CHAPTER NINE

Leaving No One Behind
Can Tax-Funded Transfer Programs Provide Income Floors in Sub-Saharan Africa?

Nora Lustig, Jon Jellema, and Valentina Martinez Pabon

Introduction

Sub-Saharan Africa (SSA) has experienced remarkable growth since the mid-1990s. Real economic activity in the region grew 4.6 percent per year during the twenty-year period between 1996 and 2016. Several national economies in the region grew at a rate that exceeded 5 percent per year during this period. The gains from greater growth in SSA 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,[1] population growth

1. PovcalNet, http://iresearch.worldbank.org/PovcalNet/povDuplicateWB.aspx.

The authors are very grateful to David Coady, Homi Kharas, Landry Signé, and other participants for their invaluable comments and suggestions. We are also grateful to Stephen Arriz, Haley Renda, and Emilia Nordgren for excellent research assistantship. The empirical results presented in the section Taxes, Transfers, and Poverty under the Current Fiscal Systems of this chapter come from the background document "Fiscal Policy in Africa: Welfare Impacts and Policy Effectiveness" by Alejandro de la Fuente, Jon Jellema, and Nora Lustig (forthcoming). 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 chapter 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.

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 Millennium Development Goal 1 (MDG 1) 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 transfer programs, the answer depends crucially on whether the resources required to provide an adequate income floor can be raised in practice. There are two obvious sources for additional spending: foregone subsidy expenditure and increased tax collection. In 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 chapter, we estimate the poverty impact and the incidence of taxes of implementing alternative income floors through cash transfers in nine SSA countries: Comoros, Ghana, Ivory Coast, Namibia, South Africa, Tanzania, Togo, Uganda, and Zambia. The "income floors" are defined in two ways: using the World Bank International Poverty Line of US$1.90 a day (in 2011 PPP)[2] for all countries and using the World Bank Income Class International Poverty Lines, which vary by countries' income levels.[3] For the set of countries in this analysis, 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).

Results vary by country but in general are not encouraging. Providing an income floor by raising domestic taxes frequently implies such large increases in additional taxes that disincentives and negative impacts on tax collection are potentially huge. Some options become infeasible when taxes are increased to such a degree that certain individuals are left with negative incomes.

The main source of information used in this chapter are the fiscal incidence analyses completed by the CEQ Institute together with the World Bank, the IMF, and the OECD; where permission has been given, these analyses are summarized in the CEQ Data Center on Fiscal Redistribution (CEQ Data Center).[4] The

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

3. See Jolliffe and Prydz (2016).

4. This data 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

household surveys used in the fiscal incidence studies were enumerated between 2010 and 2015.[5] These studies use the common methodological framework described in Nora Lustig (2018), allowing sound cross-country comparisons.[6]

The country set in this analysis is limited by data availability; nonetheless, our sample represents diversity in both macroeconomic and fiscal 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 (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 public social welfare systems. In particular, government spending on cash transfer programs as a percent of pre-fiscal income ranges from zero or almost zero (Comoros, Ivory Coast, Togo, and Uganda); above 0.1 percent but less than 0.5 percent (Ghana, Tanzania, and Zambia); to levels of spending comparable to advanced OECD countries in Namibia and South Africa (4.3 percent and 6 percent, respectively). Except for Namibia and South Africa, subsidies (in particular, energy subsidies) represent between 70 and 100 percent of government spending in the combined category of transfers and subsidies (table 9-1).[7, 8]

organization. For information, please contact Jon Jellema: (jon.jellema@ceqinstitute.org). For a country-specific description of the fiscal systems and assumptions, please see: for Comoros, World Bank (2017); for Ghana, Younger, Osei-Assibey, and Oppong (2017); for Ivory Coast, Jellema and Tassot (forthcoming); for Namibia, Namibia Statistics Agency and World Bank (2017); for South Africa, Inchauste and others (2017); for Tanzania, Younger, Myamba, and Mdadila (2016b); for Togo, Jellema and Tassot (2018); for Uganda, Jellema and others (2018); for Zambia, de la Fuente and others (2017).

5. The household surveys are Comoros: Enquête sur L'emploi, le Secteur Informel et la Consommation des Ménages aux Comores (2014); Ghana: Living Standards Survey (2012–2013); 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 (2011–2012); 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).

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

7. Note that the size of taxes and transfers with respect to pre-fiscal income, shown in table 9-1, is calculated as the ratio of taxes and transfers included in the fiscal incidence analysis to the pre-fiscal 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.

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.

Table 9-1. Gross National Income per Capita, Population, and the Size of Taxes and Transfers

	Characteristics					Taxes, transfers, and subsidies as a share of pre-fiscal income (%)								
Country	Development category (2018)	Year of Survey	GNI/ capita (2011 ppp)	GNI/ capita growth (%) 2013–17	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	58.0	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

Note: Taxes and transfers are shown as a share of pre-fiscal income (Market Income plus Pensions) unless otherwise noted.

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

The section that follows presents the impact on poverty of the current fiscal systems of taxes and transfers. The next section, "Poverty and Tax Burden under Alternative Policy Scenarios," presents the results of alternative simulated policy scenarios. Conclusions are presented in the last section. Additional methodological details are described in an online appendix.[9]

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 Alejandro de la Fuente, Jon Jellema, and Nora Lustig (forthcoming), and use as inputs the fiscal incidence analyses cited in table 9-1. 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 pre-fiscal and post-fiscal income concepts.

The pre-fiscal income concept used here is equal to earned and unearned income from wages and capital,[10] plus private transfers, plus pensions from public contributory pension systems.[11] Income from noncontributory pensions (also known as social pensions), in contrast, is treated as a government transfer. Post-fiscal income here is equivalent to the CEQ Assessment "Consumable Income" concept.[12] Starting from pre-fiscal income, consumable income 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 taxes (payroll taxes, personal income taxes, etc.) and indirect taxes (VAT, excise taxes, sales taxes, etc.).[13] Once pre-fiscal and consumable incomes are available

9. The appendix can be found online at http://commitmentoequity.org and is also available upon request.

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

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

12. Note that this welfare variable is different from 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.

13. Our analysis does not use the concept *final income* because we focus on the cash portion

for each individual, we proceed to estimate the inequality and poverty indicators and compare them.[14]

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 pre-fiscal income reported here equals the true counterfactual income in the absence of taxes and transfers. It is a first-order approximation.[15] 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, typical fiscal incidence analysis does not capture these dynamic effects.

