

The Distributional Impact of Fiscal Policy in South Africa

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Abstract

This paper uses the 2010/11 Income and Expenditure Survey for South Africa to analyze the progressivity of the main tax and social spending programs and quantify their impact on poverty and inequality. The paper also assesses the redistributive effectiveness of fiscal interventions given the resources used. Because it applies the Commitment to Equity methodology, the results for South Africa can be compared with other middle-income countries for which the framework has also been applied. The main results are twofold. First, the burden of taxes—namely the personal income tax, the value added tax, excises on alcohol and tobacco, and the fuel levy—falls on the richest in South Africa and social spending results in sizable increases in the incomes of the poor. In other words, for the components

examined, the tax and social spending system is overall progressive. Second, for these elements, fiscal policy in South Africa achieves appreciable reductions in income inequality and poverty. Moreover, these reductions are the largest achieved in the emerging market countries that have so far been included in the Commitment to Equity project. Although fiscal policy is equalizing and poverty-reducing, the levels of inequality and poverty that remain still rank among the highest in middle-income countries. Looking ahead, as South Africa grapples with slow economic growth, a high fiscal deficit, and a rising debt burden, addressing the twin challenges of high inequality and poverty will require not only much improved quality of public services, but also higher and more inclusive economic growth.

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The Distributional Impact of Fiscal Policy in South Africa¹

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I. Introduction

Since the end of apartheid, South Africa has made progress toward establishing a more equitable society. In particular, advances in areas such as electrification and access to education have increased equality of opportunities (World Bank, 2012). There has also been a sizeable reduction in the levels of poverty in recent years. Between 2006 and 2011, the proportion of the population living in poverty using the national poverty line fell from 57.2 to 45.5 percent.² Inequality of per capita household consumption has also declined during this period: the Gini coefficient fell from 0.67 to 0.65.³ However, in spite of this progress, the Gini coefficient in South Africa is still higher than it was in 1993 and the country continues to be one of the most unequal in the world. The top 20 percent of the population accounted for 61.3 percent of national consumption, while the bottom 20 percent accounted for 4.3 percent in 2011.⁴ As a comparator, in another highly unequal country, Brazil, the share of the top 20 percent in national consumption is 55.7 percent.⁵ As a result of the high levels of inequality, South Africa also features higher poverty rates than other middle-income countries with similar per capita GDP. For example, measured with the international poverty line of US\$2.50 per day, South Africa's headcount ratio is 36 percent, while it is 11 percent in Brazil and 4 percent in Costa Rica.⁶

In large part, progress towards greater income equality has proven elusive because of the enduring legacy of the apartheid system. This is true in spite of the fact that South Africa's government has tried to attack the inequality inertia at its roots on several fronts, including most prominently through taxation and social spending. The 1996 Constitution's Bill of Rights established citizens' rights to health care, food, water, social security and assistance. It required the state to fulfill these rights progressively and to the best of its ability. Since the end of apartheid, the government has expanded social assistance programs and spends sizable resources, by the standards of middle-income countries, on health and education services. By 2013/14, total government spending amounted to 33.2 percent of GDP with more than half of it devoted to social spending. Indeed, thanks to social grants, everybody's disposable income grew between 1995 and 2005; without the grants, two-fifths of the population would have seen its income decline in the first decade after apartheid. Indeed, van der Berg (2006) found that social spending had become increasingly progressive. More recently, Leibbrandt et al. (2010) estimated redistributive spending policies have undone about 40% of the increase in the market-income inequality (measured by the Gini coefficient), with the expansion of social cash transfers being particularly important. Meanwhile the tax system has generated considerable resources for redistribution with total general government revenue collections amounting to 29.2 percent of GDP in the same year. Moreover, Woolard et al. (2005) found that although the relative burden of taxation increased for the bottom 30 percent and the top decile between 1995 and 2000, when taken together taxes were progressive, effectively reducing the level of inequality between incomes before and after taxes.

The government's commitment to greater equality remains strong. The *National Development Plan: Vision for 2030* sets the ambitious goal of eliminating poverty and reducing inequality. It targets to cut the Gini coefficient to 0.60 by 2030 by raising employment and the share of income of the bottom 40 percent from 6 to 10 percent.⁷ In 2014, with an overall fiscal deficit at about 4 percent of GDP and debt burden close to 40 percent of GDP, fiscal space has become more limited. In such an environment, the question becomes whether the government is making the best possible use of fiscal policy to achieve its goals of reducing poverty and inequality.

In this context, this paper aims to assess the distributional impact of some of the main tax and social spending programs by applying a state-of-the-art fiscal incidence analysis. In particular, the paper first aims to analyze whether the tax and spending programs assessed in this paper are progressive in South Africa. Second, the paper aims to quantify the impact these tax and spending programs have on inequality and poverty, and how effectively the taxes and transfers redistribute income between the rich and the poor. Our analysis has three unique features. First, with most other studies almost a decade old, this paper uses the most recent Income and Expenditure Survey

² Statistics South Africa, 2014a, Table 3, using the national upper-bound poverty line of R.620 per month.

³ Statistics South Africa, 2014a, Table 5, expenditure per capita excluding taxes.

⁴ Ibid, 2014.

⁵ SEDLAC (Socioeconomic Database for Latin America and the Caribbean, CEDLAS at Universidad de La Plata and World Bank).

⁶ The poverty line is measured in purchasing power parity. The headcount ratios are for disposable income.

⁷ National Planning Commission, 2011, National Development Plan: Vision for 2030, page 3 and page 28.

(IES) from 2010/11 (Statistics South Africa, 2012a) that contains data on household income, expenditures, cash transfers, and utilization of educational services collected from some 25,328 households covering over 95,000 individuals. Second, it assesses how each fiscal instrument examined in this paper contributes to redistribution and how effective it is in doing so given the resources used. Finally, because it applies the Commitment to Equity (CEQ) methodology (Lustig and Higgins, 2013), the results for South Africa can be compared with other middle-income countries for which the framework has also been applied.

The main results are twofold. First, the burden of taxes—namely, the Personal Income Tax (PIT), Value Added Tax (VAT), excises on alcohol and tobacco, and the fuel levy—falls on the richest in South Africa and social spending results in sizable increases in the incomes of the poor. In other words, for the components examined, the tax and social spending system is overall progressive. Second, for these elements, fiscal policy in South Africa achieves appreciable reductions in income inequality and poverty, and these reductions are in fact the largest achieved in the emerging market countries that have so far been included in the CEQ project.⁸ Yet despite fiscal policy being both equalizing and poverty-reducing, the level of inequality and poverty rates that remain are still very high, as noted above, ranking as some of the highest in middle-income countries. Looking ahead, as South Africa grapples with slowing economic growth, a high fiscal deficit and rising debt burden, addressing the twin challenges of high inequality and poverty will require not only much improved quality of public services, but also higher and more inclusive economic growth.

Before delving into these issues more deeply, Sections II and III provide an overview of the key fiscal tools used by the South African government to redistribute income between the rich and the poor, followed by the basic framework, caveats and assumptions. Section IV then presents the progressivity of taxes and social spending by looking at each of the key fiscal instruments and then viewing the incidence of the key taxes and social spending as a whole. From theory one knows that a tax or expenditure instrument could be progressive but not have large impacts on equity if it is too small.⁹ One also knows that a tax could be regressive but still equalizing if analyzed in conjunction with other taxes and, especially, transfers.¹⁰ Furthermore, taxes and transfers could be equalizing and yet poverty increasing because inequality depends on relative incomes while poverty is affected by absolute income levels: that is, a tax system could be progressive and equalizing but hurt the poor if the level of taxes paid by them exceeds the transfers received by the poor. Finally, taxes and transfers could introduce horizontal inequity. One typical form of horizontal inequity occurs when the ranking of individuals (i.e., the ordering of individuals in the before taxes and transfers income distribution) gets changed (some individuals swap positions) by the fiscal system.¹¹ Recognizing these four elements, section V analyzes the impact of taxes and transfers combined on inequality, poverty and horizontal equity, and compares the results to those for other middle-income countries. Finally, the paper discusses the effectiveness of social spending, and whether the reduction in poverty is commensurate with the amount spent, compared to other middle-income countries.

II. General Government's Fiscal Instruments to Tackle Poverty and Inequality

Since the end of apartheid, the government has progressively expanded its fiscal programs to help address poverty and inequality while maintaining sound fiscal indicators. It broadened the tax base and built an efficient tax administration to generate the resources it needed to progressively expand the social safety net for the poor. However, in recent years fiscal space has become more limited. Reflecting the impact of the global financial crisis and the slowdown in economic growth in South Africa, the government pursued a countercyclical policy that preserved spending in the face of declining revenue collections. As a result, the overall fiscal balance moved from a surplus of about 1.3 percent of GDP in 2008 to a deficit of 4.3 percent of GDP in 2012/13 before narrowing somewhat to a deficit of 4 percent of GDP in 2013/14. The overall net debt burden rose from 22.9 percent of GDP in 2008/09 to 39.7 percent of GDP in 2013/14 and in an environment of slow economic growth it is

⁸ Led by [Nora Lustig](#) since 2008, the Commitment to Equity (CEQ) project is an initiative of the Center for Inter-American Policy and Research (CIPR) and the Department of Economics, Tulane University, the Center for Global Development and the Inter-American Dialogue. For more details, see <http://www.commitmenttoequity.org>.

⁹ See Duclos and Tabi (1996).

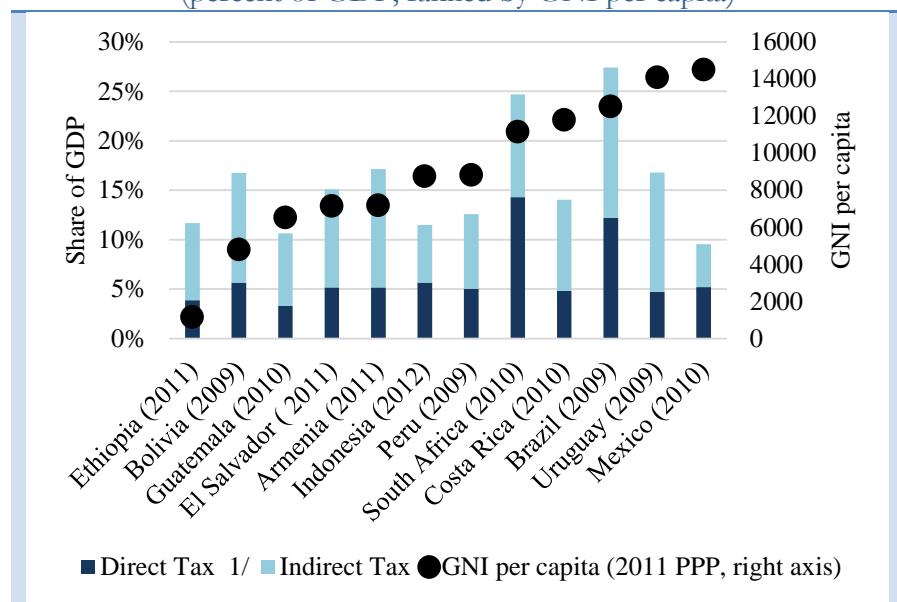
¹⁰ As soon as there is more than one intervention, assessing the progressivity of fiscal interventions individually is not sufficient to determine whether they are equalizing or not (see, for example, Lambert (2002) pp. 277-278).

¹¹ For details on these see the chapter by Lustig, Nora, Rodrigo Aranda and Ali Enami, in Lustig, forthcoming.

forecast by the National Treasury (2014) to rise even higher. Given a more constrained fiscal environment going forward and the government's medium-term budget plan that aims to consolidate the overall deficit and stabilize the debt burden, the contribution of fiscal policy to reducing market-determined levels of inequality and poverty has particular relevance.

On the revenue side, the tax system in South Africa generates considerable resources for potential redistribution by middle-income country standards. Just over half of South Africa's general government tax collections of 27.1 percent of GDP in 2010/11 came from direct taxes: the Personal Income Tax (PIT), Corporate Income Tax (CIT), and payroll taxes in the form of unemployment insurance and the skills development levy (table 1). South Africa relies relatively more on PIT and less on indirect or consumption taxes than other CEQ countries (figure 1), a welcome feature of its tax system (in terms of equity, that is)¹² since PIT tends to be more progressive than consumption taxes (as we shall see below).

Figure 1. Composition of Taxes
(percent of GDP, ranked by GNI per capita)



Source: Armenia (Younger and Khachatryan, forthcoming), Bolivia (Paz et al, 2014), Brazil (Higgins and Pereira, 2014), Ethiopia (Woldehanna et al, forthcoming), Indonesia (Jellema et al forthcoming), Mexico (Scott, 2014), Peru (Jaramillo, 2014), Uruguay (Bucheli et al, 2014), Lustig (forthcoming) based on Guatemala (Cabrera et al, 2014), Costa Rica (Sauma et al, 2014) and El Salvador (Beneke et al, 2015, and own estimates for South Africa based on IES 2010/11. 1/ Direct taxes include Corporate Income Tax collections in addition to PIT.

Table 1. South Africa General Government Revenue Collections, 2010/11

	2010/11 (% of GDP)	Incidence analysis (% of GDP)
Total general government revenue	30.9	17.5
<i>Tax revenue</i>	<i>27.1</i>	<i>17.5</i>
<i>Direct taxes</i>	<i>14.3</i>	<i>8.5</i>
Personal income tax	8.5	8.5
Corporate income tax	5.6	...
Other direct taxes	0.1	...
<i>Indirect taxes</i>	<i>10.4</i>	<i>9.0</i>
VAT	6.9	6.9
Specific excise duties	0.9	0.8
General fuel levy	1.3	1.3
International trade taxes	1.0	...
Other indirect taxes	0.3	...
<i>Other taxes</i>	<i>2.5</i>	...
<i>Nontax revenue</i>	<i>3.8</i>	...

Sources: Statistics South Africa, 2012b, "Financial statistics of Consolidated General Government," November 22, 2012 for totals. Line items under direct and indirect taxes are from 2013 Budget Review, National Treasury.

¹² Of course, equity is not the only criterion by which a tax system should be evaluated. Direct taxes can constrain economic growth which in turn limits the ability of the fiscal system to reduce inequality in the future.

Our analysis focuses on the major tax items, namely personal income tax, payroll taxes, value-added tax, specific excise duties on alcohol and tobacco and the general fuel levy. These items make up about 64.5% of all general government tax revenue.¹³ Box 1 describes the main features of each of these taxes in South Africa.

Box 1: Main features of key taxes included in the fiscal incidence analysis for South Africa

Personal Income Tax

Personal income tax (PIT) is levied on individual taxable income (gross income less exemptions and allowable deductions). Capital gains also form part of taxable income. Individuals generally receive their income as salary/wages, pension/annuity payments and investment income (interest and dividends).

Filing is done individually and the system does not provide deductions for married persons or children. All formal sector employees must be registered by their employer for PIT and the employer is responsible for calculating and withholding PIT payable. In 2010/11, individuals with an income of less than R120,000 (US\$16,438 calculated at the average exchange rate in 2010/11 of Rand 7.3 per US\$) per annum (who comprised more than half of all taxpayers) were not required to file tax returns. In 2010/11, the tax threshold (i.e. the taxable income below which no PIT was payable) was R54,200 (US\$7,424) for individuals below age 65 and R84,200 (US\$11,534) for individuals over the age of 65. The top marginal tax rate was 40% and kicked in at R525,000 (\$71,917) per annum. A certain level of interest income (R22,300 or US\$3,054 p.a. in 2010/11) is tax-exempt in an effort to promote saving. Limited deductions are permitted for travel expenses, contributions to pension funds, and medical aid (health insurance) schemes.

Payroll taxes

There are no social security taxes as there is no contributory social security in South Africa. Two earmarked payroll taxes exist: First, the skills development levy: employers contribute 1% of total payroll towards a levy used to fund training facilitated through the Sector Education and Training Authorities. Second, the Unemployment Insurance Fund (UIF): employers and employees each contribute 1% of earnings (up to a cap, currently set at R14,872 or US\$1487 per month) towards a fund which provides income protection for up to 236 days in the event of unemployment. We treat the skills development levy and UIF as payroll taxes separate from PIT, but as part of direct taxes.

