of prefiscal income (Market Income plus Pensions).

The replace is organized as follows. Section II presents the impact on poverty of the current fiscal systems. Section III presents results of alternative simulated policy scenarios. Section IV concludes.

II. Taxes, Transfers and Poverty under the Current Fiscal Systems

Measuring the Impact of Taxes and Transfers on Inequality and Poverty: Methodology

The results presented in this section are based on de la Fuente, Jellema and Lustig (2018) which uses

⁸ As explained in the text, the size of taxes and transfers come from the fiscal incidence exercise and not from the country's fiscal administrative accounts.

as inputs the fiscal incidence analyses cited in Table 1. Applying what is known in the literature as the “accounting approach,” these fiscal incidence studies estimate how the burden of taxes and the benefits of transfers and subsidies are distributed among individuals. The studies provide estimates of the impact of the fiscal system on poverty and inequality via the calculation of prefiscal and postfiscal income concepts.

The prefiscal income concept used here is equal to earnings and income from capital,⁹ plus private transfers, plus pensions from contributory systems.¹⁰ Income from noncontributory pensions (also known as social pensions), in contrast, is treated as a government transfer. The postfiscal income is *consumable income*.¹¹ Starting from prefiscal income, the latter is constructed by adding direct cash transfers (conditional and unconditional; pure cash or near-cash transfers) and subsidies (electricity, food, fuel, etc.) and subtracting direct (payroll taxes, personal income taxes, etc.) and indirect taxes (VAT, excise taxes, sales taxes, etc.).¹² Once prefiscal and consumable incomes are available for each individual, we proceed to estimate the inequality and poverty indicators and compare them.¹³

The fiscal incidence studies used here are point-in-time rather than lifecycle and do not incorporate behavioral or general equilibrium effects. That is, we do not claim that the prefiscal income reported here equals the true counterfactual income in the absence of taxes and transfers. It is a first-order approximation (and in a variety of settings a first-order approximation is all one may need).¹⁴ Moreover, although public spending on, for example, education, health and infrastructure has an inherent investment element that is likely to affect long-run inequality and poverty dynamics, the typical fiscal incidence analysis does not capture these dynamic effects.

Despite being a standard incidence analysis that does not incorporate second-round or general equilibrium effects, the analysis is not a mechanically applied accounting exercise. We analyze the incidence of taxes by their economic rather than their statutory incidence and take into account tax evasion. Typically, individuals who do not report being registered in the social security administration are assumed not to pay personal income and payroll taxes. In the case of consumption taxes, for purchases from informal sellers it is assumed that no consumption taxes are paid (at least, directly at

⁹ Incomes from capital tend to be grossly underreported in household surveys. In particular, they do not include undistributed profits, for example.

¹⁰ In other words, income from old-age pensions in contributory systems is considered part of prefiscal income (contributions are treated as a form of forced savings) and not treated as a government transfer. The rationale behind this assumption is discussed in Lustig and Higgins (2018) (chapter 1 of Lustig, 2018). For some of the nine countries, the scenario with contributory pensions treated as government transfers is available upon request.

¹¹ Note that this welfare variable is different from what international databases such as the World Bank’s PovCal report. The inequality and poverty indicators in international databases are (primarily) for *disposable income*; that is, they *never* include the effect of indirect taxes or subsidies on measured inequality and poverty.

¹² Our analysis does not use the concept *final income* because it focuses on the cash portion of the fiscal system. Results including *final income* and the progressivity of education and health spending can be found in de la Fuente, Jellema and Lustig (op. cit.).

¹³ In Section III, we also present results for the impact on poverty under alternative simulation scenarios with the *gross income* concept which equals prefiscal income plus cash transfers (and before any taxes).

¹⁴ Coady and others, for instance, state, “The first order estimate is much easier to calculate, provides a bound on the real-income effect, and is likely to closely approximate a more sophisticated estimate. Finally, since one expects that short-run substitution elasticities are smaller than long-run elasticities, the first-order estimate will be a better approximation of the short-run welfare impact” (Coady and others, 2006, p. 9).

the time of purchase although the price of the good may carry the effect of taxes on inputs). If there is no information on the place of purchase, some studies assume that households in rural areas do not pay consumption taxes. We assume that payroll taxes and contributions (both by employee and employer) in the formal sector are borne by labor and that consumption taxes (and subsidies) are fully shifted forward to consumers. This is equivalent to assuming that the supply of labor and demand for goods and services are perfectly inelastic.¹⁵ In all but the case of Uganda, the fiscal incidence analyses incorporated the indirect effects of subsidies (and indirect taxes).¹⁶ The indirect effects work their way when the subsidized (taxed) good is used as an input in the production of other goods. For example, fuel subsidies have a direct benefit to consumers when they buy gasoline or kerosene and an indirect benefit in the form of lower transport prices.

Measuring the Impact of Taxes and Transfers on Inequality and Poverty: Results

What is the impact of the current fiscal system on poverty?¹⁷ The effect of fiscal policy on poverty can be measured using the typical indicators such as the headcount ratio for prefiscal and postfiscal (consumable) income. Another measure that one can use to assess the impact of fiscal policy on the poor is the extent to which the prefiscal poor end up being net payers to the fiscal system in cash terms (leaving out in-kind services). A third measure is that of Fiscal Impoverishment proposed by Higgins and Lustig (2016). Fiscal Impoverishment measures the extent to which fiscal policy makes the poor (non-poor) poorer (poor) or, in particular, the proportion of impoverished as a share of the total population.¹⁸

As shown in Table 2 (panel a), with the exception of Namibia and South Africa, the combined effect of the existing system of taxes (direct and indirect) and transfers (direct cash and near-cash transfers and subsidies) increases the postfiscal poverty headcount rate or leaves it unchanged even measured with the extreme international poverty line of US\$1.90 a day.¹⁹ Note that the increase in poverty occurs

¹⁵The economic incidence, strictly speaking, depends on the elasticity of demand and/or supply of a factor or a good, and the ensuing general equilibrium effects. In essence, the accounting approach implicitly assumes zero demand price and labor supply elasticities, and zero elasticities of substitution among inputs, which may not be far-fetched assumptions for analyzing effects in the short-run, especially when changes are small.

¹⁶ Comoros has no subsidies. The following countries in our sample include the indirect effects: Ghana: indirect effects for VAT and electricity subsidies; Ivory Coast: indirect effects for indirect taxes and electricity; the subsidies are allocated to households based on their share of electricity consumption as a proportion of total consumption of electricity; Namibia: indirect effects for taxes and subsidies are estimated using the Input-Output method (Jellema and Inchauste, 2018); South Africa: indirect effects for taxes and subsidies are estimated using the Input-Output method; Tanzania: indirect effects for petroleum and import duties but no indirect effects for value added tax or subsidies; Togo: indirect effects for indirect taxes and electricity subsidies; the subsidies are allocated to households based on their share of electricity consumption as a proportion of total consumption of electricity; Zambia: indirect effects for taxes and subsidies are estimated using the Input-Output method.

¹⁷ By “current” we mean the fiscal system that prevailed in the year of the household survey.

¹⁸ As shown by Higgins and Lustig (op. cit.), who were the first to propose a formal measure of fiscal impoverishment, there are several indicators of Fiscal Impoverishment that fulfill the basic desirable axioms of a poverty measure. In this replace, we use the proportion of impoverished as a share of the total population.

¹⁹ The SDG 1 uses the \$1.25 per day measured in 2005 purchasing power parity international poverty line which is equivalent to the \$1.90 per day 2011 purchasing power parity international poverty line. The latter formally replaced the \$1.25 poverty line in October 2015. See <http://www.worldbank.org/en/topic/poverty/brief/global-poverty-line-faq>.

despite the fact that inequality falls, which emphasizes the fact that the impact of fiscal policy on inequality and poverty should be studied separately. Moreover, the extent of Fiscal Impoverishment exceeds 20 percent in five (of the nine) countries and is above 40 percent in Tanzania, Togo and Zambia. Even in countries where the poverty headcount rate falls as in Namibia, Fiscal Impoverishment reaches more than 10 percent of the total population. As shown in panel (b) of Table 2, with country-specific poverty lines the postfiscal headcount ratio is higher for all countries and the squared poverty gap is higher for all but Namibia, South Africa and Uganda. In no country the Fiscal Impoverishment ratio is lower than 10 percent and it is higher than 40 percent in Ivory Coast, Namibia, Tanzania, Togo and Zambia.