The analyses here are not, however, mechanical accounting applications. 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 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.[16] In all but the case of Uganda, the fiscal incidence analyses incorporated the indirect effects of subsidies (and indirect taxes).[17]

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 (forthcoming).

14. In the section Poverty and Tax Burden under Alternative Policy Scenarios, we also present results for the impact on poverty under alternative simulation scenarios with the gross income concept, which equals pre-fiscal, plus cash transfers (and before any taxes).

15. In a variety of settings, a first-order approximation suffices for a reasonable impact estimate. David 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).

16. The 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. For more details on methodological assumptions, see the appendix posted online at http://commitmentoequity.org.

17. Comoros has no subsidies. The following countries in our sample include the indirect effects:

Indirect effects may occur 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?[18] We examine three different indicators (or indicator sets) to answer this question. We estimate "traditional" indicators like the poverty headcount ratio or poverty gap at both pre- and post-fiscal incomes. We also estimate the extent to which the pre-fiscal poor populations end up as "net payers" to the fiscal system (rather than "net recipients") in cash terms.[19] A third indicator—Fiscal Impoverishment, proposed by Higgins and Lustig (2016)—measures the extent to which fiscal policy makes the post-fiscal poor *poorer* or contributes to the transformation of the pre-fiscal non-poor population into the post-fiscal poor population.[20]

As shown in table 9-2 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 post-fiscal poverty or leaves it unchanged even if measured with the extreme international poverty line of US$1.90 a day.[21] Note that the increase in poverty occurs despite the fact that inequality falls, which emphasizes that inequality-reducing policies *do not necessarily* protect poor and vulnerable households. Moreover, the extent of fiscal

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. For more details, see the appendix posted online at http://commitmentoequity.org.

18. By "current" we mean the fiscal system that prevailed in the year of the household survey.

19. That is to say, without the addition of benefits provided via in-kind services.

20. As shown by Sean Higgins and Nora Lustig (2016), there are several indicators of fiscal impoverishment that fulfill the basic desirable axioms of a poverty measure. In this chapter, the proportion of impoverished (in the sense described here) as a share of the total population is used.

21. 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 www.worldbank.org/en/topic/poverty/brief/global-poverty-line-faq.

Table 9-2. Baseline: Fiscal Policy's Impact on Poverty and Fiscal Impoverishment

Panel (a) $1.90 a Day International Poverty Line

		Baseline Market income plus pensions (pre-fiscal)			Baseline Consumable income (post-fiscal)						
Country	Survey year	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

		Baseline Market income plus pensions (pre-fiscal)			Baseline Consumable income (post-fiscal)						
Country	Survey year	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

Notes: 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. Fiscal impoverishment, or FI, is the number of pre-fiscal poor (nonpoor) who are made poorer (poor) at post-fiscal income by fiscal policy (i.e., the existing combination of taxes, transfers, and subsidies) measured as a share of the total population.

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

impoverishment exceeds 20 percent in five of the nine of 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 9-2, with country-specific poverty lines, the post-fiscal 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 is the fiscal impoverishment ratio 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 9-1 shows the extent to which, on average, individuals in the decile specified on the horizontal axis are net receivers from or net payers to the fiscal system. Net receivers are those individuals for whom post-fiscal income is *higher* than pre-fiscal income, indicating that tax burdens are smaller (in absolute magnitude) than total benefits received from transfer and subsidy expenditures. Net payers are those individuals for whom post-fiscal income is *lower* than pre-fiscal income, indicating that tax burdens are larger (in absolute magnitude) than total benefits received from transfer and subsidy expenditures. With the exception of

Figure 9-1. Baseline: Net Payers of the Fiscal System by Decile

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

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.

In principle, it is desirable for the poor—especially the extreme poor—to be net receivers of fiscal resources in cash so that poor individuals can consume the minimum amounts of food and other essential goods accounted for in the estimation of poverty-line expenditure. As discussed in de la Fuente, Jellema, and Lustig (forthcoming), the proximate causes for fiscal impoverishment in our sample of countries is the reliance on indirect taxes as the main channel to collect transfers, combined with the fact that a very large portion of the resources (70 percent or more in six of our nine countries) is spent on general price subsidies (especially on energy subsidies) rather than on direct transfers (see table 9-1). 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.

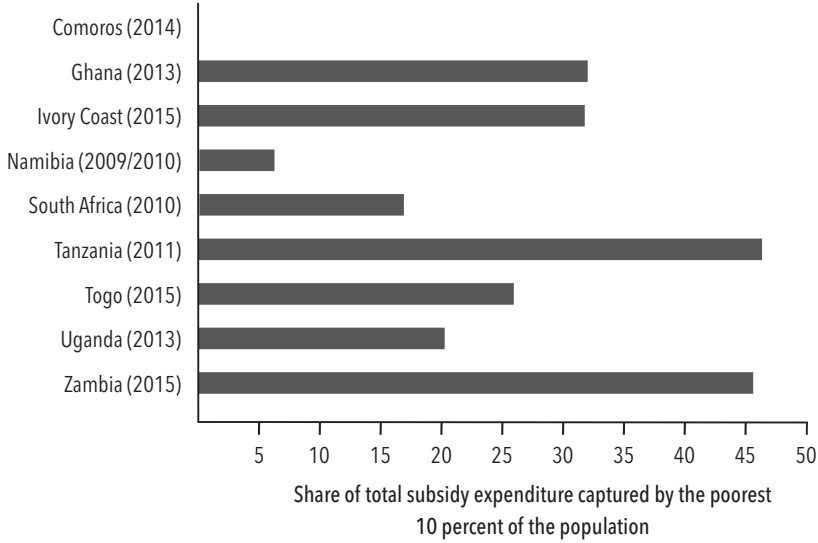
According to de la Fuente, Jellema, and Lustig (forthcoming),

> 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.