Value-added tax

VAT was introduced in South Africa in September 1991, replacing the General Sales Tax (GST). The South African VAT system is an example of a 'modern' VAT. Most goods are subject to the standard rate of 14%, with limited zero-ratings and exemptions.

Certain foodstuffs are zero-rated. The current list of zero-rated foodstuffs are: brown bread, maize meal, samp, maize rice, dried maize, dried beans, lentils, tinned pilchards/sardines, milk powder, dairy powder blend, rice, vegetables, fruit, vegetable oil, milk, cultured milk, brown wheaten meal, eggs and legumes/pulses. Other goods such as diesel and petrol are zero-rated as they are instead subject to excise duties and municipal taxes are zero-rated to avoid cascading taxes.

The VAT system also has a limited number of exemptions, notably for certain forms of passenger transport, educational and financial services. Passenger transport by road and rail were exempted for two reasons. First, when the VAT was introduced there were concerns that increased bus and train fares would hurt the poor. Second, it was considered infeasible to get mini-bus taxi operators to register as VAT vendors. In the case of educational services there is a blanket exemption which includes private schools, colleges and universities. Concessions for education are common to most VAT systems, and are justified on merit grounds. Finally, some goods are exempt because they are hard to tax, in particular financial services.

¹³ The largest omitted item is corporate income tax (CIT) which accounts for about 21% of tax revenue. The analysis only assesses items included in South Africa's general government budget and therefore it does not include revenues collected or activities undertaken by State-Owned Enterprises.

Excise duties

Specific excise duties are levied on tobacco products, alcohol products (malt and traditional beer, wine and other fermented beverages, spirits) and petroleum products (petrol, distillate fuel, residual fuel and base oil).

Fuel levies

Fuel levies include general levies and specific excise duties on petrol, diesel and illuminating paraffin. Petrol and diesel fuel are also levied with a contribution to the Road Accident Fund which pays compensation to victims of traffic accidents.

Total general government spending in South Africa is also somewhat higher than the average for middle-income countries.¹⁴ Total general government spending, excluding interest payments amounted to 32.2 percent of GDP in 2010/11 (table 2). As we can see in figure 2, South Africa's social government spending (as a share of GDP) is among the highest in our (comparable) sample. Compared with other "big" social spenders in this graph, Bolivia and Brazil, South Africa spends somewhat more on education and less on health and direct cash transfers than Brazil does, but more on direct cash transfers than Bolivia does.

Table 2: South Africa: General government expenditure, 2010/11

	2010/11 (% of GDP)	Incidence analysis (% of GDP)
Total General Government Expenditure	34.8	14.9
<i>Primary government spending</i>	<i>32.2</i>	<i>14.9</i>
<i>Social spending</i>	<i>17.6</i>	<i>14.9</i>
Total Cash Transfers	3.8	3.8
Child Support Grant	1.1	1.1
Old age pension (non-contributory)	1.3	1.3
Disability grant	0.6	0.6
Foster care grant	0.2	0.2
Other grants	0.6	0.6
Free Basic Services	0.5	0.5
In-kind transfers	12.6	11.1
Education	7.0	7.0
Health	4.1	4.1
Housing and urban	1.5	...
Other social spending	1.1	...
<i>Nonsocial spending (incl. public sector pensions)</i>	<i>14.6</i>	<i>...</i>

Source: : Statistics South Africa, 2012b , "Financial Statistics of Consolidated General Government," November 22, 2012, for totals. Line items under direct and indirect taxes from 2013 Budget Review, National Treasury. For Free Basic Service, data represent the amount transferred under the equitable share formula for 2010/11 to municipalities to compensate them for providing basic services to poor households, and was provided by the Financial and Fiscal Commission of South Africa.

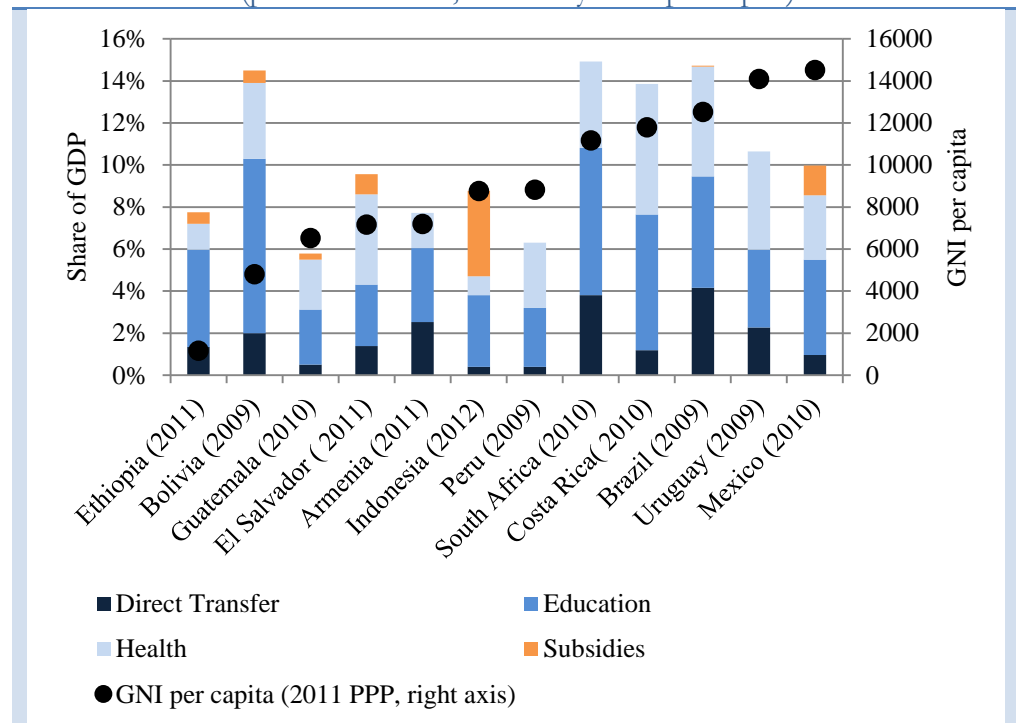
Just over half of South Africa's total general government expenditure was devoted to social spending. Some 3.3 percent of GDP was dedicated to direct cash transfers to individuals and includes items such as non-contributory pensions and child grants (table 2) but excluding free basic services. Over the past decade, the number of beneficiaries receiving social grants doubled from almost 8 million in 2003/04 to 15.8 million in 2013/14 mainly reflecting the expansion of direct cash transfers to children and the elderly. The Child Support Grant (CSG) was introduced in 1998 and was initially targeted at children aged 0-7 years, with the age limit progressively raised to its current level of 18 years. The age limit for the old-age grant for men was also lowered from 65 to 60 years to

¹⁴ General government excludes State-Owned Enterprises.

equalize it with that of women. Total spending on all direct cash grants amounted to some 3.3 percent of GDP in 2010/11 (excluding free basic services of 0.5 percent of GDP), and is more than twice the median spending across developing countries (World Bank 2009).

Other items included in social spending include 0.5 percent of GDP in the form of basic services such as power, sanitation, water supply, and refuse removal (free basic services, or FBS) which were provided free to low-income households (note that the modality of delivery of these services varies across municipalities as described in Box 2). In addition, 12.6 percent of GDP was spent on in-kind transfers via health (4.1 percent of GDP) and education (7 percent of GDP) outlays, while 1.5 percent of GDP was devoted to housing and urban in-kind transfers, which includes RDP housing.¹⁶ In this study, we utilize direct cash transfers, in-kind transfers in the form of health and education. Together, these items account for 43 percent of total spending and 85 percent of social spending. It was not possible to include the remaining items of social spending due to data limitations. Box 2 describes the main features of each of these social spending programs in South Africa.

Figure 2. Social Spending and Subsidies¹⁵
(percent of GDP, ranked by GNI per capita)



Source: Armenia (Younger and Khachatryan, forthcoming), Bolivia (Paz et al, 2014), Brazil (Higgins and Pereira, 2014), Ethiopia (Woldehanna et al, forthcoming), Indonesia (Jellema et al forthcoming), Mexico (Scott, 2014), Peru (Jaramillo, 2014), Uruguay (Bucheli et al, 2014), Lustig (forthcoming) based on Guatemala (Cabrera et al, 2014), Costa Rica (Sauma et al, 2014) and El Salvador (Beneke et al, 2015), and own estimates for South Africa based on IES 2010/11.

Box 2. Main features of the key social spending Programs included in the fiscal incidence analysis for South Africa

Cash transfer programs

Social assistance is prioritized in the national budget in line with section 27(1) of the Constitution which states that “everyone has the right to have access to ... social security, including, if they are unable to support themselves and their dependents, appropriate social assistance.” Social grants are targeted at categories of individuals who are unlikely to be able to provide for their own needs, namely the elderly, the disabled and children.

It is estimated that the fiscal year 2014/15 the Old Age Grant will have reached just over 3 million people aged 60 years and above, up from 2.6 million in 2010/11. The value of the Old Age Grant is currently R1,350 (US\$127.5) per month, having kept pace with inflation in recent years. The Old Age Grant is currently means-tested, but reaches over 80 percent of age-eligible individuals. The intention is to phase out the means-test and to make the grant universal by 2016. The disability grant (which has the same monetary value as the Old Age Grant) is currently

¹⁵Does not include contributory old-age pensions.

¹⁶However, this category of expenditure was not included formally in the incidence analysis owing to lack of detailed administrative data on housing values. However, we do present results on the coverage of RDP housing by decile to assess who benefits from this program.

paid to about 1.1 million people of working age who are unable to work because of chronic illness or disability. This is slightly down on the number of beneficiaries in 2010/11 when 1.2 million people collected this grant.

The social grant system includes three child grants. The Child Support Grant (CSG) is the main poverty-oriented child grant available to all primary caregivers who pass a means test. The Care Dependency Grant (CDG) is provided to caregivers of severely disabled children with intensive care needs. The Foster Child Grant (FCG) is available to foster parents of children who have been found by the courts to be in need of 'care and protection' in terms of the Children's Act. In the fiscal year 2014/15, the CSG will have been paid to 11.2 million children, the FCG to 534,000 children and the CDG to 135,000 children (2014 Budget Review). The value of the CSG is R310 (US\$29) per month, against R830 (US\$78) for the FCG and R1,350 (US\$127) for the CDG. The number of FCG and CDG beneficiaries has remained steady over the last few years, while the number of CSG beneficiaries has risen by 1 million children since 2010/11.

Education

Schooling is compulsory for all children aged seven to 15. The vast majority (96%) of school-goers attend public schools. The fiscus provides all public schools with a grant to finance their operational costs and teacher salaries. Schools in poorer neighborhoods are designated 'no fee' schools which receive a slightly higher state subsidy to compensate for the absence of school fees. In 2011, 78 percent of learners attended no-fee schools (Department of Basic Education [DBE], 2012). Other public schools will charge fees which vary enormously, from about R100 to about R30,000 per annum. However, even at fee-paying schools parents can apply for a full or partial reduction of fees and schools may not refuse admission to learners living in the immediate vicinity. On application, beneficiaries of the CSG should automatically be exempted from the payment of school fees. Tertiary education is not free but is subsidized.

Health

The healthcare system in South Africa is divided into public care, which services more than 80% of the population, and private care which services only those who can afford the high fees. Primary health care is available free of charge to everyone, while hospital services are provided at relatively low cost, with a sliding tariff scale calculated according to income level. Individuals living in households with an income of less than R6000 (US\$566) per month, children under six years, pregnant women and social grant beneficiaries are automatically exempt from paying for any public health services.

Free Basic Services

The Municipal Property Rates Act contains an explicit mandate for municipalities to provide relief for the poor in the way in which they charge for municipal services (property rates, water, electricity, and sanitation and refuse removal).

Drawing on international benchmarks, minimum standards of 50kWh of free electricity and 6kl of free water per household per month have been adopted in South Africa, while the minimum adequacy requirement for sanitation is a ventilated pit latrine. In 2010, 97 percent of households had access to water supply infrastructure (though this includes communal taps), and 79 percent had access to adequate sanitation (National Treasury, 2011). More than three-quarters of households are connected to the electricity grid.

About half of total municipal spending is funded by the national government via an 'equitable share formula.' This transfer amounted to about 1 percent of GDP in 2010/11. About three-quarters of the equitable share transfer reflects that part of the formula used to cover the operating costs of providing basic services to poor households in each municipality using an estimate of the number of poor households in their area. However, at the local level, some municipalities also use a block tariff system which makes it possible for municipalities to cross-subsidize free basic service allocations to the poor, using revenue from service fees paid by the non-poor.

The availability of free basic services is variable in that municipalities determine their own eligibility criteria or 'indigence' levels. Larger municipalities provide a certain amount of free water and electricity by not charging for the first few units and then applying rising block tariffs for consumption over that amount. Other municipalities provide a rebate to households that have applied on grounds of 'indigence' (where indigence is typically defined as having a monthly income below twice the amount of the Old Age Grant). An important limitation of the free basic services safety net is that households living in areas without service infrastructure cannot benefit from free services.

Integrated Residential Development Program (RDP)

This program is based on the development of integrated housing projects. It provides for the acquisition of land, servicing of stands for a variety of land uses including commercial, recreational, schools and clinics, as well as residential stands for low, middle and high income groups. The land use and income group mix is based on local planning and needs assessment however it is not explicitly targeted to the poor.

III. Basic Framework, Data and Assumptions

1. Fiscal Incidence Framework

Our fiscal incidence analysis assesses how personal income and consumption taxes along with the assessed social spending programs redistribute income amongst different deciles of the population (Box 3). Using this approach, it is possible to measure how the redistributive process implemented through these fiscal instruments impacts poverty and inequality. As such, the analysis does not provide an assessment of the drivers or causes of poverty or inequality.

Box 3. What Is Fiscal Incidence Analysis?

Fiscal incidence analysis consists of allocating taxes and public spending (social spending in particular) to households or individuals so that one can compare incomes before taxes and transfers with incomes after taxes and transfers, where the latter may include the monetized value or consumption of free public services. In addition to assessing the impact of fiscal policy on the distribution of income, one may be interested in how taxes and transfers affect the welfare of different social groups such as groups of individuals differentiated by gender, ethnicity, or location.

The most common fiscal incidence analysis examines what is paid and received without assessing the behavioral responses that taxes and public spending may trigger on individuals or households. This is often referred to as the “accounting” approach and is adopted in this study. Put simply, the accounting approach consists of starting from a pre-fisc income and, depending on the fiscal intervention under study, allocating the proper amount of a tax or a transfer to each household or individual. If the fiscal intervention is a direct tax (transfer) and one starts the analysis from pre-tax (pre-transfer) income, the post-tax (post-transfer) income is calculated by subtracting (adding) the tax paid (transfer received).

More formally, let's define before taxes and transfers income of unit b as I_b , and net taxes of type i as T_i . Let us define the “allocator” of tax i to unit b as S_{ib} (or the share of net tax i borne by unit b). Then, post-tax income of unit b can be defined as: $Y_b = I_b - \sum_i T_i S_{ib}$. Although the theory is quite straightforward, its application can be fraught with complications. Most of the complications arise because actual incidence can be quite different from statutory incidence (for example, due to tax evasion) and the data to calculate the actual incidence is incomplete or absent.

Fiscal incidence analysis can be partial or comprehensive. Partial fiscal incidence analysis assesses the impact of one or several fiscal policy interventions: for example, income taxes or the use of public education and health services. Comprehensive fiscal incidence analysis assesses the impact of the revenue and spending sides simultaneously: namely, the impact of direct and indirect taxes, cash and in-kind transfers, and indirect subsidies. Incidence analysis can use income or consumption (per capita or equivalized) to measure household welfare. In this study we assess fiscal policy on a partial and comprehensive basis and test the sensitivity of our findings using both income and consumption (i.e. disposable income) measures. Additionally, there is point-in-time vs. lifetime fiscal incidence analysis. The analysis can assess a current system or estimate the potential or actual effects of particular reforms. It can use the statutory incidence or the actual one (including tax evasion or less than full take-up of a cash transfer, for example). It can make different assumptions about tax shifting and the value of in-kind benefits. The analysis can assess the average incidence of a tax or benefit or it can assess the incidence on the margin: e.g., the distribution of an increase in the spending of public education.