Another indicator of the impact of taxes and transfers on living standards is their incidence. Figure 1 shows the extent to which, on average, individuals in the decile (from poorest to richest ten percent in horizontal axis) are net receivers (blue-shaded bars) or net payers (orange-shaded bars). Net receivers (net payers) are those individuals for whom the postfiscal income is higher (lower) than their respective prefiscal income; in other words, individuals for whom what they pay in taxes is lower (higher) than what they receive in transfers and subsidies. With the exception of Namibia and South Africa (and to a much lesser degree, Uganda and Zambia), the entire population—including the poor—are, on average, net payers into the system.

Table 2. Baseline: Fiscal Policy's Impact on Poverty and Fiscal Impoverishment
Panel (a) \$1.90 a day International Poverty Line

Country	Survey year	Baseline Market income plus pensions (prefiscal)			Baseline Consumable income (postfiscal)					
		Headcount	Squared poverty gap	Gini	Headcount	Squared poverty gap	Gini	Fiscal Impoverishment Headcount		
Comoros	2014	13.6%	1.6%	0.44	14.1% +	1.7% +	0.43 -	13.8%		
Ghana	2013	10.5%	1.4%	0.44	11.9% +	1.5% +	0.42 -	9.6%		
Ivory Coast	2015	21.2%	2.9%	0.40	22.9% +	3.2% +	0.40 =	21.7%		
Namibia	2010	30.4%	7.5%	0.65	26.2% -	3.3% -	0.60 -	15.7%		
South Africa	2010	30.4%	13.8%	0.72	19.6% -	2.6% -	0.63 -	3.9%		
Tanzania	2011	49.6%	6.6%	0.38	53.5% +	7.4% +	0.35 -	50.0%		
Togo	2015	35.6%	5.9%	0.40	41.4% +	7.3% +	0.39 -	41.8%		
Uganda	2012	37.3%	5.0%	0.44	38.1% +	5.0% =	0.42 -	29.2%		
Zambia	2015	57.0%	18.2%	0.56	58.1% +	18.4% =	0.55 -	46.5%		

Panel (b) Country-specific International Poverty Lines

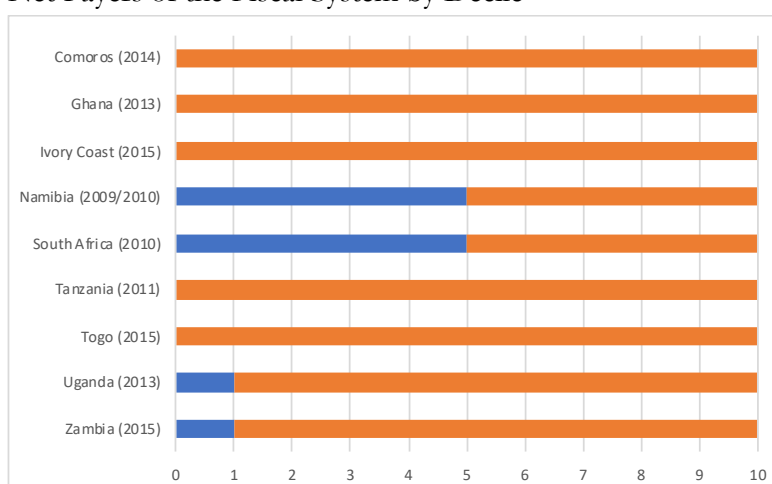
Country	Survey year	Baseline Market income plus pensions (prefiscal)			Baseline Consumable income (postfiscal)					
		Headcount	Squared poverty gap	Gini	Headcount	Squared poverty gap	Gini	Fiscal Impoverishment Headcount		
Comoros	2014	13.6%	1.6%	0.44	14.1% +	1.7% +	0.43 -	13.8%		
Ghana	2013	29.8%	4.7%	0.44	32.2% +	5.2% +	0.42 -	27.6%		
Ivory Coast	2015	50.6%	9.4%	0.40	52.7% +	10.0% +	0.40 =	50.8%		
Namibia	2010	68.3%	27.3%	0.65	70.3% +	24.0% -	0.60 -	46.1%		
South Africa	2010	57.9%	27.6%	0.72	59.9% +	18.9% -	0.63 -	19.7%		
Tanzania	2011	49.6%	6.6%	0.38	53.5% +	7.4% +	0.35 -	50.0%		
Togo	2015	35.6%	5.9%	0.40	41.4% +	7.3% +	0.39 -	41.8%		
Uganda	2012	37.3%	5.0%	0.44	38.1% +	5.0% =	0.42 -	29.2%		
Zambia	2015	74.5%	30.8%	0.56	76.1% +	31.4% +	0.55 -	63.0%		

Source: de la Fuente, Jellema and Lustig (2018) based on Comoros (Belghith et al., 2017); Ghana (Younger, Osei-Assibey and Oppong, 2016); Ivory Coast (Tassot and Jellema, 2019); Namibia (Sulla, Zikhali and Jellema, 2016); South Africa (Inchauste et al., 2016); Tanzania (Younger, Myamba and Mdadila, 2016); Togo (Tassot and Jellema, 2018); Uganda (Jellema et al., 2016); and, Zambia (de la Fuente, Jellema and Rosales, 2018).

Notes:

1. For panel (b): Comoros, Tanzania, Togo and Uganda: \$1.90 a day international poverty line. Ghana, Ivory Coast and Zambia: \$3.20 a day country-specific international poverty line. Namibia and South Africa: \$5.50 a day country-specific international poverty line.
2. Fiscal Impoverishment or FI is measured as the number of prefiscal poor (nonpoor) who are made poorer (poor) by fiscal policy (i.e., the existing combination of taxes, transfers and subsidies) as a share of the total population.

Figure 1. Baseline: Net Payers of the Fiscal System by Decile

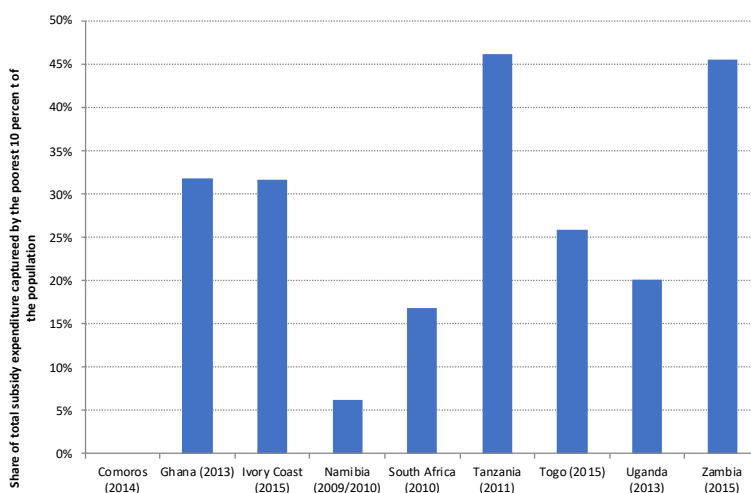


Source: de la Fuente, Jellema and Lustig (2018) based on Comoros (Belghith et al., 2017); Ghana (Younger, Osei-Assibey and Oppong, 2016); Ivory Coast (Tassot and Jellema, 2019); Namibia (Sulla, Zikhali and Jellema, 2016); South Africa (Inchauste et al., 2017); Tanzania (Younger, Myamba and

Mdadila, 2016); Togo (Tassot and Jellema, 2018); Uganda (Jellema et al., 2016); and, Zambia (de la Fuente, Jellema and Rosales, 2018).