On the spending side, as shown by Coady, V. Flamini, and L. Sears (2015), a very large share of benefits from price subsidies in general goes to high-income households. In our sample, in seven of nine countries, the richest 10 percent of individuals capture a share of subsidy expenditures that is higher than 10 percent (figure 9-2).[22]

22. It is also the case that, in all countries but Namibia 80 percent or more of tax revenues are 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 create 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.

Figure 9-2. Baseline: Concentration Share of Subsidies in the Richest 10 Percent



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

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 impact on poverty 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 transfer system (called the baseline scenario) by alternative budget-neutral "policy" scenarios in which the size, targeting, and/or coverage of the transfers is changed.[23] By

23. Cash transfer programs included in the baseline cover noncontributory programs only; that is, means-tested conditional and unconditional cash transfers, cash transfers based on categorical targeting (for example, people with disabilities), and noncontributory pensions. The programs included in our baseline analysis by country are described in the appendix posted online at http://commitmentoequity.org.

budget-neutral, we mean that if the scenario entails an increase in spending, we allow taxes to increase so 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 use country-specific international poverty lines?[24] Since there are 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)[25] 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-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[26] reallocation of current expenditures on transfers and consumption subsidies. We generate these scenarios to demonstrate how much fiscally-induced poverty reduction is diminished when spending on transfers is shifted from targeted to universal schemes. Spending-neutral scenarios are 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

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

25. Goal 1, target 1 of the Sustainable Development Goals (SDGs) specifies: "By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day." See 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 www.worldbank.org/en/topic/poverty/brief/global-poverty-line-faq.

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

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, in which 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 gap[27] 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 9-3 summarizes these ten scenarios and their characteristics.

Larger transfers with higher coverage levels imply greater increases in expenditure and therefore greater increases in additional taxes to fund that expenditure. The most expensive scenario—providing a poverty-line transfer to everyone (scenario 10 in table 9-3)—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 allows us to demonstrate the impossibility (in practical terms) of

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

implementing a UBI strategy in the set of middle- and low-income countries we have analyzed here.[28]

As discussed, to capture the impact on living standards after considering the financing mechanisms, the relevant post-fiscal 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 pre-fiscal income for each of the ten transfers-cum-financing scenarios. We then 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 chapter, we show results only 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 cover the extreme poor, but fewer households whose income or consumption lies close to the poverty line (which is the case, for instance, in South Africa). As shown in Jamele Rigolini and others (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, 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 9-3. 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 for the distribution of tax burdens if we wanted to raise more domestic 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

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

Table 9-3. 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			Total population	Total spending on cash transfers and subsidies in baseline divided by the total population	Allocated to every individual
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.

simulations contemplate first-order effects only. In particular, pre-fiscal incomes do not change in response to simulated taxes and transfers. In reality, any policy changes of the type simulated here would induce behavioral responses and general equilibria would have to be redetermined; pre-fiscal incomes would likely be different from the baseline. One of the key points of this hypothetical exercise is, in fact, to show that these non-marginal changes could potentially result in such large disincentive effects in the labor market and associated tax efficiency costs that they should not realistically be considered economically or politically feasible policy options.

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

To start, we compare the average transfer to the poor and the coverage of the poor population under the alternative scenarios.[29] These are shown in table 9-4. As expected, if subsidies are replaced by transfers in full, under the spending-neutral scenario, when resources are targeted to the poor (in lexicographic order) 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 resources, 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 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 transfers under the targeted and the universal scenarios are identical. The average transfer equals the 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]).

What is the impact of the alternative policy scenarios on poverty? Because the headcount ratio is sensitive to movements of individuals (into or out of poverty) around the poverty line, we 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.[30] Tables 9-5 and 9-6 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

29. Table 9-4 includes the spending scenarios only because the size and coverage of transfers are not affected by how the financing gap is funded (for example, by direct or indirect taxes).

30. Results using the headcount ratio are available upon request.

country-specific international poverty lines, respectively. In panel (a), we show the change (in percent) between the squared poverty gap measured with gross income (pre-fiscal income plus transfers) and the squared poverty gap measured with pre-fiscal 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 pre-fiscal income. The results shown in panel (b) are calculated assuming the financing gap is fully funded with a proportional increase in direct taxes: that is, everyone's direct taxes are increased in the same proportion. The results shown in panel (c) are calculated assuming the financing gap is fully funded with a proportional increase in indirect taxes: that is, everyone's indirect taxes are increased in the same proportion.

As shown in panel (a) in tables 9-5 and 9-6, 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 pre-fiscal top incomes end up with negative incomes after taxes and, thus, move from being the pre-fiscal richest to the poorest of the population).[31] These scenarios are infeasible because some individuals would have to pay more in taxes than they earn and receive in transfers. As observed in tables 9-5 and 9-6, a universal basic income equal to the poverty line (either the $1.90 a day or the country-specific line) 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 requiring additional revenues from taxes, the one that is almost always feasible is the poverty gap scenario with perfect targeting.

In short, the scenario that is systematically feasible[32] 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

31. A scenario is defined as "not feasible" whenever the proportion of individuals with negative consumable income is higher than 0.1 percent 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 post-fiscal income. For more details, see Jellema, Lustig, and Martinez (forthcoming).

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

Table 9-4. Average Transfer and Coverage of the Poor under the Six Alternative Spending Scenarios

Panel (a) $1.90 a Day International Poverty Line

			Spending Neutral			Poverty Gap ($)		Poverty Line ($)	
	Baseline		Perfect targeting		Universal	Perfect targeting	Universal	Targeted	Universal
Country	Per poor person ($)	Coverage of the poor (%)	Per beneficiary ($)	Coverage of the poor (%)	Per capita ($)	Average per poor person	Per capita	Per poor person	Per capita
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	10	0.29	38	0.06	0.96	0.96	1.90	1.90

Panel (b) Country-Specific International Poverty Lines

			Spending Neutral			Poverty Gap ($)		Poverty Line ($)	
	Baseline		Perfect targeting		Universal	Perfect targeting	Universal	Targeted	Universal
Country	Per poor person ($)	Coverage of the poor (%)	Per Beneficiary ($)	Coverage of the poor (%)	Per capita ($)	Average per poor person	Per capita	Per poor person	Per capita
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

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

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

Table 9-5. Change in Pre-Fiscal to Post-Fiscal Squared Poverty Gap for Alternative Policy Scenarios ($1.90 a Day International Poverty Line)

		Spending Neutral (%)		Poverty Gap (%)		Poverty Line (%)	
Country	Baseline (%)	Perfect targeting	Universal	Perfect targeting	Universal	Targeted	Universal
Panel (a): Gross Income							
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							
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

Country	Baseline (%)	Spending Neutral (%)		Poverty Gap (%)		Poverty Line (%)	
		Perfect targeting	Universal	Perfect targeting	Universal	Targeted	Universal
Panel (c) Consumable Income and with financing gap funded with indirect taxes							
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

Notes: 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. Comoros does not have transfers or subsidies and, hence, the spending neutral scenario does not apply.