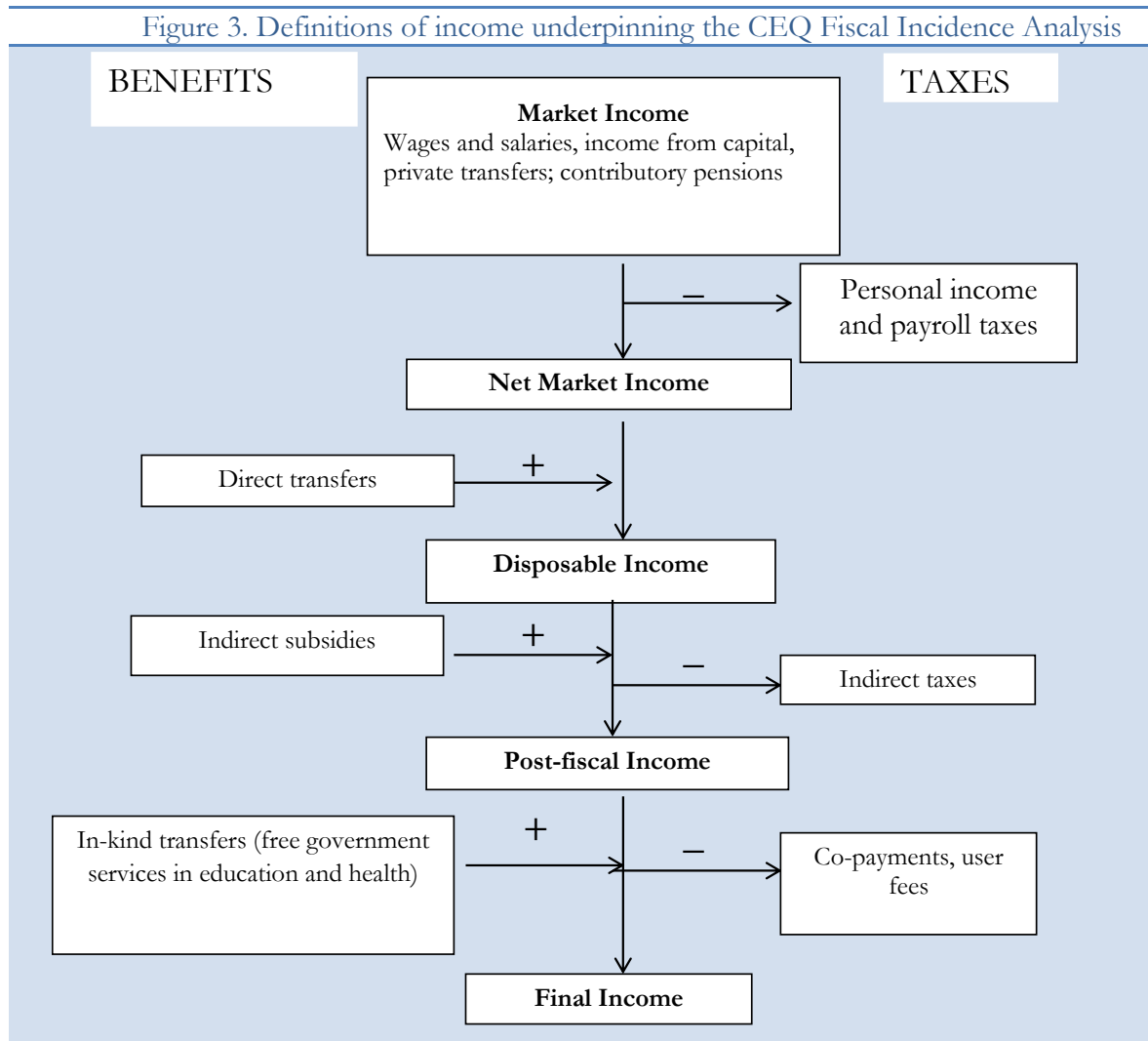
Incidence studies use micro-data from household surveys or rely on incidence indicators from secondary sources. Since in practice surveys will not include information on every tax paid or transfer received (or the information even if it exists may be inaccurate), that information must be generated in a consistent and methodologically solid way. Frequently, the information will have to be generated using more than one method to check the sensitivity of

the results to assumptions that one cannot externally validate. In our study we have to adopt such an approach for items like alcohol and tobacco taxation, health and free basic services.

The typical indicators produced by incidence analysis are measures of progressivity such as incidence –i.e., the share of taxes (transfers) paid (received) as a proportion of the pre-tax (pre-transfer) income-- and concentration coefficients which measures the share (by decile or quintile) of specific, or overall, taxes and transfers. In addition, fiscal incidence studies report inequality and poverty indicators –such as the headcount ratio and the Gini coefficient—before and after taxes and transfers. Also, some studies include indicators of horizontal equity to capture how policy impacts individuals who are equal before fiscal intervention (see below). This study produces information on all these indicators.

Source: Lustig and Higgins (2013).

We follow Lustig and Higgins (2013) and measure per capita income before and after each fiscal intervention (figure 3).



Source: Lustig and Higgins, 2013

- Market income¹⁷ comprises pre-tax wages, salaries, and income earned from capital assets (rent, interest or dividends) and private transfers.

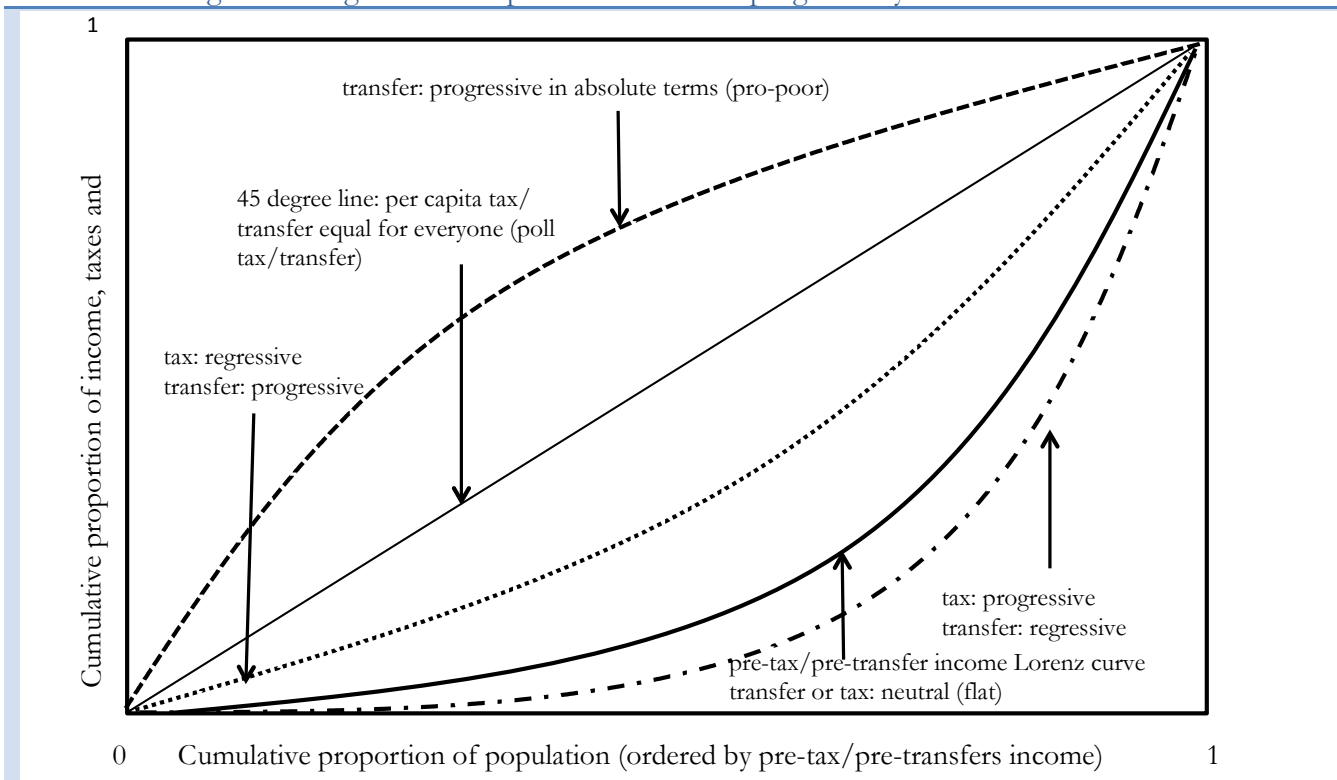
¹⁷In South Africa, we take net market income reported by each household in the IES and impute each direct tax paid to arrive at market income. This figure is then divided by the number of members in each household to arrive at per capita market income. We did not include the value of own production (sometimes called autoconsumption). Statistics South Africa did not measure auto-consumption in the conventional way; instead their variable captured both home production and business inventories and we had no way of separating out

- Net market income subtracts direct taxes, Personal Income Tax (PIT) and employee contributions to the Unemployment Insurance fund (UIF) and Skills Development Fund from market income.
- Disposable income is constructed by adding direct cash transfers to net market income. (This measure is closest to household consumption on which the Gini coefficient in South Africa is usually constructed.) In South Africa direct cash transfers include, for example, the old age, child, disability and foster grants.
- Post fiscal income adds the impact of indirect taxes and subsidies to disposable income. In South Africa, indirect taxes included in this analysis includes the VAT, excises on alcohol and tobacco, and the fuel level.
- Final income adds in-kind benefits such as health and education to post fiscal income.

2. Progressivity and Redistributive Effect: Basic Concepts and Definitions

One common way to measure the progressivity of a tax (transfer)¹⁸ is by comparing the cumulative distribution (also known as cumulative concentration shares) of their burden (benefit) with the cumulative distribution of market income. This is known as the tax (transfer) redistribution approach.¹⁹ In the case of spending, it is also useful to compare the cumulative distribution of benefits with the cumulative shares of total population. To illustrate, Figure 4 presents a Lorenz curve where the population is ranked along the horizontal axis using market (sometimes called original or reference) income, and the cumulative shares of taxes paid or transfers received is plotted along the vertical axis. The latter are concentration curves.

Figure 4. Diagrammatic representation of the progressivity of taxes and transfers



Source: Lustig and Higgins (2013).

The classification of taxes (transfers) in the remainder of the paper uses the following definitions when referring to whether taxes or government spending are progressive or not:²⁰

the auto-consumption component. Market income does include the imputed value of owner's occupied housing, though. See Table 9 for an illustration of the average level of income for each of these concepts across the distribution.

¹⁸ Note that the words "tax" and "transfer" apply to any form of government revenue and spending, respectively. For example, government spending on education and health are "transfers."

¹⁹ See, for example, Duclos and Araar (2006), p. 136.

²⁰ Based on Duclos and Araar (2006) and Lustig (2014).

- **Progressive:** a tax (transfer) whose concentration curve lies everywhere below (above) the Lorenz curve for market income is globally progressive.²¹
- **Absolutely progressive:** a transfer whose concentration curve lies everywhere above the diagonal (that is, the per capita transfer decreases with income) is globally progressive in absolute terms. An absolutely progressive transfer is frequently called “pro-poor.”
- **Neutral:** a tax (transfer) whose concentration curve coincides with the Lorenz curve of market income is neutral.
- **Regressive:** A tax (transfer) whose concentration curve lies everywhere above (below) the Lorenz curve is globally regressive.

There are several aspects that are crucial to bear in mind when analyzing the redistributive effect (that is, the change in the distribution of income) of fiscal interventions:²²

- To establish progressivity as defined in the literature it is not necessary for taxes (transfers) to be progressive for every individual in the distribution. Taxes (transfers) can be *globally* progressive even if they are not *everywhere* progressive.
- The redistributive impact of a tax (transfer) depends both on its progressivity *and* level. For example, a particular tax can be less progressive than another tax but if the level of the former is higher, its equalizing impact will be higher as well.²³
- In the face of more than one fiscal intervention, the impact of a tax (transfer) on inequality depends on the interaction among interventions. For example, a tax can be regressive with respect to market income but progressive and equalizing with respect to market income plus transfers. Depending on the characteristics of the tax and the transfer, keeping the progressive transfer only (i.e., eliminating the regressive tax) could be less equalizing than having both.²⁴
- Given what is mentioned in the previous paragraph, in order to assess the redistributive impact of taxes and transfers combined, we need to compare the concentration curve for after taxes and transfers income (with households ranked by market income) with the Lorenz curve for market income. The tax and transfer system combined is *globally* progressive in the income-redistribution sense if the concentration curve for after taxes and transfers income (with households ranked by market income) lies everywhere above the Lorenz curve for market income.
- If the order of individuals in the after taxes and transfers income distribution is the same as their order using market income, this condition will ensure that the tax and transfer system is equalizing. The total redistributive effect can be measured with the Reynolds-Smolensky index, defined as the difference between the Gini coefficient for market income (G_m) and the concentration coefficient for incomes *after* taxes and transfers ($C_{post-fisc}$), or:

$$\text{Reynolds – Smolensky Index} = RS = (G_m - C_{post-fisc})$$

In the absence of reordering of individuals, the concentration coefficient of after taxes and transfers income is identical to the Gini coefficient, or, $C_{post-fisc} = G_{post-fisc}$. The higher the RS index, the more redistributive the fiscal system.

In the real world, however, fiscal interventions are likely to change the order of individuals. In the literature, this is known as “re-ranking.” Re-ranking occurs if individual A was poorer than individual B before a fiscal intervention, (let’s say, a cash transfer), but B is poorer than A after the intervention. Re-ranking is considered to be a typical form of horizontal inequity generated by fiscal policy.²⁵ The re-ranking definition of horizontal equity postulates

²¹ This refers to progressivity in the tax (transfer) redistribution sense.

²² See Duclos and Araar (2006) and Lambert (2002). For a synthesis, see Lustig (forthcoming).

²³ See Duclos and Tabi (1996).

²⁴ See Lambert (2002), pp. 277-278. This counter-intuitive result is illustrated in Lambert’s Table 11.1.

²⁵ See Duclos and Araar, op. cit., Chapter 8.

that the pre-fiscal policy income ranking should be preserved. In other words, if individual A was poorer than individual B before fiscal interventions, individual A should continue to be poorer than individual B after the interventions.

From theory, we know that the total *redistributive effect* (RE) can be decomposed into two elements: the change in *vertical inequality* (VE) minus *re-ranking* (RR) (see Duclos and Araar, 2006, Chapter 8, p. 145; Lambert, 2002, Chapters 8-10; and Urban, 2009). The redistributive effect (RE) is equal to the difference between the Gini coefficient for incomes *before* taxes and transfers, G_m , and the Gini coefficient for incomes *after* taxes and transfers $G_{post-fisc}$, or;

$$RE = G_m - G_{post-fisc} \quad (1)$$

Adding and subtracting $C_{post-fisc}$ the concentration coefficient for incomes *after* taxes and transfers,²⁶ equation (1) can be decomposed into:

$$RE = (G_m - C_{post-fisc}) - (G_{post-fisc} - C_{post-fisc}), \quad (2)$$

Then the redistributive effect can be written as:

$$RE = VE - RR, \quad (3)$$

where:

- VE is equal to the difference between the Gini coefficient for incomes *before* taxes and transfers and the concentration coefficient for incomes *after* taxes and transfers; if there is no re-ranking, $RE = VE$ by definition because the concentration coefficient for incomes *after* taxes and transfers will be identical to the Gini coefficient for incomes *after* taxes and transfers;
- RR is equal to the difference between the Gini coefficient for incomes *after* taxes and transfers and the concentration coefficient for incomes *after* taxes and transfers.