In principle, it would be desirable for the poor—especially the extreme poor—to be net receivers of fiscal resources in cash so that poor individuals can buy/consume the minimum amounts of food and other essential goods embedded in the selected poverty line. As discussed in de la Fuente, Jellema and Lustig (op. cit.), the proximate causes for fiscal impoverishment in our sample of countries is the reliance on indirect taxes as the main channel to collect revenues combined with the fact that a very large portion of the resources (70 percent or more in 6 of our 9 countries) is spent on general price subsidies (especially on energy subsidies) rather than on transfers (see Table 1). Excise taxes, VAT and other indirect taxes affect every individual—rich or poor—consuming goods or services, some of which will carry an explicit or implicit indirect tax charge. “As the ratio of consumption to income tends to be higher for poor households, indirect taxes – when measured as a share of own income – often weigh more heavily on the poor even while in absolute terms richer households bear a greater burden from indirect taxes. For households living at or near the poverty line, the reduction in purchasing power (over real goods and services) from indirect taxes can drive their real expenditure levels below the poverty line.” (de la Fuente, Jellema and Lustig, op. cit.). On the spending side, as shown by Coady, Flamini and Sears (2015), a very large share of benefits from price subsidies in general goes to high-income households. In our sample, in 7 of 9 countries, the richest 10 percent of individuals capture a share of subsidy expenditures that is higher than 10 percent (Figure 2).²⁰

Figure 2. Baseline: Concentration Share of Subsidies in the Richest 10%



²⁰ It is also the case that in all countries but Namibia, 80 percent or more of tax revenues is allocated to other spending categories (different from transfers or subsidies). The latter include spending on education, health and infrastructure as well as public goods. Leaving aside corruption, high wages for bureaucrats and waste, this type of spending should carry (at least some) benefits to the poor in the form of access to services and/or higher economic growth. However, the question is whether the extreme poor (especially those below the international poverty line of \$1.90 a day) should have to (implicitly) pay for these benefits given that, by definition, they do not have enough money to cover their basic needs.

Source: de la Fuente, Jellema and Lustig (2018) based on Comoros (Belghith et al., 2017); Ghana (Younger, Osei-Assibey and Oppong, 2016); Ivory Coast (Tassot and Jellema, 2019); Namibia (Sulla, Zikhali and Jellema, 2016); South Africa (Inchauste et al., 2017); Tanzania (Younger, Myamba and Mdadila, 2016); Togo (Tassot and Jellema, 2018); Uganda (Jellema et al., 2016); and, Zambia (de la Fuente, Jellema and Rosales, 2018).

III. Poverty and Tax Burden under Alternative Policy Scenarios

Measuring the Impact of Changing the Size, Targeting and Coverage of Cash Transfers Under Alternative Financing Scenarios: Methodology

In this section, we estimate the poverty impact and the incidence of taxes of implementing alternative scenarios for increasing cash transfer spending in Comoros, Ghana, Ivory Coast, Namibia, South Africa, Tanzania, Togo, Uganda, and Zambia. Specifically, we simulate the first-round effects on poverty and the incidence of taxes that result from changing the existing cash transfers system (called the baseline scenario) by alternative budget-neutral “policy” scenarios in which the size, targeting and/or coverage of the transfers is changed.²¹ By budget-neutral we mean that if the scenario entails an increase in spending, we allow taxes to increase so that the financing gap is closed. In all simulated scenarios, we assume that current subsidy spending is eliminated, and the saved resources are used to increase the budget available for cash transfers. In other words, we assume that the first source of financing the transfer to attain the corresponding income floor is the elimination of price subsidies. How should one define sensible transfer magnitudes? If we wish to provide an income floor equivalent to poverty-line expenditure, should one use the same poverty line for all countries or country-specific international poverty lines?²² Since there can be arguments in favor of both, here we produce poverty results for the baseline and the simulated scenarios using the World Bank International Poverty Line of US\$1.90 a day (in 2011 PPP)²³ and the World Bank Income Class International Poverty Lines which vary by countries’ income levels since in richer countries higher international poverty lines are more appropriate. As described by Jolliffe and Prydz (2016), each income class-specific poverty line is chosen as the median of the national poverty lines of the countries in that income class. Specifically, there are three income class-specific poverty lines: US\$1.90 a day for low income countries (Comoros, Tanzania, Togo and Uganda); US\$3.20 a day for lower middle-

²¹ The cash transfers programs included in the baseline cover noncontributory programs only: that is, means-tested conditional and unconditional cash transfers, cash transfers based on categorical targeting (e.g., people with disabilities), and noncontributory pensions. The programs included in our baseline analysis by country are available upon request.

²² These country-specific international poverty lines should not be confused with national extreme or moderate poverty lines.

²³ Goal 1, Target 1 of the Sustainable Development Goals (SDG) specifies: “By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day.” <https://sustainabledevelopment.un.org/topics/povertyeradication> The \$1.25 poverty line was calculated using the purchasing power parity conversion factors for 2005. In October 2015, however, the official international poverty line to track SDG progress was changed to \$1.90 a day, which was calculated using the 2011 purchasing power parity conversion factors. See <http://www.worldbank.org/en/topic/poverty/brief/global-poverty-line-faq>.

income countries (Ghana, Ivory Coast and Zambia); and, US\$5.50 a day for upper middle-income countries (Namibia and South Africa).

Our scenarios first consider a *spending-neutral*²⁴ reallocation of current expenditures on transfers and subsidies. We generate these scenarios to demonstrate how much is lost in terms of fiscally-induced poverty reduction when spending on transfers is shifted from targeted to universal schemes. The spending-neutral scenario is also useful to estimate how much is gained in terms of fiscally-induced poverty reduction if current spending on subsidies is reallocated to universal cash transfers. In particular, we are able to determine how much poverty remains even after such a significant shift in expenditures in countries that start out with significant resources devoted to consumption subsidies. The second set of scenarios generates and allocates transfers that are (roughly) equivalent to the average poverty gap and the third set generates and allocates transfers that are equivalent to poverty line expenditure.

For each of the spending-neutral, poverty gap, and poverty-line scenarios, we generate two different coverage levels:

- *Perfectly-targeted*: total resources are allocated first among the poor in lexicographic order (starting from the poorest). When available resources are capped (as in the spending-neutral scenario), transfers are allocated first to the very poorest individual until her income is equivalent to the next-poorest individual; then to those two individuals until their individual incomes are equivalent to the third-poorest individual; then to those three individuals until their individual incomes are equivalent to the fourth-poorest individual; and so on until available resources are exhausted. In the targeted poverty gap scenario, each poor individual receives a transfer equivalent to her actual poverty gap²⁵ and in the targeted poverty line scenario, each poor individual receives a transfer equivalent to the corresponding poverty line.
- *Universal*, in which we divide total resources by total population and give each individual this average in the form of a universal basic income (UBI).

Whenever the spending-neutral reform does not provide enough additional expenditure for the coverage target – that is, when government spending on simulated transfers is higher than current spending on transfers and subsidies – we simulate the effect of the required increase in taxes necessary to provide funding for the additional transfer spending. We consider two types of tax increases: a proportional increase in direct taxes and a proportional increase in indirect taxes. Table 3 summarizes these 10 scenarios and their characteristics.²⁶

Larger transfers with higher coverage level imply a greater increase in expenditure and therefore a greater increase in additional taxes to fund that expenditure. The most expensive scenario – providing a poverty-line transfer to everyone (scenario 10 in Table 3 below) – is clearly infeasible for most fiscal systems while implying overall burdens from taxes that are incompatible with most reasonable estimates of labor market and consumption behavior. We chose to include Scenario 10 anyway as it

²⁴ In order to simplify the analysis, we have assumed current program-specific expenditures can be transformed costlessly into other program-specific expenditures.

²⁵ In perfectly-targeted, spending-neutral and poverty gap scenarios, the covered population receive non-uniform transfers such that the post-transfer income in the covered population is uniform.