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

Table 9-6. Change in Pre-Fiscal to Post-Fiscal Squared Poverty Gap for Alternative Policy Scenarios (Country-Specific International Poverty Lines)

		Spending Neutral (%)		Poverty Gap (%)		Poverty Line (%)	
Country	Baseline (%)	Perfect targeting	Universal	Perfect targeting	Universal	Targeted	Universal
Panel (a): Gross Income							
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							
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

Country	Baseline (%)	Spending Neutral (%)		Poverty Gap (%)		Poverty Line (%)	
		Perfect targeting	Universal	Perfect targeting	Universal	Targeted	Universal
Panel (c): Consumable Income and with financing gap funded with indirect taxes							
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

Notes: 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. 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. Comoros does not have transfers or subsidies and, hence, the spending neutral scenario does not apply.

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

scenario, post-fiscal 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 9-3. Panels (a) and (b) of figure 9-3 show the change in the pre-fiscal to post-fiscal 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.

However, even though the poverty gap scenario funded with indirect taxes is frequently feasible and requires the smallest increase in taxes, it does not mean that the required marginal tax increase is economically feasible. To assess this, we look at the incidence of taxes by decile for this scenario and compare it to the baseline incidence.[33] This is shown in table 9-7 using the $1.90 a day international poverty line in panel (a) and the country-specific international poverty lines in panel (b). The additional tax burden (the 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.

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 9-2). Thus, the burden of the higher indirect taxes required to finance the targeted poverty gap scenario would appear larger (when measured relative to post-fiscal incomes) for the top 40 percent, since that group would not be receiving any transfers. The increase in the tax burden (the difference between the baseline incidence and the scenarios) for the top 40 percent is 5 to 6 percentage points of pre-fiscal income, which is perhaps feasible economically (if not politically). South Africa is a country where the universal poverty line scenario using the US$1.90 a day poverty line. Under this universal basic income scenario, extreme poverty would be eradicated (table 9-5). 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 9-2) is quite steep. The middle deciles (3 to 6) would have to forego between 19 to 10 percentage points of their pre-fiscal income in additional taxes, respectively. In Tanzania, a low-income country, the

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

baseline poverty headcount ratio with the $1.90 a day poverty line equals 53 percent (table 9-2). Thus, the burden of the higher indirect taxes required to finance the targeted poverty gap scenario would appear larger (when measured relative to post-fiscal incomes) for the top 50 percent, since they would not be receiving any transfers. The increase in the tax burden for the top 50 percent is 8 to 10 percentage points of pre-fiscal income (roughly double compared to baseline), which, in principle, seems utterly high.

Conclusions

We have shown that, using the lowest World Bank International Poverty Line of $1.90 a day, the existing combination of taxes and transfers increases post-fiscal poverty (the headcount ratio and the squared poverty gap) in all countries in our sample, except upper middle-income Namibia and South Africa. With income class international poverty lines for lower middle-income and upper middle-income countries, 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 only a small share of total subsidies. We call this phenomenon fiscal impoverishment.

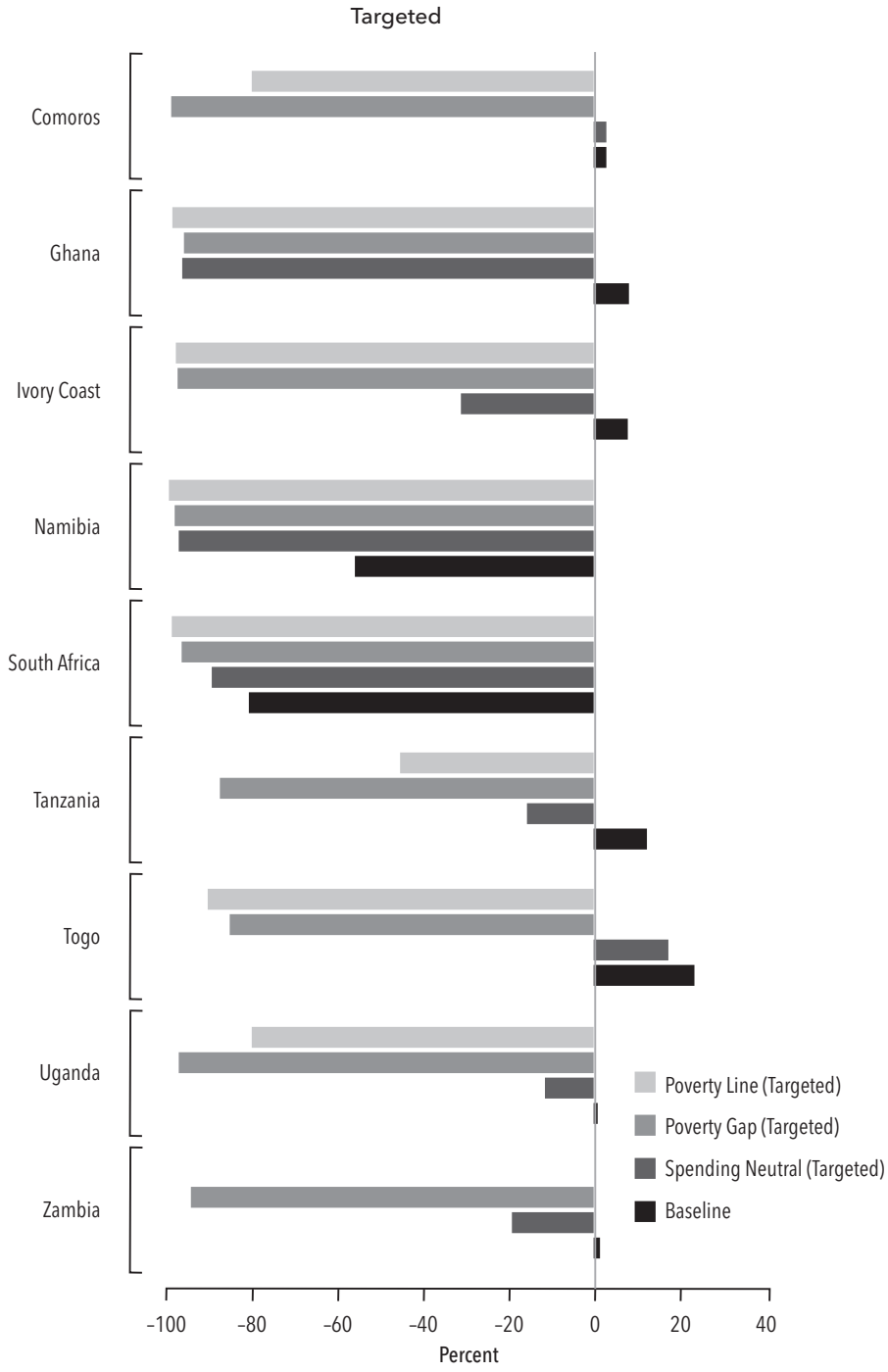
One way to get rid of fiscal impoverishment is by eliminating subsidies and using those resources to increase cash transfers targeted to the poor. This targeted spending-neutral scenario would reduce the post-fiscal squared poverty gap in all countries but Comoros and Togo, where it would still be higher than the pre-fiscal 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.