The redistributive effect is diminished by re-ranking (RR) as clearly shown in equation (3). The VE measure is the Reynolds-Smolensky progressivity index (RS) and the RR measure is known as the Atkinson-Plotnick index of horizontal inequity.

It is very important to note that if taxes and transfers combined (i.e., the fiscal system) is globally progressive *but* there is re-ranking, it is no longer true that the system is always necessarily equalizing.²⁷ In other words, to establish whether a fiscal system decreases inequality –and by how much—it is essential to carry out the empirical fiscal incidence analysis for the system as a whole.

3. Data and Assumptions

To determine the size of each fiscal intervention at each step of income in Figure 1, we need to “map” the taxes and transfers from South Africa’s national accounts and administrative fiscal data to individual members in households. For this we use the 2010/11 Income and Expenditure Survey (IES) conducted by Statistics South Africa (Statistics SA, 2012a). This survey contains data on household income, expenditures, cash transfers, and utilization of educational services collected from 25,328 households across the country over a period of 12 months.²⁸ The allocation or “mapping” to individuals is obtained dividing the total tax paid or transfer received by each household by the total number of members in the household (excluding boarders and domestic workers).

²⁶ Recall that a concentration coefficient (also known as quasi-Gini) differs from the Gini coefficient in that the households are still ranked by the income *before* taxes and transfers.

²⁷ See, Lambert (2002) and Duclos and Araar (2006).

²⁸ The methodology used for data collection in the IES survey is an internationally accepted best practice and it is generally believed that the quality of the incomes and consumption data in the survey are good. However, there is some concern that the share of food consumption of the extreme poor in South Africa is much lower than one would expect, potentially pointing to some under-reporting at

Information on direct and indirect taxes, transfers in cash and in-kind, and subsidies cannot always be obtained directly from the IES. When it can be obtained, we call this the *direct identification method*. When the direct identification method is not feasible, one can use the inference, simulation, or imputation methods, or an alternate source. As a last resort, one can use secondary sources. The methods one can use to allocate taxes and transfers are described in detail in Lustig and Higgins (2013). The method used for each category of taxes and transfers in our study can be found in Appendix 1. A summary of the main assumptions follows:

1. The IES does not provide information on personal income taxes or payroll taxes like the Skills Development Levy and contributions to the Unemployment Insurance Fund. Thus, the burden of these had to be simulated. Consistent with other conventional tax incidence analyses, we assume that the economic burden of direct personal income taxes is borne by the recipient of income. The burden of payroll taxes is assumed to fall entirely on workers.
2. In contrast, the IES provides detailed information on the receipt of cash transfers. The number of beneficiaries implied by the survey receiving old age, child, disability and foster benefits aligns well with the figures provided by administrative fiscal data (National Treasury, 2014).
3. The IES also provides detailed consumption data that allows us to estimate the burden of VAT, the Fuel Levy, and specific excise duties on alcohol and tobacco. Consumption taxes are assumed to be shifted forward to consumers. (See Appendix 1 for details on all assumptions taken). Evasion of consumption taxes was taken into account implicitly by using “effective” rates (i.e., collected tax as a share of total consumption of that good according to national accounts) rather than statutory rates. In the case of excise on alcohol and tobacco, the survey severely underestimates actual consumption relative to what is recorded in the National Accounts. To correct for this, we assume that the extent of under-reporting is consistent across the income distribution, i.e. we assume that the survey provides the correct distribution of spending on alcohol and tobacco, but that the levels of spending are too low.²⁹ Finally, we use the 2009 Input-output Matrix and a price shifting model³⁰ to estimate the second round effects of indirect taxes, whereby these taxes result in higher costs in sectors that use these goods as inputs. For VAT, the indirect effects are only considered in the case of exempt items, since VAT refunds ensure that there is no cascading of non-exempt items.
4. In South Africa consumption subsidies are relatively small except for the “free basic services” provided by some municipal governments. However, a lot of municipalities essentially treat these free services as a direct transfer to households. In most of this paper, these services are considered a transfer in our baseline scenario, but we also present an alternative scenario where these services are treated as an indirect subsidy.³¹
5. The approach to estimate the incidence of public spending on education and health followed here is the so-called “benefit or expenditure incidence” or the “government cost” approach. In essence, we use per beneficiary input costs obtained from administrative fiscal data (disaggregated by province and type of

the bottom of the distribution. The survey uses a combination of the diary and recall methods to calculate total household consumption. As is often the case with survey based on diary and recall methods that run over extended periods there is a risk that income and consumption is underestimated. In addition, the survey does not separately identify own-produced goods, which could lead to under-reporting of consumption at the bottom of the distribution and could account for at least part of the gap in the share of food in the consumption basket of the poor relative to what surveys report in other countries. Finally, as in other countries, there are questions about the ability of a survey of this type to collect adequate information on households at the top of the distribution. One area for further research would be to try alternative methods to simulate the top of the distribution to try to correct for this.

²⁹ The ratio of the value of IES consumption on alcohol is only 17 percent of total sales reported by the Reserve Bank of South Africa due to a very large number of households reporting zero amounts of alcohol and/or tobacco consumption. Although previous fiscal incidence analysis done for South Africa used similar scaling assumptions as the ones used here, the results were mixed, with excise duties found to be quite regressive in 1995 but almost neutral in 2000 (Woolard et al, 2005). Although it is true that we could be overestimating the incidence of excises at the bottom of the distribution due to this scaling, it is also the case that we apply the same excise tax regardless of the quality of the alcoholic beverage or tobacco product, which could underestimate excises at the top of the distribution. See Appendix 1 for details.

³⁰ See Coady (2008) for a description of the price shifting model and Appendix 2 for a description of the approach.

³¹ Full results under the alternative scenario are available upon request.

service) as the measure of average benefits. This approach is also known as the “classic” or “non-behavioral approach”, and it amounts to asking the following question: how much would the income of a household have to be increased if it had to pay for the free or subsidized public service at the full cost to the government? The IES provides information on educational enrolment by level and type: public versus private institutions. Data on the use of public health services come from the 2008 National Income Dynamics Study (SALDRU, 2014). Details on the assumptions used for the health incidence are included in Appendix 1.

There are some important caveats about what the fiscal incidence analysis applied here does not address:

- It does not take into account behavioral, lifecycle or general equilibrium effects and focuses on average incidence rather than incidence at the margin. Our tax shifting and labor supply response assumptions are strong because they imply that consumers have perfectly inelastic demand and that labor supply is perfectly inelastic too. In practice, they provide a reasonable approximation, and they are commonly used.
- The analysis does not take into account intra-household distribution of consumption.
- The analysis cannot take into account the quality of services delivered by the government.
- We are unable to include some important taxes and spending that are included in the general government budget. Revenues such as corporate income, international trade or property taxes and spending categories such as infrastructure investments including urban services and rural roads for example are excluded even though they affect income distribution and poverty reflecting a combination of data as well as methodological constraints.³² In addition, since the analysis focuses on tax and spending programs that are on-budget and are part of the general government, it excludes operations of state-owned enterprises.
- The analysis does not capture the growing debate on how asset accumulation and returns to capital impact income inequality.

Note that by considering the poverty and redistributive effects of the fiscal instruments that were examined in this paper, we do not offer a full analysis of whether specific taxes or expenditures are desirable. When one tax or expenditure is found to be more redistributive to the poor than another, the temptation is to conclude that the former is preferable. However, redistribution is only one of many criteria that matter when making public policy. Good tax policy will aim to be sufficient, efficient and simple in addition to equitable; and public spending will aim to (among other goals) provide the minimal functions of a state (such as security) and invest in necessary public goods (such as infrastructure) that are necessary to ensure prosperity in addition to improving equity. By assessing the equity of specific taxes and spending programs, the results presented in this paper are just one input to public policy making, one which should be weighed with other evidence before deciding that a tax or expenditure is desirable.

To try to control for these possible shortcomings and biases, we conduct various robustness tests. In addition to calculating the various measures of income in Figure 3 from the reported level of net income in the IES, we also cross checked our findings using the reported level of disposable income, which closely approximates consumption, to calculate the steps in Figure 3.

IV. The Level and Progressivity of Selected Taxes and Social Spending Programs in South Africa

What is the incidence of taxes and spending? Who bears the burden of taxation and who benefits from the various forms of social spending? This section aims to assess whether government taxes and spending are progressive by first analyzing alone each tax and social spending component that was included in this study, and then assessing the progressiveness/regressiveness of these selected taxes and spending combined.

³² The incidence of international customs tariffs can be estimated the same way the incidence of other indirect taxes was estimated. However this paper did not do so given time constraints. For property taxes, the cadastral value of property would be required, and this was not available for this study. The empirical tools necessary to undertake incidence analysis of corporate taxes and investment spending are not well established in the literature and were beyond the scope of what could be done in this paper.

1. Taxes and Fees

How progressive are the taxes that we examine in this paper in South Africa? The analysis only evaluates the tax system along one dimension, its impact on equity. As mentioned above, it does not assess other important features of a tax system such as its efficiency—which measures the amount collected given the rate—, simplicity, and ease to administer.

Direct Taxes: PIT and Payroll Taxes

Direct taxes in the incidence analysis for South Africa are comprised of Personal Income Tax (PIT) and contributions to the unemployment insurance fund and skills development levy social security (also known as payroll taxes). Table 3 shows concentration shares of market income and direct taxes as well as the cumulative distributions of market income and direct taxes. As one can observe in the cumulative distributions, based on the tax redistribution approach, direct taxes overall are progressive. We analyze the PIT and payroll taxes separately. In table 3 one can observe that the PIT is quite progressive, as the cumulative share of a tax paid by the bottom deciles of the population is lower than their share in market income. The burden of the PIT is borne overwhelmingly by the richer deciles. The wealthiest 20 (10) percent of individuals generated over 97 (87) percent of total PIT collections while their share in market income was equal to 81.4 (63.7) percent.

Table 3. Progressivity of direct taxes

Decile	Market income distribution and concentration shares (in %)				Cumulative distribution and cumulative concentration shares (in %)			
	Market income 1/	Direct taxes	Personal income taxes	Payroll taxes	Market income 2/	Direct taxes	Personal income taxes	Payroll taxes
1	0.1%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
2	0.2%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
3	0.5%	0.0%	0.0%	0.1%	0.7%	0.0%	0.0%	0.1%
4	0.8%	0.0%	0.0%	0.3%	1.6%	0.0%	0.0%	0.4%
5	1.5%	0.1%	0.0%	0.8%	3.1%	0.1%	0.0%	1.2%
6	2.7%	0.2%	0.1%	2.1%	5.8%	0.4%	0.1%	3.3%
7	4.5%	0.8%	0.4%	4.8%	10.3%	1.2%	0.5%	8.1%
8	8.3%	2.8%	2.0%	10.2%	18.6%	4.0%	2.5%	18.3%
9	17.7%	11.7%	10.6%	23.3%	36.3%	15.7%	13.1%	41.6%
10	63.7%	84.3%	86.9%	58.4%	100.0%	100.0%	100.0%	100.0%

Source: Own calculations based on IES 2010/11.

1/ This is the distribution of market income for the population ordered by market income. All the others are concentration shares for the population ordered by market income.

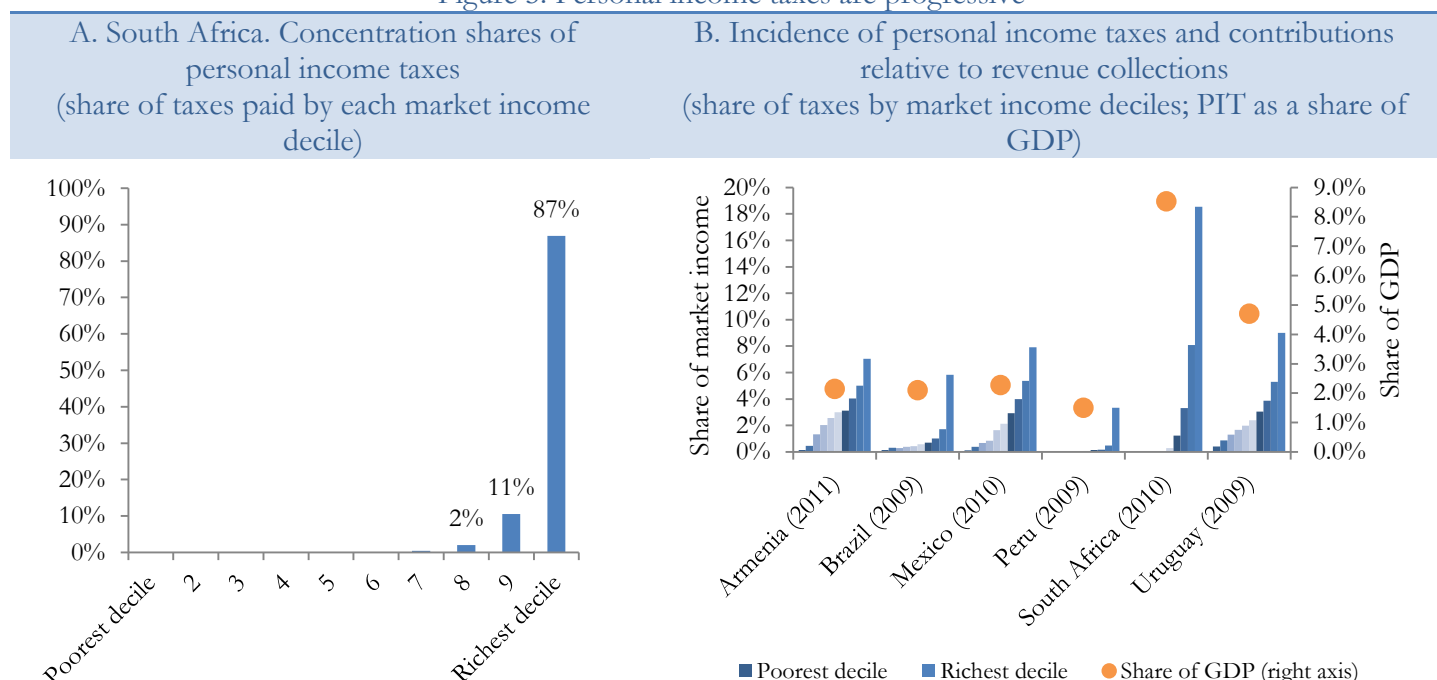
2/ This is the cumulative distribution of market income; in other words, the Lorenz curves by decile.

Payroll taxes in the form of the skills development levy and UIF are progressive up to the eighth decile inclusive (right hand panel, table 3). However, they are locally regressive for the ninth decile. The tenth decile pays a lower share of the total contributions (58.4 percent) than its share in market income (63.7 percent). The lack of progressivity at the top is a reflection of the cap on contributions to the UIF. When looking at direct taxes as a whole, we find that they are progressive as the cumulative share of a tax paid by the bottom 90 percent the population is lower than their share in the market income.

Direct taxes are also progressive when measured in relative terms. For instance, the top decile pays 18.5 percent of its market income in PIT while the lowest six deciles pay next to zero percent of PIT, reflecting the fact that their

market income is below the PIT threshold (figure 5).³³ By contrast, Brazil collects almost a similar amount to South Africa in direct taxes as a share of GDP,³⁴ households in its top decile pay about 11 percent of their market income in direct taxes (or about 5 percent of market income in PIT), while those in its poorest decile pay about 1 percent. The difference in effective rates of market income collected in direct taxes between the two countries reflects both the steeper PIT tax rate structure in South Africa (which peaks at a top rate of 40 percent, compared with a top statutory rate of 27.5 percent in Brazil), and its exemption threshold, which helps to exclude poorer households.