²⁶ Details on the methodological assumptions are available upon request.

allows us to demonstrate the impossibility (in practical terms) of implementing a Universal Basic Income (UBI) strategy in the set of middle- and lower-income countries we have analyzed here.²⁷

Table 3. Policy Scenarios: A Summary

Scenario	Transfer System	Budget	Source of additional financing*	Eligibility rules	Average transfer per beneficiary	Allocation rule	
1	Spending Neutral	Targeted	Total direct transfers and subsidies in current system	Not applicable	Anybody with prefiscal income below the selected poverty line (International \$1.90 or International Country-specific)	Total spending on cash transfers and subsidies in baseline divided by the sum of individuals reached by the allocation rule	Allocation proceeds lexicographically as follows: starting with the poorest individual, she or he receives a transfer until her/his income equals the income of the second poorest individual; then the poorest and second poorest individuals receive transfers until their incomes are equal to the income of the third poorest individual, and so on. This procedure is repeated until resources are exhausted
2		Universal					
3	Poverty Gap	Targeted	Total poverty gap	Direct Taxes	Anybody with prefiscal income below the selected poverty line (International \$1.90 or International Country-specific)	Average poverty gap	Allocated to individuals below the selected poverty line in the amount necessary to close each individual's poverty gap
4				Indirect Taxes			
5		Universal	Average poverty gap times total population	Direct Taxes	Total population		Allocated to every individual
6				Indirect Taxes			
7	Poverty Line	Targeted	Selected poverty line times the number of individuals with prefiscal income below the selected poverty line	Direct Taxes	Anybody with prefiscal income below the selected poverty line (International \$1.90 or International Country-specific)	International \$1.90 poverty line and International Country-specific poverty line	Allocated to individuals below the selected poverty line
8				Indirect Taxes			
9		Universal	Selected poverty line times total population	Direct Taxes	Total population		Allocated to every individual
10	Indirect Taxes						

Note: The budget available in scenarios 1 and 2 is also available in scenarios 3 to 10, therefore only scenarios 3 to 10 require additional financing.

As discussed above, in order to capture the impact on living standards after considering the financing mechanisms, the relevant postfiscal welfare variable is per capita *consumable income*. To assess whether a scenario is welfare-increasing or welfare-reducing, we calculate the change in poverty measured with *consumable income* vis-à-vis prefiscal income for each of the ten transfers-cum-financing scenarios. We then proceed to compare these changes with the analogous change in poverty observed in the baseline scenario.

In our simulations, we estimate the effect on poverty using two poverty measures: the poverty headcount and the squared poverty gap. In this replace, we show results for the latter but the former are available upon request. There is a clear rationale in using these two measures: the poverty headcount is widely used in policy circles but fails to capture the impact of poverty reforms among the extreme poor. To give an example, assume that direct transfers are covering well the extreme poor, but less well households whose income or consumption lies close to the poverty line (which is the

²⁷ See, for example, Acemoglu (2019) and references therein for a current summary of the debate surrounding UBI strategies.

case, for instance, in South Africa). As shown in Rigolini et al. (forthcoming), “a spending-neutral UBI reform may show greater poverty reduction when measured with the poverty headcount index (because with the UBI all households close to the poverty line would now receive a transfer – and hence “jump” over the poverty line); but the reform would come at the expense of higher extreme poverty, because the budget would be “taken away” from the extreme poor to be redistributed among a greater number of people. The squared poverty gap measure, by giving a greater weight to the welfare of the extreme poor, would capture such an increase in extreme poverty.”

As indicated above, we produce the policy simulations using the \$1.90 per day international poverty line and country-specific international poverty lines that change depending on the development category assigned by the World Bank’s classification system.

To recapitulate, our simulations consist of replacing the baseline spending on cash transfer programs and consumption subsidies with the ten simulated policy scenarios described above and summarized in Table 3. These policy scenarios, however, should not be interpreted as normative country-specific proposals. Our intention is to explore the implications on poverty if existing resources were better targeted and the implications on the burden of taxes if we wanted to raise more resources to provide an income floor for the poor or across the board (as in a UBI program). In addition, as indicated from the start, these simulations contemplate first-order effects only. In particular, we keep the prefiscal incomes unchanged and equal to the baseline. In reality, any policy changes of the type simulated here would bring large behavioral responses and general equilibrium effects and, thus, prefiscal incomes would be very different from the baseline. One of the key points of this hypothetical exercise is, in fact, to show that these nonmarginal changes could potentially result in such large work disincentive effects and efficiency costs that they cannot be considered as part of the economically feasible set of policy options (not to mention their political unfeasibility).

Measuring the Impact of Changing the Size, Targeting and Coverage of Cash Transfers Under Alternative Financing Scenarios: Results

To start, let’s compare the average transfer to the poor and the coverage of the poor population under the alternative scenarios.²⁸ These are shown in Table 4. As expected, if subsidies are replaced by transfers in full, under the *spending-neutral scenario* when resources are targeted to the poor and allocated in a lexicographic order starting with the poorest until resources are exhausted, the average spending per poor person is higher than in the baseline but the coverage is significantly lower. If instead of targeting the resources to the poor, the baseline spending on transfers and subsidies is divided by the entire population (a UBI), the average transfer is, of course, lower than when resources are targeted but at the same time the average transfer is higher than the baseline’s in all but Namibia and South Africa where spending on subsidies is relatively small (compared to transfers, that is). By definition, the average transfer in the *poverty gap scenario* will tend to be higher than in the baseline. In the *poverty line scenario*, it will be higher than in the baseline and the *poverty gap scenario*. By construction, the average transfer under the targeted and the universal scenarios are identical. The average transfer equals the

²⁸ Table 4 includes the spending scenarios only because the size and coverage of transfers is not affected by how the financing gap is funded (e.g., by direct or indirect taxes).

average poverty gap in the poverty gap scenario and the \$1.90 per day international poverty line (panel a) and the country-specific international poverty lines in the poverty line scenario (panel b).

Table 4. Average Transfer and Coverage of the Poor under the Six Alternative Spending Scenarios
Panel (a) \$1.90 a day International Poverty Line

Country	Baseline		Spending Neutral			Poverty Gap		Poverty Line	
	Per poor person	Coverage of the poor	Perfect targeting		Universal Per capita	Perfect targeting Average per poor person	Universal Per capita	Targeted Per poor person	Universal Per capita
			Per beneficiary	Coverage of the poor					
Comoros	-	-	-	-	-	\$ 0.55	\$ 0.55	\$ 1.90	\$ 1.90
Ghana	\$ 0.05	65%	\$ 0.56	100%	\$ 0.16	\$ 0.56	\$ 0.56	\$ 1.90	\$ 1.90
Ivory Coast	\$ 0.01	36%	\$ 0.37	26%	\$ 0.02	\$ 0.58	\$ 0.58	\$ 1.90	\$ 1.90
Namibia	\$ 0.67	83%	\$ 0.78	100%	\$ 0.40	\$ 0.78	\$ 0.78	\$ 1.90	\$ 1.90
South Africa	\$ 1.55	98%	\$ 1.12	100%	\$ 0.97	\$ 1.12	\$ 1.12	\$ 1.90	\$ 1.90
Tanzania	\$ 0.02	78%	\$ 0.29	27%	\$ 0.04	\$ 0.60	\$ 0.60	\$ 1.90	\$ 1.90
Togo	\$ 0.00	45%	\$ 0.27	7%	\$ 0.01	\$ 0.64	\$ 0.64	\$ 1.90	\$ 1.90
Uganda	\$ 0.01	52%	\$ 0.27	12%	\$ 0.01	\$ 0.58	\$ 0.58	\$ 1.90	\$ 1.90
Zambia	\$ 0.03	100%	\$ 0.29	38%	\$ 0.06	\$ 0.96	\$ 0.96	\$ 1.90	\$ 1.90