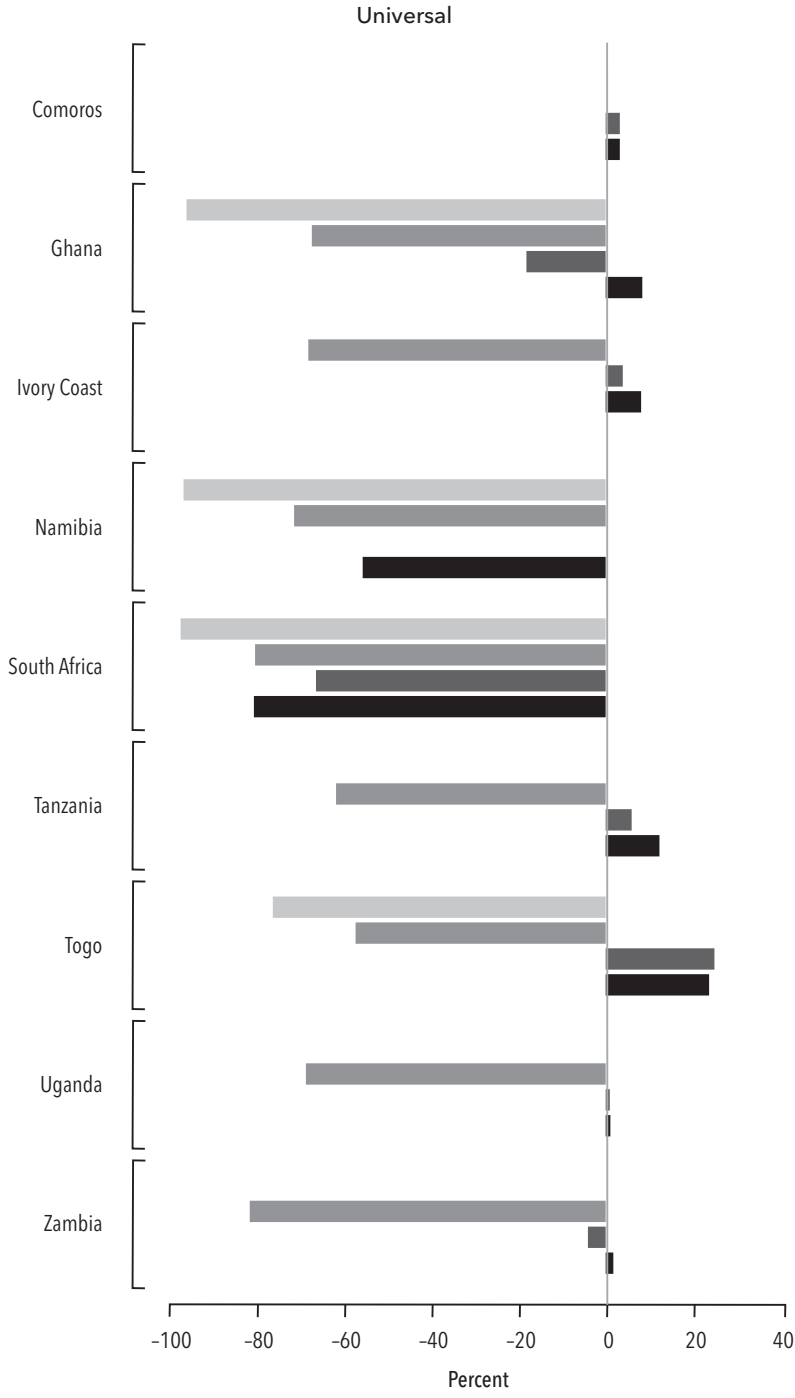
What happens if we increase the size of transfers to equal the poverty line or the average poverty gap? Under both scenarios, by definition, poverty would be eradicated, but the first one is more expensive. For either policy to be budget neutral, taxes would need to increase. Here we consider two options: financing the fiscal gap with direct taxes and financing it with indirect taxes. How much taxes need to be increased depends on whether transfers are universal or targeted to the poor with perfect targeting. These can be seen as upper and lower bounds of the cost of eradicating poverty.

34. In Togo, the increase in the post-fiscal squared poverty gap is smaller than the baseline increase in the post-fiscal squared poverty gap. Results are the same for the $1.90 a day and the country-specific international poverty lines.