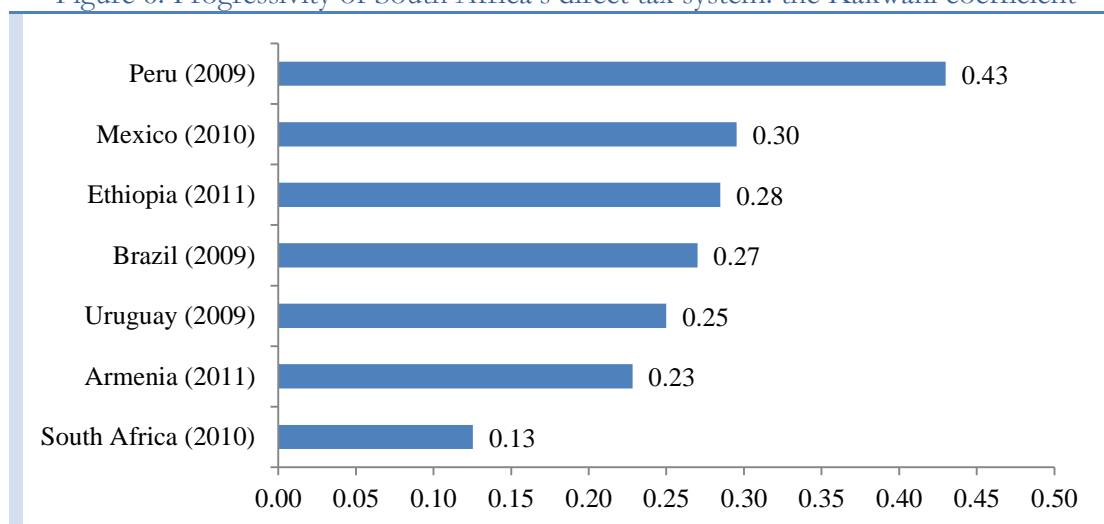
Figure 5. Personal income taxes are progressive



Sources: Armenia (Younger and Khachatryan, forthcoming), Brazil (Higgins and Pereira, 2014), Mexico (Scott, 2014), Peru (Jaramillo, 2014), Uruguay (Bucheli et al, 2014), and own estimates for South Africa based on IES 2010/11.

Although it is clear that direct taxes are progressive in South Africa, how progressive are they relative to other countries? One common approach to compare across countries is to measure progressivity using summary statistics such as the Kakwani index. The Kakwani index is equal to the difference between the concentration coefficient of a particular tax minus the Gini coefficient of the

Figure 6. Progressivity of South Africa's direct tax system: the Kakwani coefficient



Sources: Armenia (Younger and Khachatryan, forthcoming), Bolivia (Paz et al, 2014), Brazil (Higgins and Pereira, 2014), Ethiopia (Woldehanna et al, forthcoming), Indonesia (Jellema et al forthcoming), Mexico (Scott, 2014), Peru (Jaramillo, 2014), Uruguay (Bucheli et al, 2014), and own estimates for South Africa based on IES 2010/11.

³³ When using consumption as the welfare measure instead of market income, the results are nearly identical. The richest decile pays 18 percent relative to their total consumption.

³⁴ In Brazil, direct taxes include personal income taxes, payroll taxes and property taxes.

reference income which in the case of direct taxes is market income.³⁵ Although all countries have progressive direct taxes as shown above for South Africa, some are more progressive (figure 6). For example, when compared with Brazil, the direct tax incidence for South Africa is less progressive at the bottom (due to the relatively higher exemption threshold) but more progressive at the top.³⁶ The lower progressivity at the bottom as well as the comparatively higher level of inequality in market income probably explains why South Africa has a lower Kakwani coefficient for direct taxes than comparator countries. When PIT and payroll taxes are combined, the Kakwani index of progressivity for South Africa equals 0.13, compared to 0.27 for Brazil and 0.30 for Mexico.

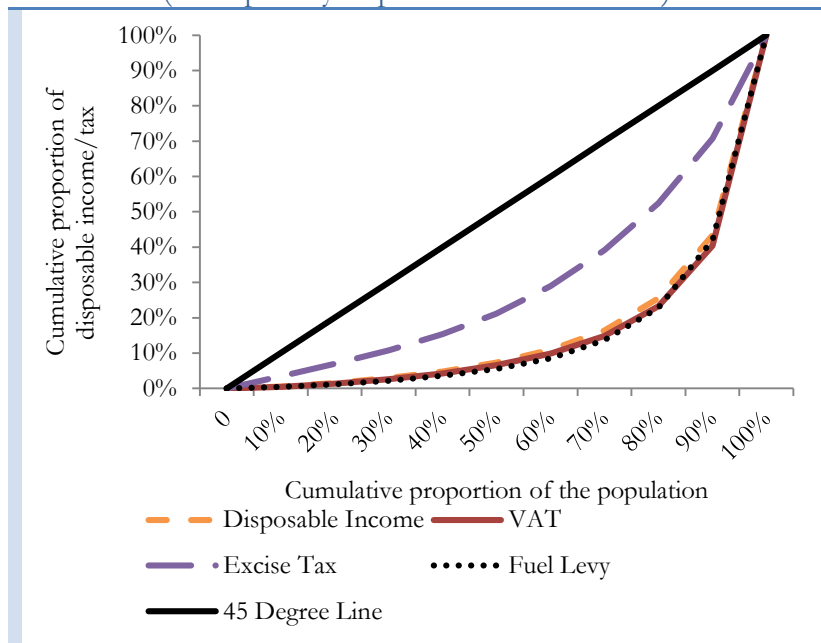
Indirect Taxes

Our incidence analysis covers VAT, excises on alcohol and tobacco, and the fuel levy. Together they comprise 9 percent of GDP (table 1). VAT accounts for roughly one-quarter of tax revenue in any given year³⁷, excise duties contribute about 3.5 percent of tax revenue, and the general fuel levy contribute about 5.2 percent of total tax revenue.

We assess the incidence of indirect taxes with respect to (and ranked by) disposable income (which is defined as the sum of market income plus direct transfers, net of direct taxes). We do this because households make their consumption decisions taking into account government cash transfers as part of their income, and therefore consume much more than their labor (or other market) income would allow them to consume in the absence of these transfers (see table 8 below), and would therefore have paid much less in indirect taxes.

Indirect taxes as a whole (see Box 3) are slightly regressive (figure 7 and table 4).³⁸ Up to the seventh decile, the cumulative share paid of total indirect taxes exceeds their cumulative share of disposable income by a relatively small margin. VAT and the Fuel Levy are progressive, with all the bottom deciles paying a lower share in such taxes than their share in disposable income. In fact, VAT is progressive partly due to the zero-rating of basic food items.³⁹ Excise taxes, in contrast, are regressive and the bottom deciles pay a substantially higher share of the total than their share of disposable income (figure 7 and table 4). This is the result of the fact that the poor consume proportionately more of the so-called sin goods.⁴⁰

Figure 7. South Africa Concentration Curves of Indirect Taxes (share paid by disposable income deciles)



Source: Own estimates for South Africa based on IES 2010/11.

³⁵The tax concentration coefficient is calculated in the same manner as the Gini, but using a tax concentration curve. If the Kakwani coefficient is greater than zero, the tax is progressive (in the tax redistribution sense), if it is equal to zero, the tax is neutral; and if it is less than zero, the tax is regressive. As a practical rule and in line with international practice, we have defined as neutral, those taxes for which the Kakwani index lies between -0.1 and 0.1.

³⁶ This can be observed by comparing pairwise the incidence by decile for Brazil and South Africa.

³⁷For the 2010/11 fiscal year, it was estimated that zero rated goods reduced revenue intake by R34 billion (or 1.2 percent of fiscal year GDP) and exempt goods and services reduced revenue by another R1 billion, or 0.03 percent of fiscal year GDP (2014 Budget Review).

³⁸ The results are nearly identical if we use market income or consumption as the welfare measure.

³⁹ Indeed, if the zero-rating of basic food were replaced with the standard rate, we find that VAT would be regressive, with the bottom 60 percent of the distribution paying a higher share of VAT than their share in disposable income. Moreover, under that scenario, both poverty and inequality would increase. Results of this simulation are available upon request.

⁴⁰ See Box A1 in Appendix 1 for a comparison of the consumption basket of the poorest and richest decile. Both report that they consume about 1 percent of their consumption baskets on alcohol and tobacco, and 8 percent on transport. Following previous fiscal incidence analysis done for South Africa (Woolard et al, 2005), the analysis adjusts for under-reporting of alcohol and tobacco consumption in the IES relative to what is reported in the national income account.

Table 4. Progressivity of indirect taxes ^{1/}

Disposable income and concentration shares (in %)						Cumulative disposable income and concentration shares (in %)				
Decile	Disposable income	VAT	Excise tax	Fuel levy	Indirect taxes	Disposable income	VAT	Excise tax	Fuel levy	Indirect taxes
1	0.54%	0.47%	3.44%	0.39%	0.68%	0.54%	0.47%	3.44%	0.39%	0.68%
2	1.00%	0.88%	3.52%	0.75%	1.05%	1.54%	1.35%	6.97%	1.14%	1.73%
3	1.38%	1.22%	3.76%	1.04%	1.38%	2.92%	2.57%	10.73%	2.19%	3.11%
4	1.86%	1.67%	4.65%	1.41%	1.84%	4.78%	4.24%	15.38%	3.60%	4.95%
5	2.54%	2.31%	5.83%	1.88%	2.49%	7.32%	6.55%	21.20%	5.48%	7.44%
6	3.62%	3.28%	7.79%	3.04%	3.57%	10.94%	9.83%	29.00%	8.52%	11.01%
7	5.45%	4.99%	10.15%	5.10%	5.40%	16.39%	14.82%	39.15%	13.63%	16.42%
8	9.09%	8.42%	13.30%	9.15%	8.94%	25.49%	23.24%	52.46%	22.77%	25.36%
9	17.86%	17.20%	18.34%	19.24%	17.72%	43.34%	40.44%	70.79%	42.02%	43.08%
10	56.66%	59.56%	29.21%	57.98%	56.92%	100.00%	100.00%	100.00%	100.00%	100.00%

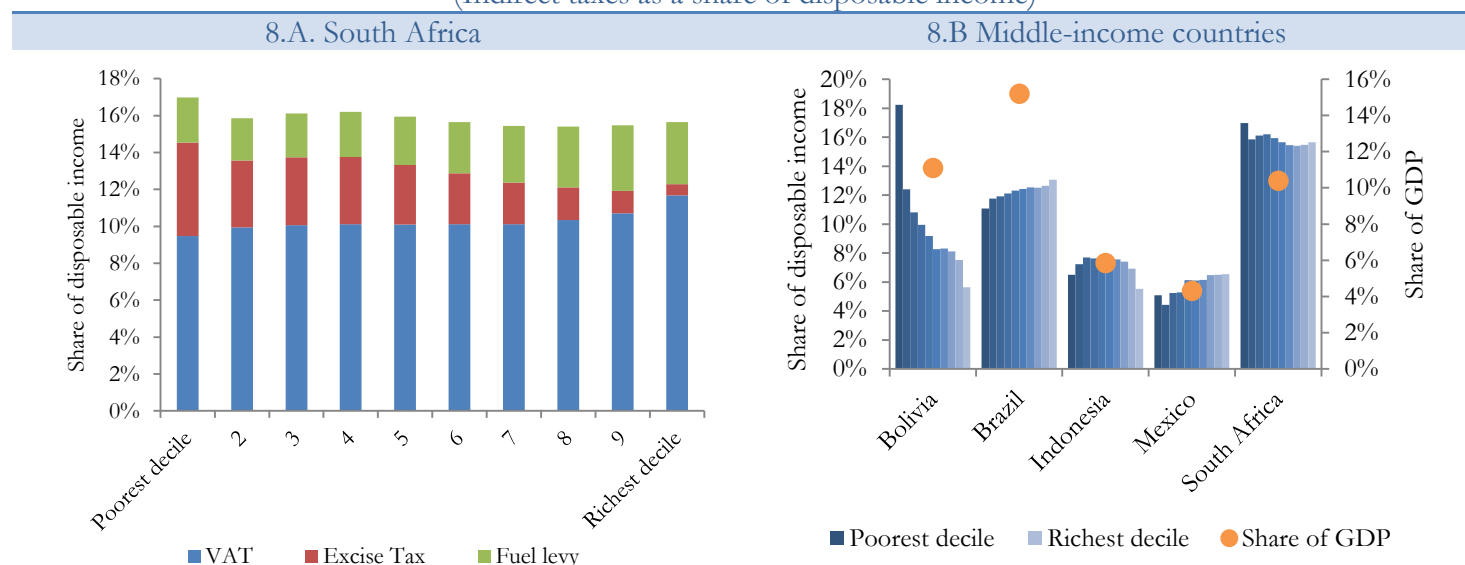
Source: Own calculations based on IES 2010/11.

1/ The distribution of disposable income and tax concentration shares for the population are ordered by disposable income deciles.

The slightly regressive nature of indirect taxes is most clearly seen in the fact that the poorest 40 percent of income distribution accounted for 4.78 percent of the total income distribution but paid 4.95 percent of total indirect tax collections, while the richest 20 percent of the income distribution paid three-quarters of the total revenue indirect tax collections when their share in total disposable income was about 74½ percent.⁴¹

Figure 8A shows that the share of disposable income paid in VAT increases from just under 9.5 percent of the disposable income of the poorest decile to almost 12 percent of the disposable income of the richest decile. However, excise taxes on alcohol and tobacco tend to make up a higher share of the disposable income of the poorer deciles. The poorest decile pays about 4.3 percent of disposable income in such excises compared to 0.6

Figure 8. Incidence of indirect taxes ^{1/}
(Indirect taxes as a share of disposable income)



Sources: Bolivia (Paz et al, 2014), Brazil (Higgins and Pereira, 2014), Indonesia (Jellema et al, forthcoming), Mexico (Scott, 2014), and own estimates for South Africa based on IES 2010/11. Note that deciles are ranked by market income

1/ Note that in this figure, households are ranked by market income (instead of disposable income) for comparison purposes. The results in Figure 7 and Table 4, however, are with households ranked by disposable income for reasons explained in the text.

⁴¹Disposable income includes FBS as a form of a transfer. When FBS are treated as an indirect subsidy and therefore excluded from disposable income, the share of the top two deciles in disposable income is 75.1 percent.

percent for those in the richest decile. However, this is partly offset by the fuel levy, which makes up a slightly higher share of the disposable income of the top deciles, 0.03 percent, compared to 0.02 percent for the bottom decile.⁴² When these two factors are combined, figure 8A shows the burden of indirect taxes in percentage of disposable income is quite even across the income distribution compared to other middle-income countries. In comparison to our CEQ comparators, figure 8b shows that in Brazil and Mexico the overall burden of indirect taxation increases more sharply with income than it does in South Africa.

The Kakwani index shows that indirect or consumption-based taxes are broadly neutral in aggregate. Table 5 shows the overall index is -0.003. VAT and Fuel Levy are both slightly progressive each with a Kakwani index of about 0.02. In contrast, excise taxes are regressive, with a Kakwani index of -0.302.

Table 5. Measuring the Progressivity of Indirect Taxes

	VAT	Fuel	Excise	Three indirect taxes together
Concentration Curves	Progressive	Progressive	Regressive	Slightly Regressive up to the seventh Decile
Kakwani	0.020	0.025	-0.302	-0.003

Source: Authors' own estimates based on IES 2010/11. If the Kakwani index is greater than zero, the tax is progressive, if it is between -0.1 and 0.1 the tax is neutral, and if it is below -0.1, the tax is regressive.