Panel (b) Country-specific International Poverty Lines

Country	Baseline		Spending Neutral			Poverty Gap		Poverty Line	
	Per poor person	Coverage of the poor	Perfect targeting		Universal Per capita	Perfect targeting Average per poor person	Universal Per capita	Targeted Per poor person	Universal Per capita
			Per beneficiary	Coverage of the poor					
Comoros	-	-	-	-	-	\$ 0.55	\$ 0.55	\$ 1.90	\$ 1.90
Ghana	\$ 0.06	68%	\$ 0.90	59%	\$ 0.16	\$ 1.07	\$ 1.07	\$ 3.20	\$ 3.20
Ivory Coast	\$ 0.01	44%	\$ 0.37	11%	\$ 0.02	\$ 1.18	\$ 1.18	\$ 3.20	\$ 3.20
Namibia	\$ 0.47	75%	\$ 1.05	55%	\$ 0.40	\$ 3.21	\$ 3.21	\$ 5.50	\$ 5.50
South Africa	\$ 1.25	96%	\$ 2.13	79%	\$ 0.97	\$ 3.46	\$ 3.46	\$ 5.50	\$ 5.50
Tanzania	\$ 0.02	78%	\$ 0.29	27%	\$ 0.04	\$ 0.60	\$ 0.60	\$ 1.90	\$ 1.90
Togo	\$ 0.00	45%	\$ 0.27	7%	\$ 0.01	\$ 0.64	\$ 0.64	\$ 1.90	\$ 1.90
Uganda	\$ 0.01	52%	\$ 0.27	12%	\$ 0.01	\$ 0.58	\$ 0.58	\$ 1.90	\$ 1.90
Zambia	\$ 0.04	100%	\$ 0.29	29%	\$ 0.06	\$ 1.90	\$ 1.90	\$ 3.20	\$ 3.20

Source: Authors' calculations based on Comoros (Belghith et al., 2017); Ghana (Younger, Osei-Assibey and Oppong, 2016); Ivory Coast (Tassot and Jellema, 2019); Namibia (Sulla, Zikhali and Jellema, 2016); South Africa (Inchauste et al., 2017); Tanzania (Younger, Myamba and Mdadila, 2016); Togo (Tassot and Jellema, 2018); Uganda (Jellema et al., 2016); Zambia (de la Fuente, Jellema and Rosales, 2018).

Notes:

1. In the perfect targeting spending neutral scenario total spending is distributed among the poor starting with the poorest until resources are exhausted.
2. In the perfect targeting poverty gap scenario each poor person receives in transfers enough to close her/his poverty gap.
3. Comoros does not have transfers or subsidies and hence average transfer per poor person and coverage of the poor are zero in the baseline.

4. For panel (b): Comoros, Tanzania, Togo and Uganda: \$1.90 a day international poverty line. Ghana, Ivory Coast and Zambia: \$3.20 a day country-specific international poverty line. Namibia and South Africa: \$5.50 a day country-specific international poverty line.

What is the impact of the alternative policy scenarios on poverty? Because the headcount ratio is very sensitive to movements of individuals (into or out of poverty) around the poverty line, let's focus on the impact on the squared poverty gap, an indicator that is more sensitive to the reduction in poverty the poorer individuals are and, thus, more in line with our concern in providing an income floor.²⁹ Tables 5 and 6 show the impact on the squared poverty gap for the baseline and the ten policy scenarios with the \$1.90 international poverty line and the country-specific international poverty lines, respectively. In *Panel a*, we show the change (in percent) between the squared poverty gap measured with *gross income* (prefiscal income plus transfers) and the squared poverty gap measured with prefiscal income. By definition, results in *Panel a* do not include the effect of the additional taxes needed to make the proposed change budget neutral. *Panels b* and *c* show the change between the squared poverty gap measured with *consumable income* (which includes the impact of direct and indirect taxes) and the squared poverty gap measured with prefiscal income. The results shown in *Panel b* (*Panel c*) are calculated assuming that the financing gap is fully funded with a proportional increase in direct (indirect) taxes: that is, everybody's direct (indirect) taxes are increased in the same proportion.

²⁹ Results using the headcount ratio are available upon request.

Table 5. Change in Prefiscal to Postfiscal Squared Poverty Gap for Alternative Policy Scenarios (\$1.90 a day International Poverty Line)

Panel a: Gross income							
Country	Baseline	Spending Neutral		Poverty Gap		Poverty Line	
		Perfect targeting	Universal	Perfect targeting	Universal	Targeted	Universal
Comoros	-	-	-	-100%	-84%	-100%	-100%
Ghana	-7%	-100%	-33%	-100%	-81%	-100%	-100%
Ivory Coast	0%	-39%	-5%	-100%	-81%	-100%	-100%
Namibia	-62%	-100%	-53%	-100%	-81%	-100%	-100%
South Africa	-91%	-100%	-83%	-100%	-88%	-100%	-100%
Tanzania	-2%	-31%	-9%	-100%	-86%	-100%	-100%
Togo	0%	-9%	-1%	-100%	-83%	-100%	-100%
Uganda	-2%	-16%	-3%	-100%	-83%	-100%	-100%
Zambia	-2%	-25%	-10%	-100%	-91%	-100%	-100%

Panel b: Consumable income and with financing gap funded with direct taxes							
Country	Baseline	Spending Neutral		Poverty Gap		Poverty Line	
		Perfect targeting	Universal	Perfect targeting	Universal	Targeted	Universal
Comoros	3%	3%	3%	-100%	NF	-100%	NF
Ghana	8%	-96%	-19%	-96%	NF	-98%	NF
Ivory Coast	8%	-31%	4%	-98%	NF	NF	NF
Namibia	-56%	-97%	NF	-97%	-77%	-100%	NF
South Africa	-81%	-90%	-67%	-94%	-81%	-98%	NF
Tanzania	12%	-16%	5%	NF	NF	NF	NF
Togo	23%	17%	24%	NF	NF	NF	NF
Uganda	1%	-12%	1%	-98%	NF	NF	NF
Zambia	1%	-20%	-4%	-99%	-89%	NF	NF

Panel c: Consumable income and with financing gap funded with indirect taxes							
Country	Baseline	Spending Neutral		Poverty Gap		Poverty Line	
		Perfect targeting	Universal	Perfect targeting	Universal	Targeted	Universal
Comoros	3%	3%	3%	-99%	NF	-80%	NF
Ghana	8%	-96%	-19%	-96%	-68%	-99%	-96%
Ivory Coast	8%	-31%	4%	-98%	-69%	-98%	NF
Namibia	-56%	-97%	NF	-98%	-72%	-99%	-97%
South Africa	-81%	-90%	-67%	-97%	-81%	-99%	-98%
Tanzania	12%	-16%	5%	-88%	-62%	-46%	NF
Togo	23%	17%	24%	-86%	-58%	-90%	-77%
Uganda	1%	-12%	1%	-97%	-69%	-80%	NF
Zambia	1%	-20%	-4%	-94%	-82%	NF	NF

Source: Authors' calculations based on Comoros (Belghith et al., 2017); Ghana (Younger, Osei-Assibey and Oppong, 2016); Ivory Coast (Tassot and Jellema, 2019); Namibia (Sulla, Zikhali and Jellema, 2016); South Africa (Inchauste et al., 2017); Tanzania (Younger, Myamba and Mdadila, 2016); Togo (Tassot and Jellema, 2018); Uganda (Jellema et al., 2016); and, Zambia (de la Fuente, Jellema and Rosales, 2018).

Notes:

1. NF = not feasible. In these scenarios, taxes would have to be increased by so much that consumable income turns out negative for a share of the population and there is extreme reranking.
2. Comoros does not have transfers or subsidies and hence the spending neutral scenario does not apply.