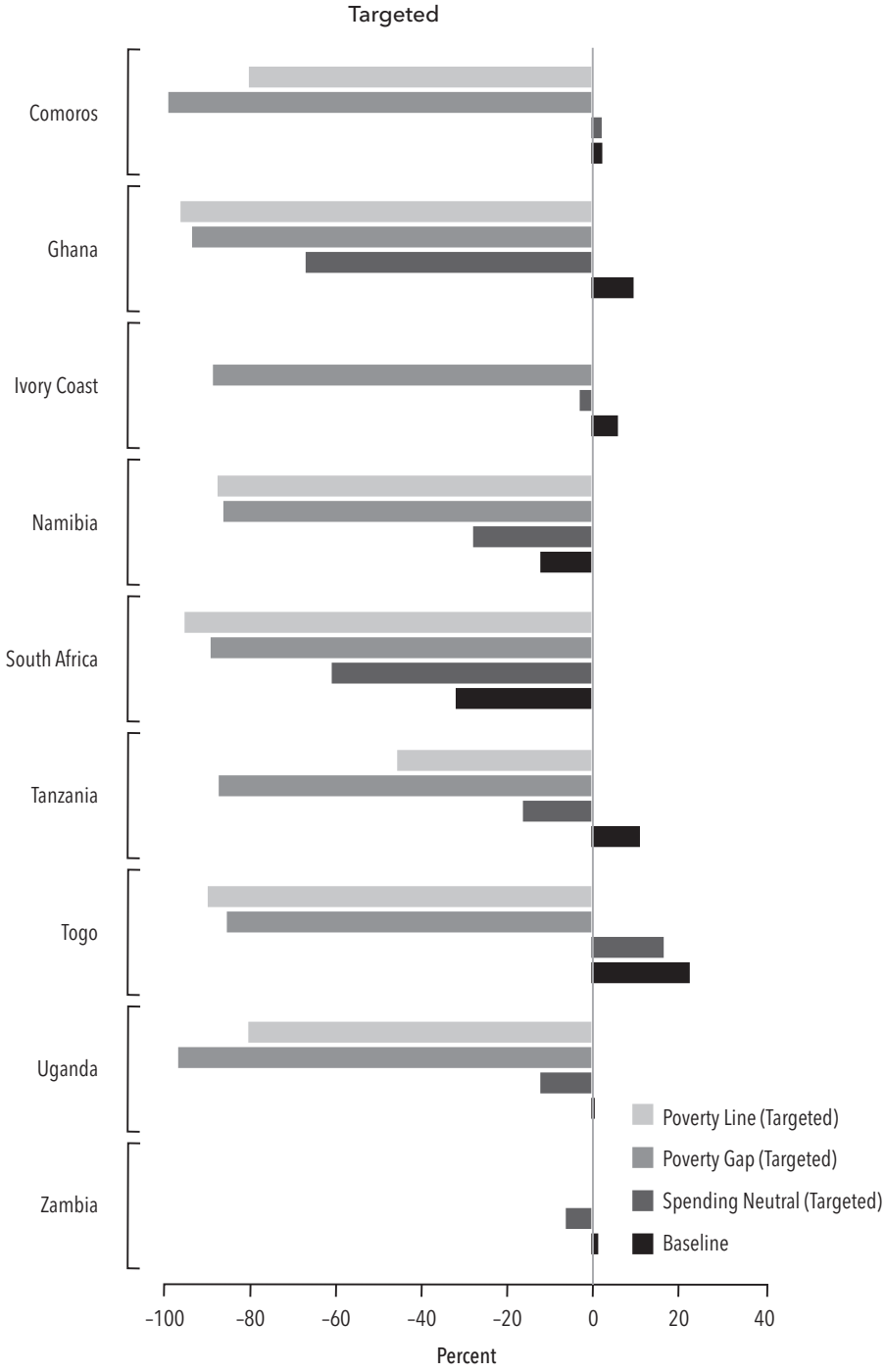
Figure 9-3. Change in Squared Poverty Gaps under Alternative Policy Scenarios and Poverty Lines

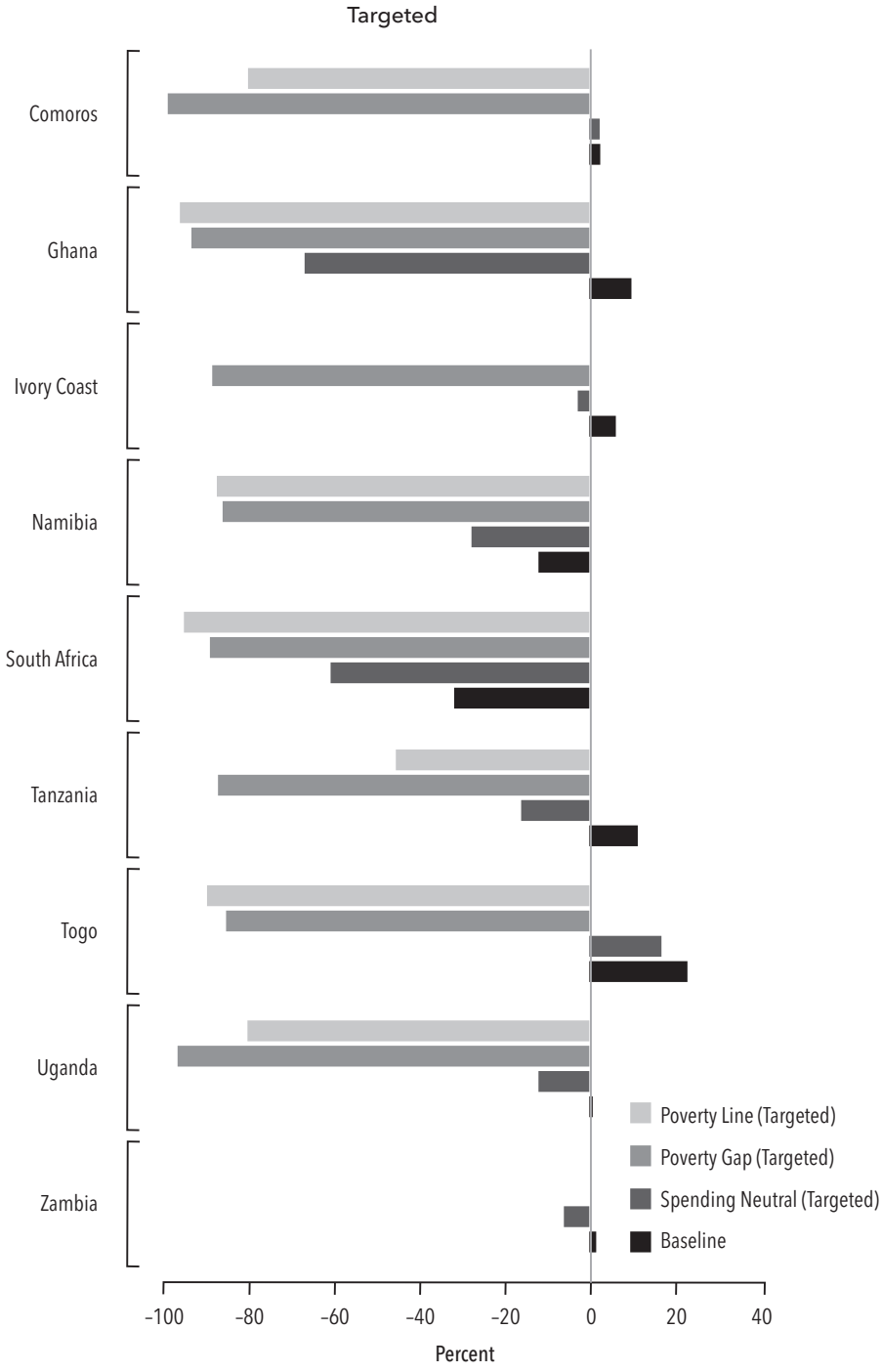
Panel (a) $1.90 a Day International Poverty Line