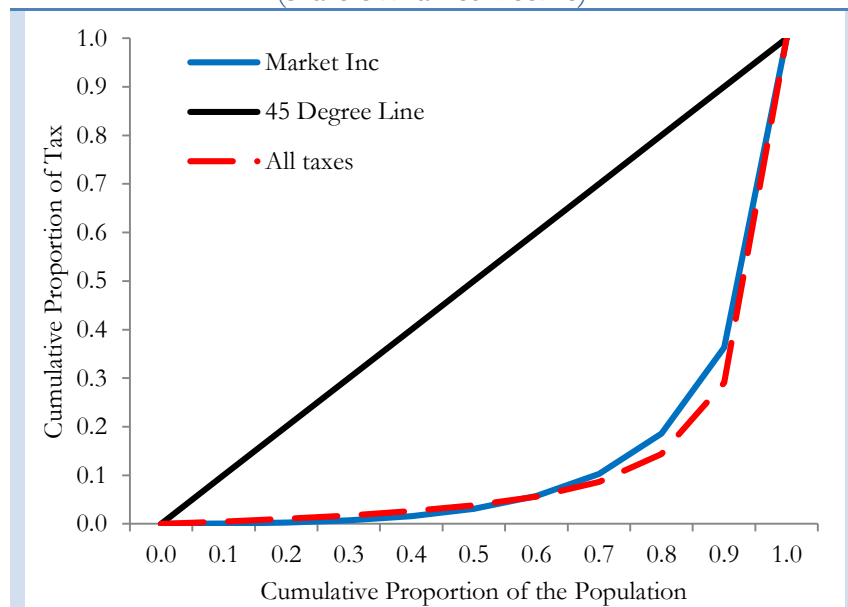
Overall Progressivity of Taxes

To assess the progressivity of direct and indirect taxes combined, we add direct and indirect taxes and measure their incidence relative to market income. The Kakwani index for both taxes combined is equal to 0.028, reflecting that the tax system (i.e., of the taxes covered in this study) is *globally* progressive. However, in figure 9 one can observe that the concentration curve and the Lorenz curve cross, indicating that there is no dominance. The slight regressivity at the lower end of the income distribution largely reflects the impact of the slight regressivity of indirect taxes (driven by the regressivity of excise taxes).

2. Government Spending

How progressive is social spending in South Africa? As we saw in the previous section, South Africa has higher social spending than other middle-income countries. But spending more does not mean that the poor always benefit from such programs. Poorly targeted or designed social programs often result in the benefits leaking to higher-income groups. As with the tax side of the government's budget, we therefore assess the question of who benefits from social spending in South Africa by examining each social program individually before combining them to assess the overall incidence of social spending. We assess the incidence of direct cash transfers—the old age non-contributory pension, the child support grant, the disability

Figure 9. South Africa. Concentration Curves of All Taxes, 2010 (share of market income)



Source: Own estimates based on IES 2010/11.

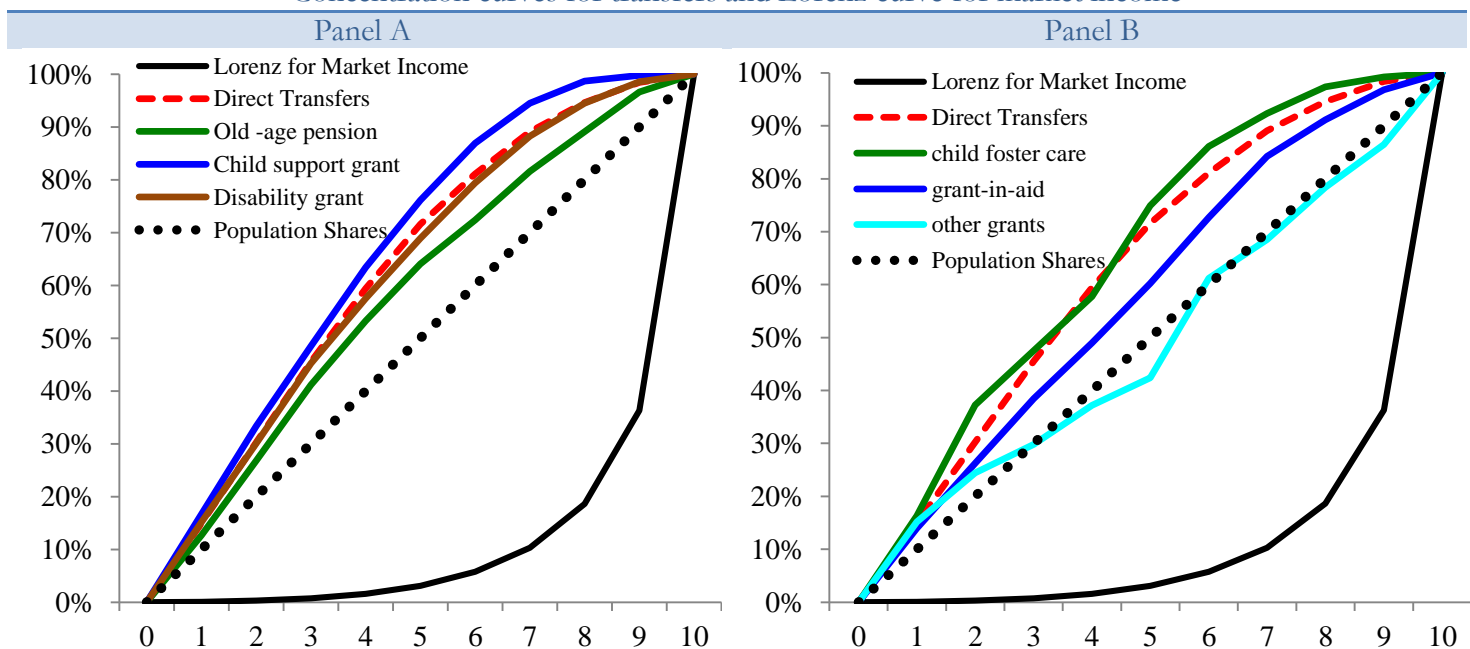
⁴² Our estimates includes not only the direct amount of tax paid, but also 'second round effects' that include the impact of higher fuel prices on transport which in turns impacts all other commodities that use transport as an input. For more details on how this was done see Appendix 1.

grant, foster-care grant and other grants like the care dependency grant. We also examine free basic services (water, electricity, sanitation and refuse removal) provided by the government to the poor, under the assumption that they are a form of a direct transfer to the poor. Finally, our analysis also extends to include health and education spending.

Direct Transfers

Direct cash transfers as a whole are strongly progressive. Which are the most and least progressive of the various cash transfers programs that exist in South Africa? We show the concentration curves program by program for the main cash transfers program in panel A and for the rest of the programs in panel B of figure 10. As can be observed, cash transfers in South Africa are progressive in absolute terms. From Section III.2, we know that absolute progressivity in the case of transfers is a higher standard than relative progressivity: it means that the *per capita absolute value* of the transfers –and not just in proportion to market income–decreases with income. The fact that transfers are progressive in absolute terms is particularly important in the context of South Africa because – given the very unequal market income distribution— even badly targeted transfers would turn out progressive in relative terms. In both panels we include the concentration curve of direct transfers as a whole so it can be used as a point of reference. Based on this, there is one cash transfer program that is more progressive than the average progressivity of direct cash transfers as a whole: the child support grant. The disability grant is as progressive as the average for the bottom deciles. Among the larger programs, the next program in terms of progressivity is the old-age pension. Although somewhat less progressive than the other three, this pension program is still progressive in absolute terms. Among the smaller programs, the most progressive one is foster child care (panel B).

Figure 10. Progressivity of direct cash transfers by category:
Concentration curves for transfers and Lorenz curve for market income



Source: Own calculations based on IES 2010/11.

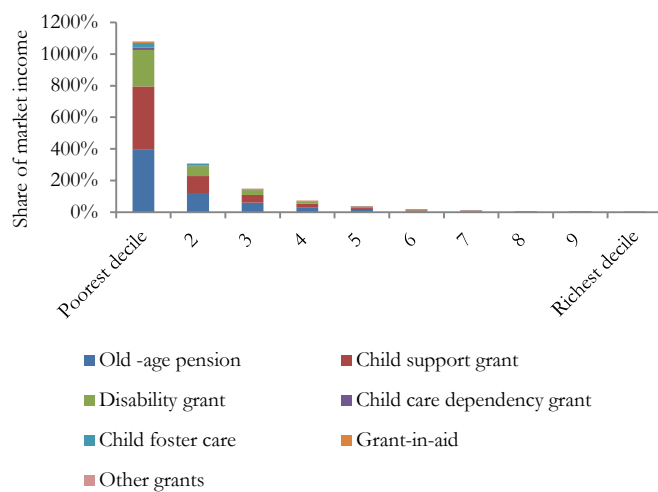
The above results partly reflect the fact that the share of households with elderly and school-aged children is higher at the bottom of the distribution. The bulk of its cash transfers go to the bottom of the income distribution: 69 percent of all cash transfers go to the bottom 40 percent. The IES shows that about 66 percent of the bottom decile households have children under 18 years of age, compared to 37 percent in the top decile (Appendix 2). Some 28 percent of households in the bottom decile have a pension aged adult in it compared to 22 percent in the top decile. Moreover, by targeting transfers to families with children and the elderly, the transfer system is very effective at targeting the poor because some 40 percent of those who are classified as living below the national lower bound poverty line of R 433 (US\$ 59.31) per month in 2010/11 prices were under the age of 15, while 23

percent were over the age of 60 (Stats SA, 2014a). Current plans to universalize the old age and child support grants are likely to change the incidence of the program going forward.⁴³

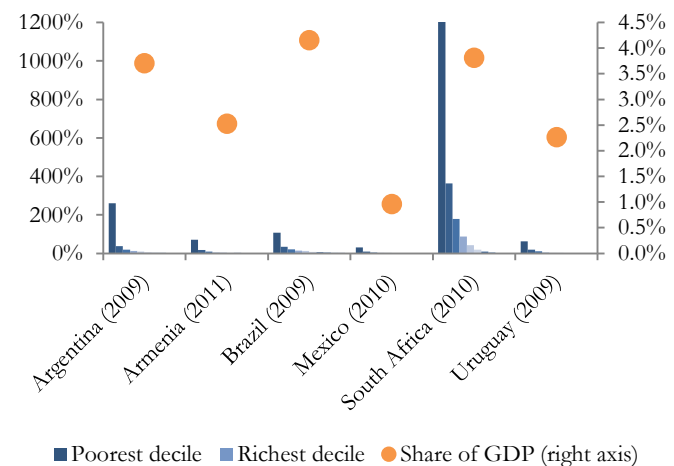
How much are incomes of the poor increased by cash transfers? Direct transfers are more than 10 times larger than market incomes of those in the bottom decile, mostly on account of old-age, disability and the child support grants (figure 11 and Appendix Table A3.3). This is larger than other middle-income countries. For instance, direct transfers in Brazil—at 4.2 percent of GDP—are larger than in South Africa, and include expenditure on the well-known Bolsa Familia conditional cash transfer program. Yet these transfers ‘only’ raise the market incomes of the bottom decile by a factor of 2 (figure 11B). However, there are some transfers in South Africa directed to individuals in higher income groups by design, with nearly 18 percent of old age pensions and 11 percent of disability grants going to households with incomes above US\$ 10 a day at PPP (table 6).

Figure 11. South Africa’s direct cash transfer programs in national and international perspective

A. South Africa: Incidence of direct cash transfers
(Share of market income by decile)



B. Middle-income countries: Incidence of direct cash transfers
(Share of market income deciles)



Sources: Argentina (Lustig and Pessino, 2014), Armenia (Younger and Khachatryan, forthcoming); Brazil (Higgins and Pereira, 2014), Mexico (Scott, 2014), Uruguay (Bucheli et al, 2014), and own estimates for South Africa based on IES 2010/11.

Table 6. Share of benefits going to each income group
(Percent of total, by level of market income, y, in US \$ PPP a day)

	$y < 1.25$	$1.25 < y < 2.5$	$2.5 < y < 4$	$4 < y < 10$	$10 < y < 50$	$y > 50$	Total
Old age pension	46.7	13.4	8.0	14.3	14.7	2.9	100
Disability grant	50.4	14.6	8.0	16.0	9.9	1.1	100
Child support grant	55.1	16.3	9.4	14.3	4.7	0.2	100
Care dependency grant	64.5	13.3	5.3	14.2	2.2	0.6	100
Foster care grant	53.3	17.1	10.7	11.7	6.5	0.6	100
Grant-in-aid	41.8	13.9	8.4	21.0	12.7	2.2	100
Other grants	32.5	7.5	10.2	20.0	17.9	11.9	100
Free basic services	40.9	12.7	7.7	17.5	16.2	5.0	100
Population shares	40.3	16.2	9.0	16.2	14.4	4.0	100

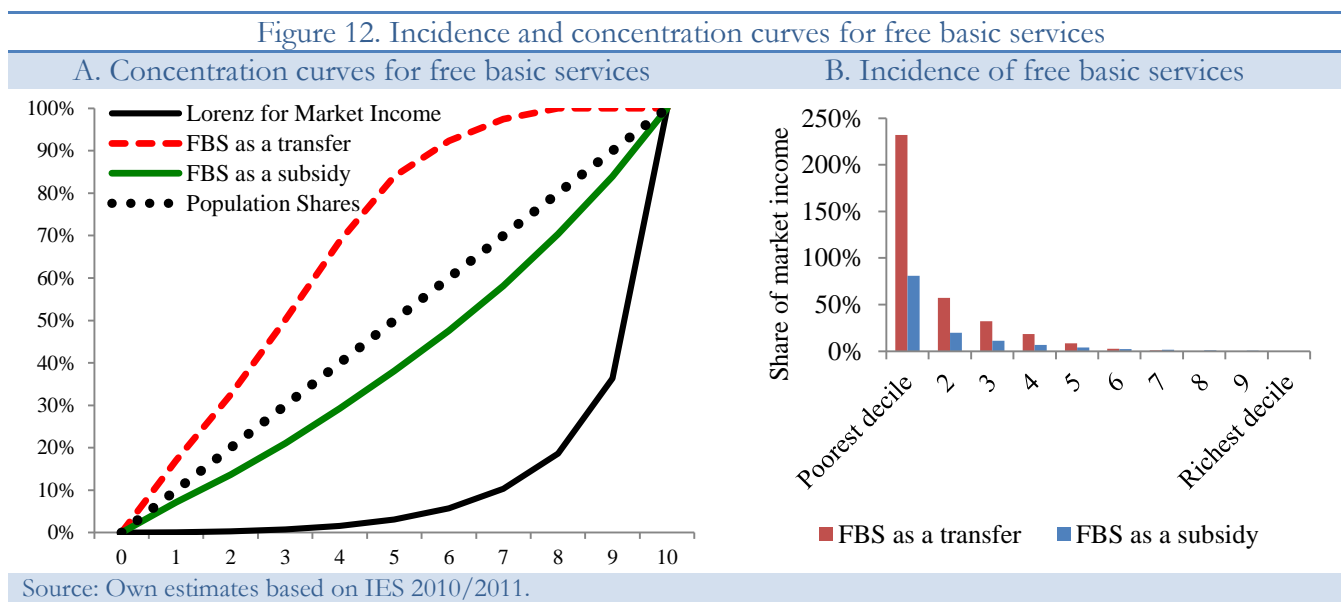
Source: Own estimates based on IES 2010/11

⁴³ The main argument for universalizing the old age grant is that while there are transfers at the bottom and tax rebates at the top, ‘mid-income’ older adults are missed out. Mid-income adults are currently not covered by existing social pensions. Low income older adults (those with individual income of less than R61,800 per annum for an unmarried person) receive the non-contributory Older Persons Grant, and high income older adults benefit from additional tax rebates which raises the PIT threshold from R70 700 (for persons below the age of 65) to R110 200 for persons aged 65-74 and R123 350 for persons aged 75 and over. The intention is to provide by 2016 a universal grant to all older adults and to do away with the tax rebates. The additional revenue from the scrapping of the secondary and tertiary rebates will be insufficient to finance the pension reform, however. There has not been a firm proposal to universalize the child support grant; such a proposal seems unlikely to emerge unless significant fiscal space opens up in the future.