Table 6. Change in Prefiscal to Postfiscal Squared Poverty Gap for Alternative Policy Scenarios (Country-specific International Poverty Lines)

Panel a: Gross income							
Country	Baseline	Spending Neutral		Poverty Gap		Poverty Line	
		Perfect targeting	Universal	Perfect targeting	Universal	Targeted	Universal
Comoros	-	-	-	-100%	-84%	-100%	-100%
Ghana	-3%	-79%	-19%	-100%	-83%	-100%	-100%
Ivory Coast	0%	-10%	-3%	-100%	-86%	-100%	-100%
Namibia	-19%	-37%	-20%	-100%	-94%	-100%	-100%
South Africa	-47%	-76%	-40%	-100%	-93%	-100%	-100%
Tanzania	-2%	-31%	-9%	-100%	-86%	-100%	-100%
Togo	0%	-9%	-1%	-100%	-83%	-100%	-100%
Uganda	-2%	-16%	-3%	-100%	-83%	-100%	-100%
Zambia	-1%	-10%	-5%	-100%	-94%	-100%	-100%

Panel b: Consumable income and with financing gap funded with direct taxes							
Country	Baseline	Spending Neutral		Poverty Gap		Poverty Line	
		Perfect targeting	Universal	Perfect targeting	Universal	Targeted	Universal
Comoros	3%	3%	3%	-100%	NF	-100%	NF
Ghana	10%	-67%	-4%	-94%	NF	NF	NF
Ivory Coast	7%	-2%	5%	NF	NF	NF	NF
Namibia	-12%	-28%	NF	NF	NF	NF	NF
South Africa	-32%	-61%	-24%	NF	NF	NF	NF
Tanzania	12%	-16%	5%	NF	NF	NF	NF
Togo	23%	17%	24%	NF	NF	NF	NF
Uganda	1%	-12%	1%	-98%	NF	NF	NF
Zambia	2%	-6%	-1%	NF	NF	NF	NF

Panel c: Consumable income and with financing gap funded with indirect taxes							
Country	Baseline	Spending Neutral		Poverty Gap		Poverty Line	
		Perfect targeting	Universal	Perfect targeting	Universal	Targeted	Universal
Comoros	3%	3%	3%	-99%	NF	-80%	NF
Ghana	10%	-67%	-4%	-94%	-66%	-97%	-96%
Ivory Coast	7%	-2%	5%	-89%	NF	NF	NF
Namibia	-12%	-28%	NF	-86%	-76%	-88%	NF
South Africa	-32%	-61%	-24%	-89%	-79%	-96%	-96%
Tanzania	12%	-16%	5%	-88%	-62%	-46%	NF
Togo	23%	17%	24%	-86%	-58%	-90%	-77%
Uganda	1%	-12%	1%	-97%	-69%	-80%	NF
Zambia	2%	-6%	-1%	NF	NF	NF	NF

Source: Authors' calculations based on Comoros (Belghith et al., 2017); Ghana (Younger, Osei-Assibey and Oppong, 2016); Ivory Coast (Tassot and Jellema, 2019); Namibia (Sulla, Zikhali and Jellema, 2016); South Africa (Inchauste et al., 2017); Tanzania (Younger, Myamba and Mdadila, 2016); Togo (Tassot and Jellema, 2018); Uganda (Jellema et al., 2016); and, Zambia (de la Fuente, Jellema and Rosales, 2018).

Notes:

1. Comoros, Tanzania, Togo and Uganda: \$1.90 a day international poverty line. Ghana, Ivory Coast and Zambia: \$3.20 a day country-specific international poverty line. Namibia and South Africa: \$5.50 a day country-specific international poverty line.

2. NF = not feasible. In these scenarios, taxes would have to be increased by so much that consumable income turns out negative for a share of the population and there is extreme reranking.
3. Comoros does not have transfers or subsidies and hence the spending neutral scenario does not apply.

As shown in panel (a) in Tables 5 and 6, before considering the required increase in taxes, poverty would be eliminated in full or almost in full if transfers are made equal to the average poverty gap (columns 4 and 5) or the poverty line (last two columns). Incorporating the effect of higher taxes, however, changes the conclusions significantly. When taking into account the required increase in taxes, some of the population's consumable income becomes negative (!) and there is extreme reranking (in some countries, the prefiscal top incomes would end up with negative incomes after taxes and, thus, move from being the prefiscal richest to the bottom of the population).³⁰ These scenarios are considered outright not feasible because some of the individuals would have to pay more in taxes than what they earn and receive in transfers. As observed in Tables 5 and 6, a universal basic income equal to the poverty line (the \$1.90 a day or country-specific) and funded with a proportional increase in direct taxes is never feasible. With country-specific poverty lines, not even the targeted poverty line scenario funded with an increase in direct taxes is feasible (with the exception of Comoros). A more or less general result is that scenarios tend to be feasible whenever the required additional funding is financed by a proportional increase in indirect taxes. Unsurprisingly, of all the scenarios that require raising additional taxes, the one that is almost always feasible is the poverty gap scenario with perfect targeting.

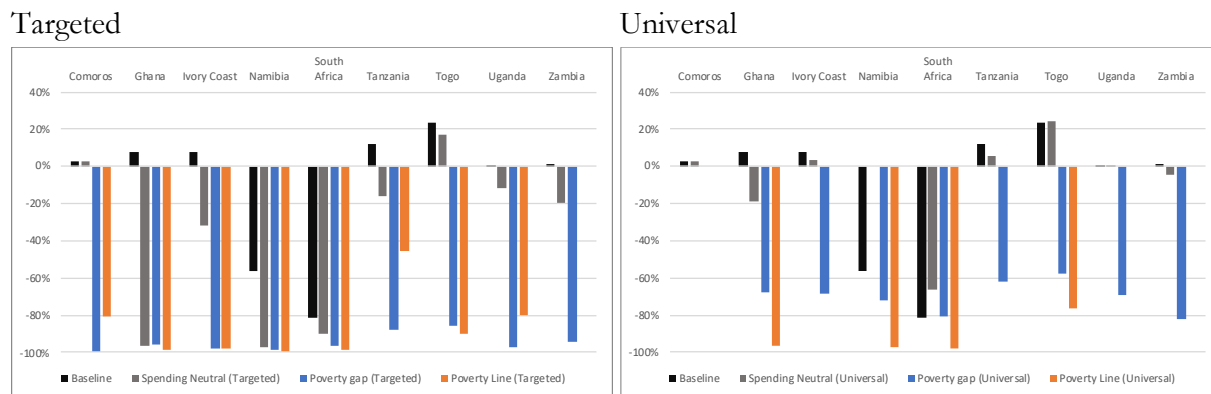
In short, the scenario that is systematically feasible³¹ is the one in which each individual's poverty gap is closed (perfect targeting) and the required additional resources are paid for with a proportional increase in indirect taxes. Under this scenario, postfiscal poverty is always lower than the baseline. And, although the change in poverty is not the highest among the scenarios considered here, it is always among the highest as shown in Figure 3. Figure 3 panels (a) and (b) show the change in the prefiscal to postfiscal squared poverty gap for the baseline, the spending neutral scenario (targeted and universal) and the poverty gap and poverty line scenarios (targeted and universal) with the financing gap funded by a proportional increase in indirect taxes for, respectively, the \$1.90 a day international poverty line and the country-specific international poverty lines.

³⁰ A scenario is defined as “not feasible” whenever the proportion of individuals with negative consumable income is higher than 0.1% and there is extreme reranking. Even in the absence of extreme reranking, reranking could be large enough so that groups switch position in the ranking with postfiscal income. For more details, see Jellema, Lustig and Martinez, *op. cit.*

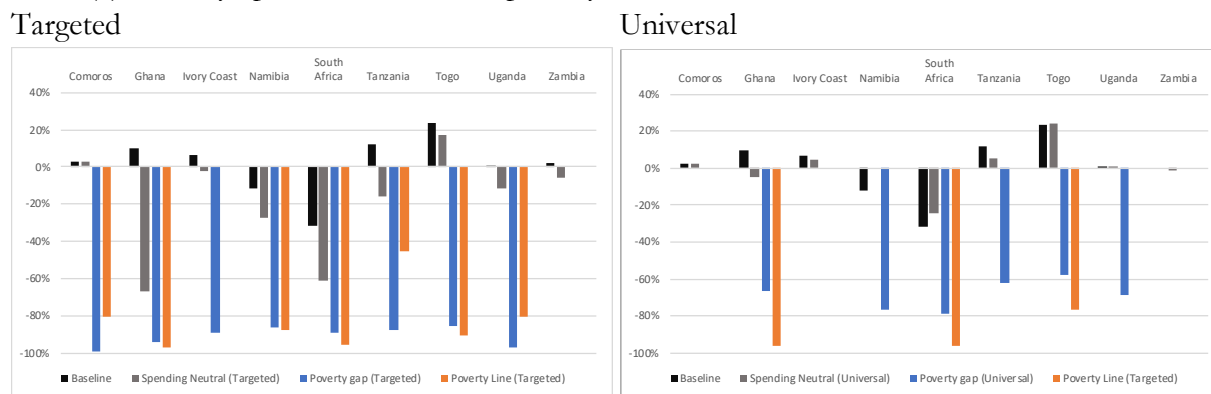
³¹ The only case in which it is not feasible is Zambia when the poverty gap is estimated with its country-specific poverty line.