Universal
Comoros
Ghana
Ivory Coast
Namibia
South Africa
Tanzania
Togo
Uganda
Zambia
−100
−80
−60
−40
−20
0
20
40
Percent

Panel (b) Country-Specific International Poverty Lines




Targeted
Comoros
Ghana
Ivory Coast
Namibia
South Africa
Tanzania
Togo
Uganda
Zambia
Poverty Line (Targeted)
Poverty Gap (Targeted)
Spending Neutral (Targeted)
Baseline
−100
−80
−60
−40
−20
0
20
40
Percent

Notes: 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. 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. Comoros does not have transfers or subsidies and, hence, the spending neutral scenario does not apply.

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

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 economically not feasible because the tax burden on the non-poor would be significantly higher (table 9-6, panel b). This is true even in South Africa (the richest country of the group).

If income floors are financed with indirect taxes (table 9-6, 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 post-fiscal negative incomes). The increase in indirect taxes paid by the non-poor, however, could still be steep (table 9-7). 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, of course, gets exacerbated for the most costly scenario where 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 purpose 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 that 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. 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 (forthcoming), 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

Table 9-7. Incidence of Total Taxes (Direct and Indirect) by Decile for the Targeted Poverty Gap Scenario Financed by Indirect Taxes (%) (Scenario 4 in table 9-3)

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)
Panel (a) $1.90 a Day International Poverty Line																		
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

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	18	3	21	21	146	502	1526	5	18	10	32	1	7	N/A	N/A
2	1	2	7	12	3	17	10	68	40	132	5	16	11	23	1	6	N/A	N/A
3	2	3	7	10	4	16	9	54	26	71	5	15	11	19	1	6	N/A	N/A
4	2	3	7	9	4	16	9	48	23	50	5	14	11	17	2	6	N/A	N/A
5	2	3	8	10	4	16	9	44	21	37	6	14	11	17	2	6	N/A	N/A
6	2	3	8	10	4	15	9	39	21	28	6	14	12	17	2	7	N/A	N/A
7	3	4	9	11	5	16	10	33	22	27	7	16	12	18	2	7	N/A	N/A
8	3	5	10	12	5	17	12	34	24	30	8	18	12	18	3	8	N/A	N/A
9	3	4	11	13	6	18	15	35	29	35	9	20	12	19	3	9	N/A	N/A
10	5	7	15	17	7	23	17	36	38	43	20	31	16	22	9	16	N/A	N/A
Total	3	5	11	13	5	19	14	38	33	41	11	21	13	20	5	11	N/A	N/A

Notes: Comoros does not have transfers or subsidies and, hence, the spending neutral scenario does not apply. 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. N/A = Not applicable. In Zambia, based on table 9-6, the scenario in panel (b) would not be feasible.

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

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.

References

Acemoglu, Daron. 2019. "Why Universal Basic Income Is a Bad Idea." Project Syndicate, June 7, https://www.project-syndicate.org/commentary/why-universal-basic-income-is-a-bad-idea-by-daron-acemoglu-2019-06.

Belghith, Nadia Belhaj Hassine, Jon Jellema, and Shireen Mahdi. 2017. "CEQ Master Workbook: Comoros (2014)." CEQ Data Center on Fiscal Redistribution, CEQ Institute, Tulane University, and the World Bank.

Brown, Caitlin, Martin Ravallion, and Dominique van de Walle. 2016. "A Poor Means Test? Econometric Targeting in Africa." NBER Working Paper 22919. National Bureau of Economic Research.

Coady, David. 2006. "The Distributional Impacts of Indirect Tax and Public Pricing Reforms." In *Analyzing the Distributional Impact of Reforms*, edited by Aline Coudouel and Stefano Paternostro. World Bank.

Coady, D., V. Flamini, and L. Sears. 2015. "The Unequal Benefits of Fuel Subsidies Revisited: Evidence for Developing Countries." In *Inequality and Fiscal Policy*, edited by B. Clements, R. de Mooij, S. Gupta, and M. Keen. International Monetary Fund.