Free Basic Services

With regard to free basic services (FBS) on water, electricity, sanitation and refuse removal, since we cannot directly identify the value of free basic services actually received as described in Box 2, we model two extremes. In the benchmark scenario we assumed that free basic services are allocated equally among households who (i) are connected to the electricity grid and (ii) are indigent (those with incomes of less than two old age pensions or about R 24,000 per annum). This scenario is closer to a targeted cash transfer program, since there are municipalities that deliver these services as cash rebates targeted to the poor. In the sensitivity scenario, we assumed that all household connected to the national electricity grid equally benefit from inverted block tariffs and received an equal share of the government subsidies for free basic services (this is closer to an untargeted indirect subsidy).⁴⁴

The results show that if FBS were targeted nationwide, there would be clear advantages for the poor, since FBS would be more progressive. In fact, when free services are treated as pure cash transfers, they are progressive in absolute terms (figure 12A). In contrast, if FBS were delivered as indirect subsidies, a larger share of the benefit is concentrated in the top deciles and, while still progressive, they are only progressive in relative terms (figure 12). Targeting in all municipalities would help improve effectiveness in reaching the poorest households.⁴⁵ In monetary terms, combining direct cash transfers with FBS helps boost the market income of the poorest decile by 11-fold.



In-Kind Transfers: Education and Health

In assessing how education and health spending benefit the poor, we have to caution that our analysis does not address the quality of such spending. We use government expenditure data on the various forms of education and health services to estimate unit costs of these programs. The analysis thus assumes that the actual benefit received by individuals is equal to the amount spent per capita. As the quality of school infrastructure, teachers, and health clinics and hospitals vary across the country then this is a clear limitation of the analysis.

A few words of caution are thus warranted to explain how our findings on targeting may not translate into a commensurate actual impact on the poor. Despite good policy and relatively high spending levels in relation to GDP for education and health, actual performance and outcomes in these sectors have been disappointing. For example, in education South Africa achieves test scores in reading and mathematics at grade 6 that are below the South and East Africa region average test scores, even though many of these comparator countries spend the same or less on education per capita.⁴⁶ The 2011 International Math and Science Study (TIMSS) showed large improvements in scores for grade 9 learners relative to 2002, but South African students are still ranked in the bottom 5 out of 42 countries. Moreover, the TIMSS showed that the average scores on math and science for South

⁴⁴ Reflecting lack of data, the analysis cannot capture the fact that some municipalities increase tariffs on consumption beyond the basic service amount and to the extent that the poor consume more than the minimum the value of the FBS is therefore reduced.

⁴⁵ We obtain qualitatively the same results when measuring with respect to consumption.

⁴⁶ Presidency of the Republic of South Africa 2014; SACMEQ 2011.

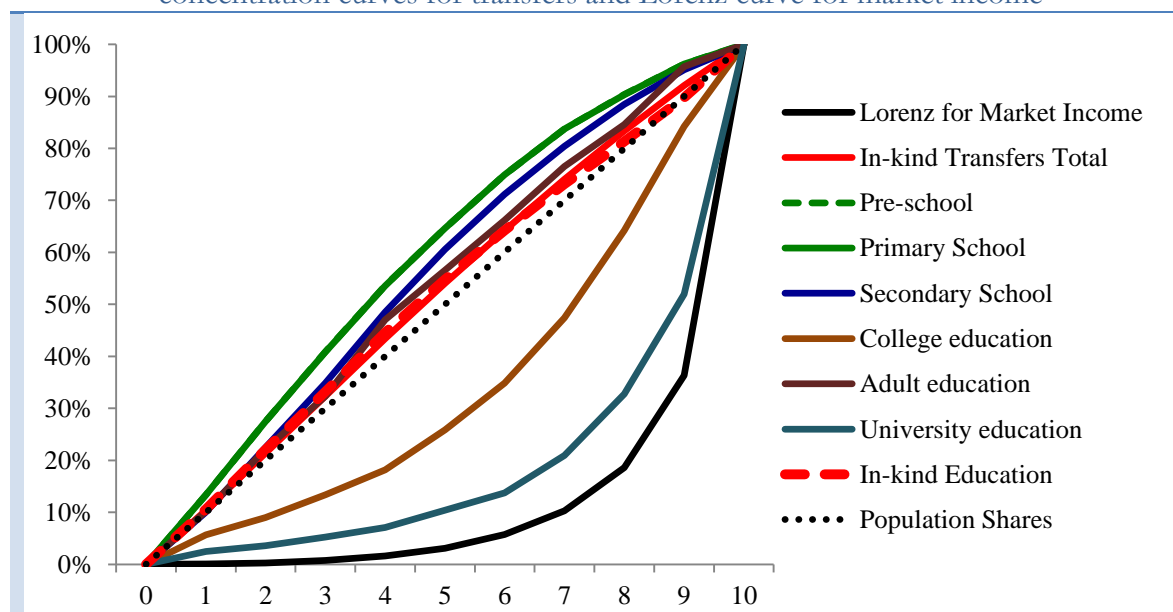
Africa's best performing students (those in the 95th percentile) were below the average scores achieved by students in Singapore, Chinese Taipei, the Republic of Korea, Japan, Finland, Slovenia, and the Russian Federation.⁴⁷ In health, despite steady improvements, South Africa still has comparatively high levels of maternal and infant mortality by middle-income country standards while its level of health spending (public and private) of just over 8 percent of GDP is comparatively high.⁴⁸

Another important consideration is how spending per student in education varies by race. One of the major features of apartheid social spending was the large gap in per capita spending per school child: per capita funding for white students was 10 times that of African learners. Remarkably, the gap in public financing based on a student's race has been eliminated: while in the early 1990s the average white child received a spending subsidy for education that was 4.5 times as much as that of a black child, the disparity was eliminated by 2006.⁴⁹ Any remaining gap in spending per pupil is caused by the fact that more highly qualified teachers tend to be concentrated in richer schools, implying a slight bias in salary expenditure per student to these schools, but this is virtually balanced by the higher allocations of spending on Norms and Standards in poorer schools. Although it is true that schools in more affluent neighborhoods are able to supplement state resources with privately funded school fees, the public financing of schools is more or less equal. As a result, public spending per student averaged R 11,000 in 2011 and about 78 percent of learners (more than 8 million students) in 80 percent of public schools (close to 20,000 schools) benefited from no-fee schools.⁵⁰

Education

With these important considerations in mind, the results for education show that when we “monetize” education spending, it disproportionately benefits those at the bottom of the distribution: i.e., it is progressive in absolute terms (see dashed red concentration curve in figure 13). Reflecting relatively high

Figure 13. Progressivity of education spending by category : concentration curves for transfers and Lorenz curve for market income



Source: Own calculations based on IES 2010/11.

levels of spending as well as high enrollment rates (over 97 percent participation for 7-to-15-year-olds and 83 percent for 16-to-18-year-olds),⁵¹ the poor benefit from primary and secondary education spending to a greater extent than the wealthier. However, they derive relatively less benefit relative to higher-income groups from post-secondary and university education because of lower rates of attendance by the poor at these institutions. Spending

⁴⁷ Presidency of the Republic of South Africa 2014

⁴⁸ Presidency of the Republic of South Africa 2013.

⁴⁹ Van der Berg 2006, 2009.

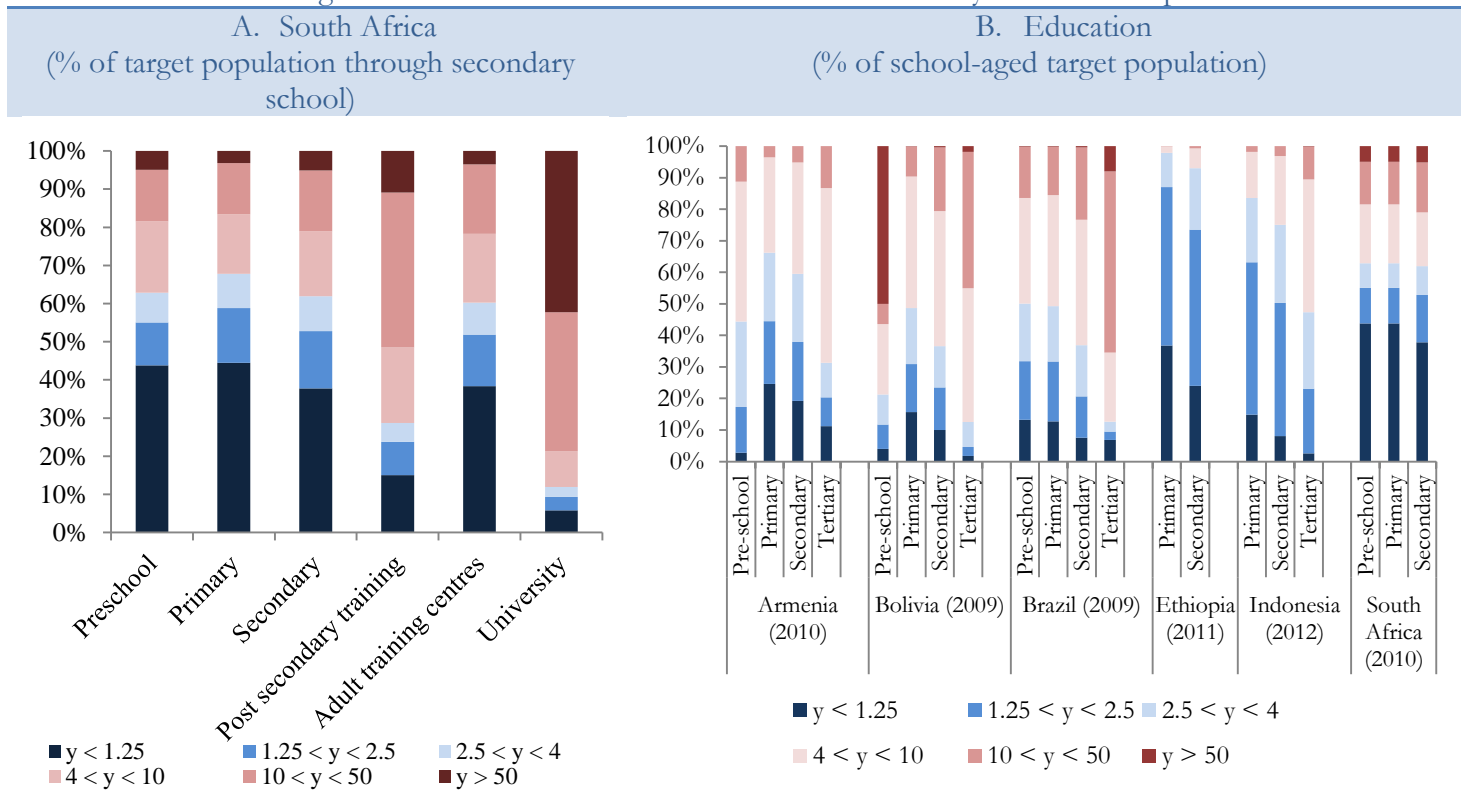
⁵⁰ 2014, The Presidency of the South Africa, Twenty-Year Review.

⁵¹ National Planning Commission, 2011, “National Development Plan: Vision for 2030”.

on college education and university education is progressive only in relative terms, with college education spending being more progressive than spending on university education.⁵²

In fact, while the share of benefits in post-secondary and university education are relatively small for the poor, about half of spending on adult training centers goes to households with incomes of less than US \$ 4 a day (figure 14A). However, this is not unique to South Africa, since much of tertiary education spending in other developing countries benefits higher-income groups in comparator countries as well (figure 14B).

Figure 14. South Africa. Share of Education Benefits by Income Group



Source: Own estimates based on IES 2010/2011.

Source: Armenia (Younger and Khachatryan, *forthcoming*), Bolivia (Paz et al, 2014), Brazil (Higgins and Pereira, 2014), Ethiopia (Woldehanna et al, *forthcoming*); and Indonesia (Jellema et al, *forthcoming*). For South Africa, own estimates based on IES 2010/2011.

Health

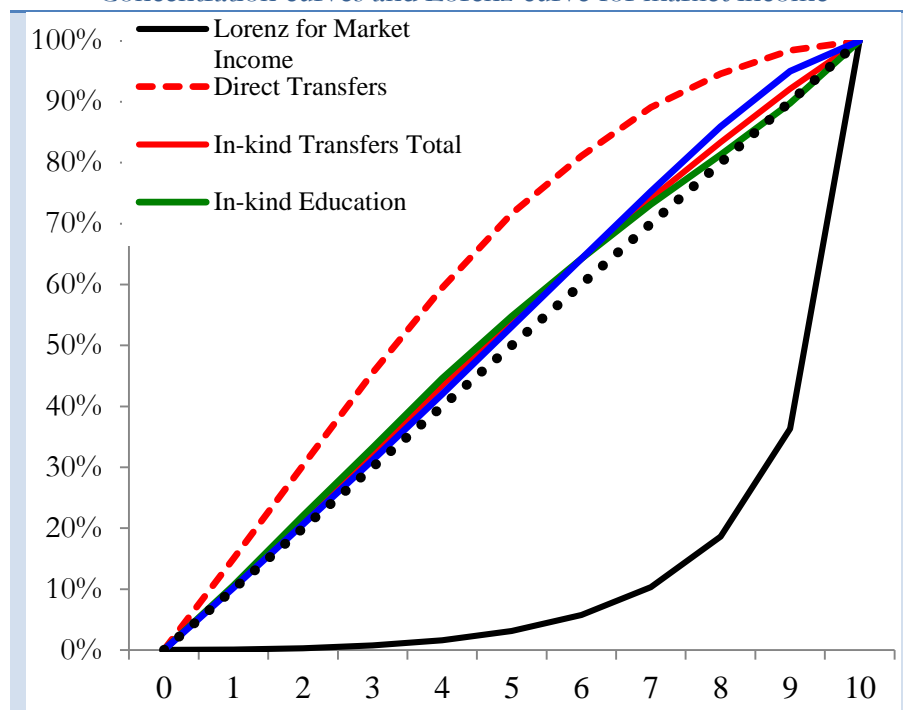
For health, since the IES has no information on health utilization, the analysis had to impute values of health spending from the NIDS, which is a nationally representative household sample, to the IES.⁵³ In figure 15 we plotted the concentration curves for direct and in-kind transfers as a whole, and for education spending and health spending. Health spending is progressive in absolute terms in a (roughly) similar extent as education spending. The monetized value of health spending makes up a larger share of the market incomes of those at the bottom of the income distribution (figure 16A): health spending is nine times the size of the market incomes of the poorest market income decile. Health care utilization in South Africa is, however, more evenly distributed across socioeconomic groups than in other middle-income countries (figure 16B). Public spending on health is relatively well targeted not because poorer people use health facilities more, but rather because they use public health services more than richer people compared to those in other countries, such as Brazil and Bolivia, where most beneficiary households are non-poor. The proportion of households who reported using public-sector clinics—the

⁵² Note that students are captured in surveys at the places they find themselves when studying, which in some cases may not be the same as their households of origin. As a result, it may appear that some students from very poor households are not actually appearing in the survey as poor.