Figure 3. Change in Squared Poverty Gaps under Alternative Policy Scenarios and Poverty Lines

Panel (a) \$1.90 a day International Poverty Line



Panel (b) Country-specific international poverty lines



Source: Authors' calculations based on Comoros (Belghith et al., 2017); Ghana (Younger, Osei-Assibey and Oppong, 2016); Ivory Coast (Tassot and Jellema, 2019); Namibia (Sulla, Zikhali and Jellema, 2016); South Africa (Inchauste et al., 2017); Tanzania (Younger, Myamba and Mdadila, 2016); Togo (Tassot and Jellema, 2018); Uganda (Jellema et al., 2016); and, Zambia (de la Fuente, Jellema and Rosales, 2018).

Notes:

1. For panel (b): Comoros, Tanzania, Togo and Uganda: \$1.90 a day international poverty line. Ghana, Ivory Coast and Zambia: \$3.20 a day country-specific international poverty line. Namibia and South Africa: \$5.50 a day country-specific international poverty line.
2. Not feasible scenarios are not shown. In the not feasible scenarios, taxes would have to be increased by so much that consumable income turns out negative for a share of the population and there is extreme reranking.
3. Comoros does not have transfers or subsidies and hence the spending neutral scenario does not apply.

However, even though the *poverty gap scenario* funded with indirect taxes is feasible according to the chosen definition and it is the one that requires the smallest increase in taxes, it does not mean that the required increase in marginal taxes is economically feasible. In order to assess this, we look at the

incidence of taxes by decile for this scenario and compare it to the baseline incidence.³² This is shown in Table 7 when using the \$1.90 a day international poverty line (panel a) and the country-specific international poverty lines (panel b).³³ The additional tax burden (difference between the incidence under the policy scenario and the baseline) with the \$1.90 a day international poverty line is very high for Tanzania, Togo, Uganda and Zambia. In contrast, the tax burden would actually be lower for all deciles in South Africa and for some deciles in Ghana and Namibia. When using the country-specific international poverty lines, the increase in the tax burden by decile (and, thus, the implied increase in marginal taxes) is very high for all but Comoros.

Table 7. Incidence of Total Taxes (Direct and Indirect) by Decile for the Targeted Poverty Gap Scenario Financed by Indirect Taxes (Scenario 4 in Table 3)

Panel (a) \$1.90 a day International Poverty Line

Decile	Comoros		Ghana		Ivory Coast		Namibia		South Africa		Tanzania		Togo		Uganda		Zambia	
	Baseline	Poverty Gap (Targeted)	Baseline	Poverty Gap (Targeted)	Baseline	Poverty Gap (Targeted)	Baseline	Poverty Gap (Targeted)	Baseline	Poverty Gap (Targeted)	Baseline	Poverty Gap (Targeted)	Baseline	Poverty Gap (Targeted)	Baseline	Poverty Gap (Targeted)	Baseline	Poverty Gap (Targeted)
1	1%	2%	7%	8%	3%	8%	21%	21%	502%	313%	5%	18%	10%	32%	1%	7%	5%	40%
2	1%	2%	7%	6%	3%	6%	10%	10%	40%	29%	5%	16%	11%	23%	1%	6%	5%	27%
3	2%	3%	7%	6%	4%	6%	9%	6%	26%	14%	5%	15%	11%	19%	1%	6%	5%	23%
4	2%	3%	7%	6%	4%	6%	9%	6%	23%	11%	5%	14%	11%	17%	2%	6%	5%	21%
5	2%	3%	8%	6%	4%	6%	9%	6%	21%	12%	6%	14%	11%	17%	2%	6%	5%	19%
6	2%	3%	8%	7%	4%	6%	9%	7%	21%	14%	6%	14%	12%	17%	2%	7%	6%	19%
7	3%	4%	9%	8%	5%	7%	10%	8%	22%	16%	7%	16%	12%	18%	2%	7%	6%	20%
8	3%	5%	10%	8%	5%	7%	12%	10%	24%	19%	8%	18%	12%	18%	3%	8%	7%	22%
9	3%	4%	11%	9%	6%	8%	15%	13%	29%	25%	9%	20%	12%	19%	3%	9%	7%	23%
10	5%	7%	15%	13%	7%	10%	17%	15%	38%	35%	20%	31%	16%	22%	9%	16%	9%	26%
Total	3%	5%	11%	9%	5%	8%	14%	12%	33%	29%	11%	21%	13%	20%	5%	11%	7%	24%

Panel (b) Country-specific international poverty lines

Decile	Comoros		Ghana		Ivory Coast		Namibia		South Africa		Tanzania		Togo		Uganda	
	Baseline	Poverty Gap (Targeted)	Baseline	Poverty Gap (Targeted)	Baseline	Poverty Gap (Targeted)	Baseline	Poverty Gap (Targeted)	Baseline	Poverty Gap (Targeted)	Baseline	Poverty Gap (Targeted)	Baseline	Poverty Gap (Targeted)	Baseline	Poverty Gap (Targeted)
1	1%	2%	7%	18%	3%	21%	21%	146%	502%	1526%	5%	18%	10%	32%	1%	7%
2	1%	2%	7%	12%	3%	17%	10%	68%	40%	132%	5%	16%	11%	23%	1%	6%
3	2%	3%	7%	10%	4%	16%	9%	54%	26%	71%	5%	15%	11%	19%	1%	6%
4	2%	3%	7%	9%	4%	16%	9%	48%	23%	50%	5%	14%	11%	17%	2%	6%
5	2%	3%	8%	10%	4%	16%	9%	44%	21%	37%	6%	14%	11%	17%	2%	6%
6	2%	3%	8%	10%	4%	15%	9%	39%	21%	28%	6%	14%	12%	17%	2%	7%
7	3%	4%	9%	11%	5%	16%	10%	33%	22%	27%	7%	16%	12%	18%	2%	7%
8	3%	5%	10%	12%	5%	17%	12%	34%	24%	30%	8%	18%	12%	18%	3%	8%
9	3%	4%	11%	13%	6%	18%	15%	35%	29%	35%	9%	20%	12%	19%	3%	9%
10	5%	7%	15%	17%	7%	23%	17%	36%	38%	43%	20%	31%	16%	22%	9%	16%
Total	3%	5%	11%	13%	5%	19%	14%	38%	33%	41%	11%	21%	13%	20%	5%	11%

Source: Authors' calculations based on Comoros (Belghith et al., 2017); Ghana (Younger, Osei-Assibey and Oppong, 2016); Ivory Coast (Tassot and Jellema, 2019); Namibia (Sulla, Zikhali and Jellema, 2016); South Africa (Inchauste et al., 2017); Tanzania (Younger, Myamba and Mdadila, 2016); Togo (Tassot and Jellema, 2018); Uganda (Jellema et al., 2016); and, Zambia (de la Fuente, Jellema and Rosales, 2018).

Notes:

1. Comoros does not have transfers or subsidies and hence the spending neutral scenario does not apply.
2. For panel (b): Comoros, Tanzania, Togo and Uganda: \$1.90 a day international poverty line. Ghana, Ivory Coast and Zambia: \$3.20 a day country-specific international poverty line. Namibia and South Africa: \$5.50 a day country-specific international poverty line.

³² The incidence here is measured as the ratio of the fiscal intervention of interest (e.g., transfers, direct taxes, and so on) to prefiscal income.

³³ We exclude Zambia from panel (b) because, based on Table 6, the scenario would not be feasible.