Coady, David, and others. 2006. "The Magnitude and Distribution of Fuel Subsidies: Evidence from Bolivia, Ghana, Jordan, Mali, and Sri Lanka." Working Paper 06/247. International Monetary Fund.

de la Fuente, Alejandro, Jon Jellema, and Nora Lustig. (Forthcoming). "Fiscal Policy in Africa: Welfare Impacts and Policy Effectiveness." World Bank Policy Research Working Paper, World Bank.

de la Fuente, Alejandro, Jon Jellema, and Manuel Rosales. 2018. "CEQ Master Workbook: Zambia (2015)." CEQ Data Center on Fiscal Redistribution. CEQ Institute, Tulane University, the World Bank, and the International Monetary Fund.

de la Fuente, Alejandro, Manuel Rosales, and Jon Jellema. 2017. "The Impact of Fiscal Policy on Inequality and Poverty in Zambia." World Bank Policy Research Working Paper 8246 (November). World Bank.

Desai, Raj M., and Homi Kharas. 2017. "Is a Growing Middle-class Good for the Poor? Social Policy in a Time of Globalization." Global Policy and Development Working Paper 105 (July). Brookings Institution.

Higgins, Sean, and Nora Lustig. 2016. "Can a Poverty-Reducing and Progressive Tax and Transfer System Hurt the Poor?" *Journal of Development Economics* 122: 63–75.

Inchauste, Gabriela, and others. 2017. "The Distributional Impact of Fiscal Policy in South Africa." In *The Distributional Impact of Taxes and Transfers. Evidence from Eight Low-and Middle-Income Countries*, edited by Gabriela Inchauste and Nora Lustig. World Bank.

Inchauste, Gabriela, and others. 2016. "CEQ Master Workbook: South Africa (2010–2011)." CEQ Data Center on Fiscal Redistribution (March 6). CEQ Institute, Tulane University, and the World Bank.

Jellema, Jon. 2017. "Fiscal Incidence Analysis." In Comoros Poverty Assessment (English). World Bank. World Bank Group.

Jellema, Jon, and others. 2016. "CEQ Master Workbook: Uganda (2012–2013)." CEQ Data Center on Fiscal Redistribution (July 28). CEQ Institute, Tulane University, and International Growth Center.

———. 2018. "Uganda: The Impact of Taxes, Transfers, and Subsidies on Inequality and Poverty." Chapter 19 in *Commitment to Equity Handbook: Estimating the Impact of Fiscal Policy on Inequality and Poverty*, edited by Nora Lustig. Brookings Institution Press and CEQ Institute, Tulane University. Free online version available at www.commitmentoequity.org.

Jellema, Jon, and Gabriela Inchauste. 2018. "Constructing Consumable Income: Including the Direct and Indirect Effects of Indirect Taxes and Subsidies." Chapter 7 in *Commitment to Equity Handbook: Estimating the Impact of Fiscal Policy on Inequality and Poverty*, edited by Nora Lustig. Brookings Institution Press and CEQ Institute, Tulane University. www.commitmentoequity.org.

Jellema, Jon, Nora Lustig, and Valentina Martinez Pabon (forthcoming). "Can Tax-funded Transfer Programs Provide Income Floors in Sub-Saharan Africa? Fiscal Incidence Analysis of Alternative Policy Simulations" CEQ Working Paper 86, CEQ Institute, Tulane University.

Jellema, Jon, and Caroline Tassot. 2018. "Analysis of the Impact of Tax and Social Protection Policies on Inequality and Poverty in Togo." OECD Development Policy Papers 12. OECD.

Jellema, Jon, and Caroline Tassot. Forthcoming. "Analyse de l'impact des politiques fiscales et de protection sociale sur les inégalités et la pauvreté au Côte d'Ivoire." OECD Development Policy Papers. OECD.

Jolliffe, Dean, and Espen Beer Prydz. 2016. "Estimating International Poverty Lines from Comparable National Thresholds" (English). Policy Research Working Paper WPS 7606. This paper was funded by the Knowledge for Change Program (KCP). World Bank Group. http://documents.worldbank.org/curated/en/837051468184454513/Estimating-international-poverty-lines-from-comparable-national-thresholds.

Lustig, Nora (ed.). 2018. *Commitment to Equity Handbook: Estimating the Impact*

of Fiscal Policy on Inequality and Poverty. Brookings Institution Press and CEQ Institute, Tulane University. Free online version available at www.commitmentoequity.org.

Moore, Mick, Wilson Prichard, and Odd-Helge Fjeldstad. 2018. *Taxing Africa. Coercion, Reform and Development.* London: Zed Books and International African Institute.

Namibia Statistics Agency and World Bank. 2017. "Does Fiscal Policy Benefit the Poor and Reduce Inequality in Namibia? The Distributional Impact of Fiscal Policy in Namibia" (June). World Bank.

Rigolini, Jamele, and others. Forthcoming. "From Theory to Facts: Incidence and Costs of Universal Basic Income Programs." World Bank.

Sulla, Victor, Precious Zikhali, and Jon Jellema. 2016. "CEQ Master Workbook: Namibia (2010)," CEQ Data Center on Fiscal Redistribution. CEQ Institute, Tulane University, and the World Bank.

Tassot, Caroline, and Jon Jellema. 2018. "CEQ Master Workbook: Togo (2015)." CEQ Data Center on Fiscal Redistribution. CEQ Institute, Tulane University, and the Organization for Economic Cooperation and Development.

———. 2019. "CEQ Master Workbook: Ivory Coast (2015)." CEQ Data Center on Fiscal Redistribution. CEQ Institute, Tulane University, and the Organization for Economic Cooperation and Development.

World Bank. 2017. "Comoros Poverty Assessment" (English). World Bank Group.

Younger, Stephen, Flora Myamba, and Kenneth Mdadila. 2016a. "CEQ Master Workbook: Tanzania (2011–2012)." CEQ Data Center on Fiscal Redistribution. (April 3, 2018). CEQ Institute, Tulane University.

———. 2016b. "Fiscal Incidence in Tanzania." African Development Review 28, no. 3: 264–76.

Younger, Stephen, Eric Osei-Assibey, and Felix Oppong. 2016. "CEQ Master Workbook: Ghana (2012–2013)." CEQ Data Center on Fiscal Redistribution. (February 10). CEQ Institute, Tulane University.

———. 2017. "Fiscal Incidence in Ghana." *Review of Development Economics* 21, issue 4, https://doi.org/10.1111/rode.12299.