3. We exclude Zambia from panel (b) because, based on Table 6, the scenario would not be feasible.

What does the additional tax burden look like in specific countries? In South Africa, the richest and most unequal country, the baseline headcount ratio with the country-specific international poverty line of US\$5.50 is 60 percent (Table 2). Thus, the burden of the higher indirect taxes required to finance the targeted *poverty gap scenario* would have to be born primarily by the top 40 percent since the latter would not be receiving any transfers. The increase in the tax burden (difference between the baseline incidence and the scenario's) for the top 40 percent is of the order 5-6 percentage points of prefiscal income, which—in principle—seems doable. South Africa is among the feasible countries under the universal *poverty line scenario* with the US\$1.90 a day poverty line. Under this universal basic income scenario, extreme poverty would be eradicated (Table 5). However, the change in tax burden for the nonpoor (about 80 percent of the population has incomes above US\$1.90 a day, based on Table 2) is quite steep. The middle deciles (3 to 6) would have to forego between 19 to 10 percentage points of their prefiscal income in additional taxes. In Tanzania, a low-income country, the baseline poverty headcount ratio with the \$1.90 a day poverty line equals 53 percent (Table 2). Thus, the burden of the higher indirect taxes required to finance the targeted *poverty gap scenario* would have to be born primarily by the top 50 percent since the latter would not be receiving any transfers. The increase in the tax burden for the top 50 percent is of the order 8-10 percentage points of prefiscal income (roughly double compared to baseline), which—in principle—seems utterly high.

IV. Conclusions

We have shown that, using the lowest World Bank's International Poverty Line of \$1.90 a day, the existing combination of taxes and transfers increases postfiscal poverty (the headcount ratio and the squared poverty gap) in all countries but upper middle-income Namibia and South Africa. With country-specific international poverty lines, there are no exceptions. This undesirable result is broadly due to the fact that the poor pay consumption taxes but receive very little in the form of cash transfers and a small share of total subsidies. We call this phenomenon fiscal impoverishment.

One way to get rid of fiscal impoverishment would be by eliminating subsidies and using the saved resources to increase cash transfers targeted to the poor in a lexicographic order starting from the poorest. This targeted *spending neutral* scenario would reduce the postfiscal squared poverty gap in all countries but Comoros and Togo where it would still be higher than the prefiscal one (in Togo, to a lesser extent than in the baseline).³⁴ Even though reallocating resources from general price subsidies to targeted transfers would yield better poverty outcomes in most countries, we would still be far from providing an income floor close to the country-specific international poverty lines. Also, under this scenario, a portion of the not-so-poor poor would receive no transfers.

What happens if we increase the size of transfers to equal the poverty line or the less demanding average poverty gap? Under both scenarios, by definition, poverty would be eradicated but in the first one, more resources will be needed to pay for such a policy. For these policies to be budget neutral, taxes would need to increase. Here we consider two options: financing the fiscal gap with direct taxes

³⁴ Results are the same for the \$1.90 a day and the country-specific international poverty lines.

and financing it with indirect taxes. How much taxes need to be increased depends on whether transfers are targeted to the poor with perfect targeting or universal. These can be seen as lower and upper bounds of the cost of eradicating poverty.

Our results show that setting income floors equal to the country-specific poverty lines and financed with an increase in direct taxes—even in the least expensive scenario when resources are perfectly targeted to the poor—is either outright not feasible because there would be extreme reranking of individuals and negative post-fiscal incomes or, in the best of cases, economically not feasible because the tax burden on the nonpoor would be significantly higher (Table 6, panel b). This is true even in South Africa (the richest country of the group).

If income floors are financed with indirect taxes (Table 6, panel c), there are a number of countries in which closing the poverty gaps with perfect targeting becomes feasible (in the sense that there is no extreme reranking or postfiscal negative incomes). The increase in indirect taxes paid by the nonpoor, however, could still be steep (Table 7). The required increase in indirect taxes are either economically inefficient or politically unrealistic. This is so even for upper middle-income countries such as Namibia and South Africa. The lack of feasibility or efficiency costs, of course, get exacerbated for the most costly scenario: everybody in the population receives a transfer equal to the country-specific poverty line (a UBI).

Although we present results for the perfect targeting scenario, this is for the purposes of showing how difficult setting budget-neutral income floors could be even in the least costly case. We are aware that a perfectly targeted transfer would never be feasible in practice. As discussed by Caitlin Brown, Martin Ravallion, and Dominique van de Walle (2016), identifying precisely who is and is not poor remains complicated due to unreliable data, weak information systems, and a lack of administrative capacity in poor countries. Moreover, as discussed by Raj M. Desai and Homi Kharas (2017), targeting may not be politically feasible, either. On top of infeasibility on the revenue collection side, the ability to implement a reasonably well-targeted transfer program (high coverage of the poor and low leakages to the nonpoor) could be low to nonexistent except in more advanced countries, such as Namibia and South Africa.

The results presented here do not take into account all domestic revenue sources which could be used to fund direct transfers. For example, when survey data does not adequately reflect top incomes, total subsidies and total direct and indirect tax revenue allocated in the incidence exercises tends to be below the administrative or budgetary totals for confirmed amounts spent or collected. The magnitude of the foregone subsidy expenditures or direct or indirect taxes used to create transfer spending in these exercises therefore tends to be lower than the actual resources available according to administrative data. One would like to investigate how the resource envelope – including the marginal revenues necessary for increased transfer spending – would change if administrative totals are used instead of survey-based ones. Jellema, Lustig, and Martinez Pabon (2019), explore the implications of assuming these additional resources are made available to fund the income floors.

In addition, as indicated by Mick Moore, Wilson Prichard, and Odd-Helge Fjeldstad (2018), there are potentially a whole series of additional revenues that could be tapped by adequately taxing the personal incomes of wealthy people or their property ownership; reducing excessive and unjustified tax exemptions to investors; curbing corruption in tax collection; proper taxing of mining; increasing

excise taxes on tobacco and alcohol; reducing “leaks” in VAT collection; and introducing gross turnover or excise taxes to compensate for taxes lost as a result of transnational companies shifting profits overseas.

While there are no country-specific estimates for the countries analyzed in this chapter, according to these authors, revenue lost due to base erosion and profit shifting in developing countries can range between 1 and 2 percent of GDP. While revenues from these other sources could potentially increase the domestic resources available for providing an adequate income floor, in general, they would still not be enough to reach these floors at reasonable marginal tax rates for the middle-classes and the rich in most of the countries. Resources coming from other countries or multilateral organizations will need to come into play as well.

As discussed by Brown, Ravallion, and van de Walle (2016), identifying precisely who is and is not poor remains complicated due to unreliable data, weak information systems, and a lack of administrative capacity in poor countries. Moreover, as discussed by Desai and Kharas (2017), targeting may not be politically feasible either. Thus, on top of the lack of feasibility from the tax side, the ability to implement a reasonable well-targeted transfer program (high coverage of the poor and low leakages to the nonpoor) could be low to nonexistent except for in the more advanced countries such as Namibia and South Africa.

All the results presented in this replace do not take into account other domestic revenues that could be tapped to provide income floors. A first source of other revenues comes from the fact that survey data does not capture well top incomes. Thus, total subsidies and total direct and indirect tax revenue generated in the incidence exercises tend to be below the administrative totals.³⁵

In addition, as indicated by Moore, Prichard and Fjeldstad (2018), there are potentially a whole series of additional revenues that could be tapped by adequately taxing the personal incomes of wealthy people or their property ownership; reducing excessive and unjustified tax exemptions to investors; curbing corruption in tax collection; proper taxing of mining; increasing excise taxes on tobacco and alcohol; reducing “leaks” in VAT collection; and introducing gross turnover or excise taxes to compensate for taxes lost as a result of transnational companies shifting profits overseas. While there are no country-specific estimates for the countries analyzed in this replace, according to these authors, the lost revenue due to base erosion and profit shifting in developing countries can range between 1 and 2 percent of GDP. While revenues from these “other” sources could potentially increase the domestic resources available for providing an adequate income floor, in general, they would still not be enough to reach these floors at reasonable marginal tax rates for the middle-classes and the rich in most of the countries. Resources coming from other countries or multilateral organizations will need to come into play as well.

³⁵ In an upcoming working paper, we explore the implications of assuming that these additional resources – equivalent to the amount by which survey-based estimations of revenue collections or subsidy spending fall short of confirmed administrative totals – are made available to fund the income floors.

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