⁵³ See Appendix 1 for full details on the methodology adopted.

main pillar of the public health system in South Africa—has risen steadily from 44.5 percent in 2004 to 59.6 percent in 2012.⁵⁴ The public sector, which spent just over 4 percent of GDP in health expenditure in 2010/11, serves roughly 83 percent (41.3 million) of the South African population.⁵⁵ About 17 percent (8.3 million) of the population have private health insurance (termed ‘medical aid’ in South Africa) and mostly use private facilities, with total private sector health related spending amounting to about 4.3 percent of GDP.⁵⁶

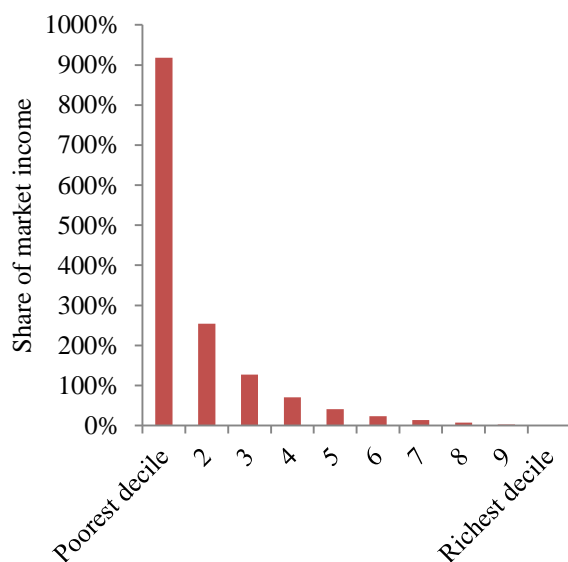
Figure 15. Progressivity of health spending:
Concentration curves and Lorenz curve for market income



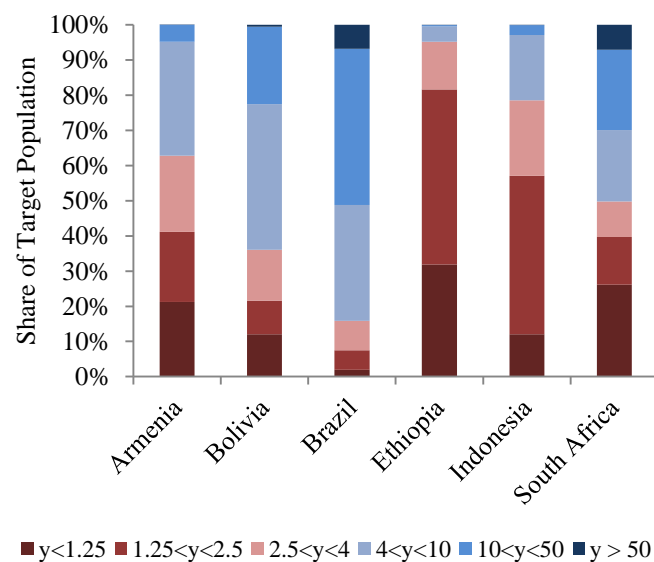
Source: Own estimates based on IES 2010/2011.

Figure 16. Health spending: incidence and beneficiary households by income group

A. South Africa. Incidence of health spending
(Share of market income deciles)



B. Health share of individuals in beneficiary households by income group



Source: Armenia (Younger and Khachatryan, forthcoming), Bolivia (Paz et al, 2014), Brazil (Higgins and Pereira, 2014), Ethiopia (Woldehanna et al, forthcoming); and Indonesia (Jellema et al, forthcoming). For South Africa, own estimates based on IES 2010/2011.

RDP Housing

As mentioned earlier, due to lack of detailed administrative data on housing values, we have not included this category of spending in the analysis. However, the IES does have information on whether any member of the

⁵⁴ Presidency (2014).

⁵⁵ National Planning Commission (2011).

⁵⁶ Ibid (2011).

household received an RDP house from the government. Based on this, Table 7 presents the distribution of RDP beneficiaries ranked by market income deciles. Note that the distribution of RDP households is relatively flat with relatively small shares in the poorest and richest deciles. Note that since houses have been built since 1995, people who have them so long might be today in a higher decile, but 10 or 20 years ago could have been in lower deciles.

Progressivity of Social Spending as a Whole

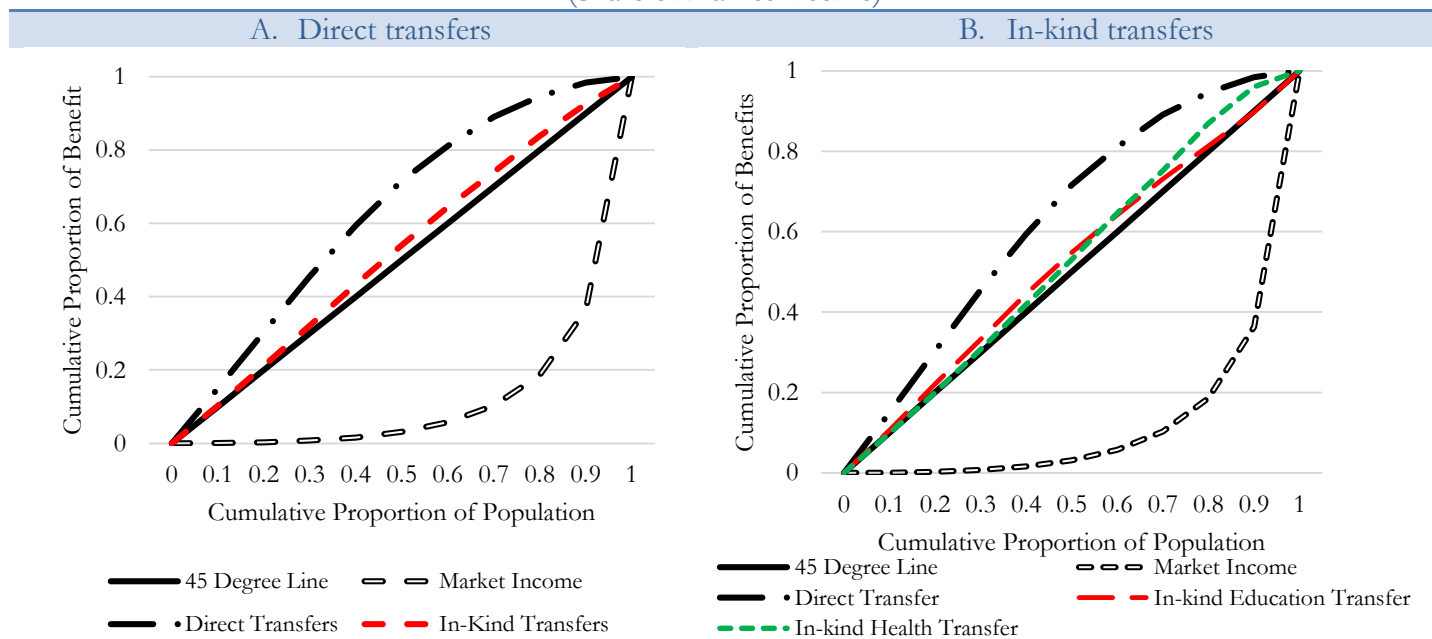
How progressive is social spending overall? As we saw above, cash transfers, education spending and health spending as a whole are strongly progressive with cash transfers taking the lead. The only categories of social spending that were progressive only in relative terms were spending on college and university education.

Remember that spending concentration curves for a transfer targeted to the poor are above the 45 degree diagonal, if they are progressive in absolute terms, when the share of benefits going to the bottom deciles is higher than the share of market income of those deciles. In figure 17A the bottom 40 percent of the income distribution receives about 59 percent of spending on direct transfers and 43 percent of spending on in-kind transfers, but accounted for about 1.6 percent of total market income across deciles. The results thus confirm that when combined, direct transfers (cash transfers and FBS) are progressive in absolute terms. In-kind transfers in the form of education and health services are also progressive in absolute terms but not to the extent of direct transfers (figure 17B).

Table 7. South Africa. Distribution of beneficiaries of RDP housing (Percent by market income decile)			
	Households lives in RDP	Household has an RDP house elsewhere	Total RDP
Poorest decile	6.3%	9.5%	6.7%
2	10.5%	9.5%	10.4%
3	12.6%	8.8%	12.2%
4	13.6%	9.0%	13.1%
5	14.2%	10.4%	13.8%
6	13.8%	10.2%	13.4%
7	11.9%	9.9%	11.7%
8	10.9%	14.2%	11.2%
9	5.0%	10.6%	5.6%
Richest decile	1.3%	7.9%	2.0%
Total	100%	100%	100%

Source: Own estimates based on IES 2010/2011.

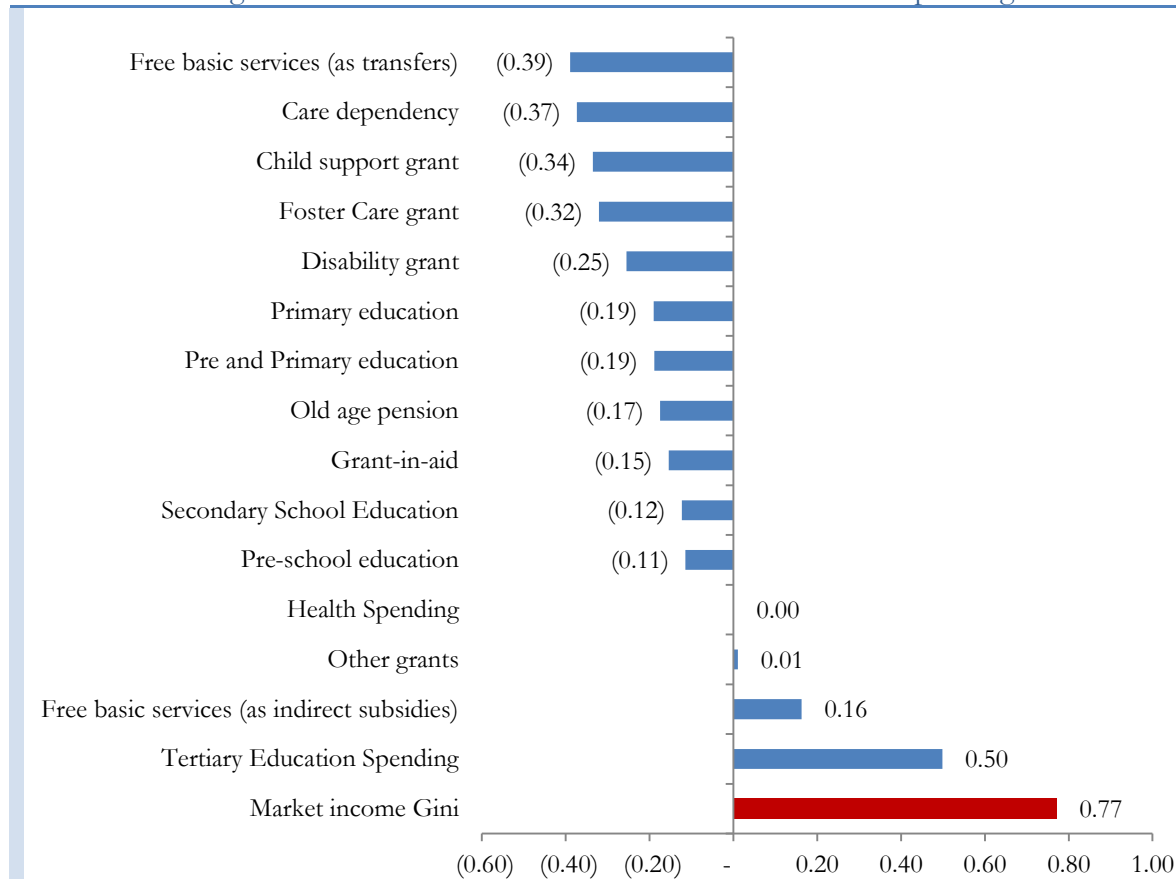
Figure 17. South Africa: Concentration curves of benefits, 2010
(Share of market income)



Source: Own estimates for South Africa based on IES 2010/11.

In addition to the concentration curves, we calculate concentration coefficients for each type of spending. Concentration coefficients are calculated in the same manner as is the Gini; for cases in which the concentration coefficient is above the diagonal, the difference between the triangle of perfect equality and the area under the curve is negative and spending is progressive in absolute terms (that is, the size of the transfer per capita falls with per capita income). Spending is absolutely progressive if it is less than -0.1. As shown in figure 18, this is true for pre-school education, grant-in-aid, old age pension, primary education, the disability, foster care and child support grants, and most notably for the care dependency grant. What is also very clear is that when free basic services are targeted as cash transfers, they are extremely progressive. When they take the form of an indirect subsidy benefiting all households, they are progressive only in relative terms when compared to the Gini of market income.

Figure 18. South Africa. Concentration coefficients for Spending



Source: Own estimates for South Africa based on IES 2010/11.

V. The Net Fiscal System and the Distribution of Income

Section IV makes clear that taxes and social spending (for the items that we have examined) are each globally progressive. These findings are in line with previous research for South Africa. However, the question that really interests us is the impact on equity of the net fiscal system. That is, how large is the impact of the fiscal instruments discussed above on inequality and poverty? In this section we aim to address this issue by combining the two elements that are at play: the level of taxes and transfers, and their progressivity. The distinction is important, since a tax or expenditure instrument could be very progressive, but so small that the impact on poverty and inequality is negligible. As we show below, both elements are important in South Africa: both the size of taxes and transfers and their progressivity is large, making the overall impact on poverty and inequality greater than in comparator countries. In addition, a fiscal system could generate a lot of re-ranking (i.e., individuals moving places in the income scale) but without really making any significant changes on the distribution of income.⁵⁷

⁵⁷ Furthermore, one cannot really assess the redistributive effect by analyzing the effect of an individual tax or transfer in isolation as in the redistributive process both interact.

1. The Impact of Fiscal Policy Instruments on Inequality and Poverty in South Africa

For the instruments we have examined, fiscal policy makes a substantial contribution to reducing market income inequality and poverty in South Africa (table 8). Using income per capita as the welfare indicator, fiscal policy in 2011/12 reduced the market income Gini coefficient from 0.771 to 0.596—a decline of 17½ gini points—when all taxes (PIT, payroll taxes, VAT, excise taxes, and the fuel levy) and transfers (including cash transfers, free basic services, and the monetized value of education and health) that we examined are taken into account. If one excludes the monetized value of education and health services, the gini coefficient still falls from the initial level of 0.771 on market income to 0.695 post-taxes and cash transfers, a drop of some 7.9 gini points.⁵⁸

Table 8. South Africa: Poverty and inequality indicators at each income concept

	Market income (1)	Net market income (2) <i>(2) = (1) -- Direct taxes</i>	Disposable income (3) <i>(3) = (2) + Cash transfers</i>	Post-fiscal income (4) <i>(4) = (3) -- Indirect taxes</i>	Final income (5) <i>5 = 4 + In-kind transfers</i>
Inequality indicators					
Gini coefficient	0.771	0.75	0.694	0.695	0.596
Theil index	1.222	1.119	0.973	0.971	0.724
90/10	198.9	173.3	32.7	33.2	12.5
Headcount poverty indicators					
National food poverty line ¹	40.8%	41.0%	23.4%	29.0%	—
Official consumption based (food poverty line)	—	—	20.2%	—	—
National lower bound poverty line ²	46.5%	46.7%	34.2%	39.6%	—
Official consumption based (lower bound)	—	—	32.2%	—	—
National upper bound poverty line ³	52.3%	52.5%	45.1%	50.1%	—
US \$1.25 PPP per day	34.4%	34.4%	11.7%	16.5%	—
US \$2.50 PPP per day	46.2%	46.4%	33.4%	39.0%	—
US \$4.0 PPP per day	54.3%	54.6%	48.5%	53.1%	—

Source: All data points based on own estimates based on IES 2010/11.

¹ The food poverty line was set at R. 210 per month in 2005/06 using March 2006 prices. Adjusted for inflation it was R. 321 per month in 2010/11.

² The lower bound poverty line was set at R. 300 per month in 2005/06 using March 2006 prices. Adjusted for inflation it was R. 443 per month in 2010/11.

³ The upper bound poverty line was set at R. 431 per month in 2005/06 using March 2006 prices. Adjusted for inflation it was R. 620 per month in 2010/11.

The incidence of extreme poverty (measured as \$1.25 per day) falls from 34.4 to 16.5 percent. This includes the combined effect of all taxes, cash transfers and free basic services.⁵⁹ It is also more common to see the incidence of poverty calculated with disposable income. If we do this, direct taxes and transfers reduce extreme income poverty by more than two-thirds: from 34.4 percent to 11.7 percent (table 8).⁶⁰ In monetary terms, the redistribution

⁵⁸ Statistics SA, 2014a, shows that level of Gini including all forms of income and social grants (but excluding FBS) was 0.69 in 2011.

⁵⁹ In line with international practice, we exclude the monetary value of education and health services in calculating the impact of fiscal policy on poverty rates because households are unlikely to be willing to pay as much as the government spends on these services and as a result do not view these services as part of their income.

⁶⁰ A caveat is in order. For reasons explained in Bibi and Duclos (2010) and Lustig (2014), care should be taken in not attributing effects to individual interventions by just taking the difference between consecutive pairs of indicators. For example, taking the difference

implemented through South Africa's fiscal system is sufficient to bring those with a per capita market income of just R200 per annum (US\$18.9) in the bottom decile, to per capita disposable income R2,363 (US\$ 223), which is close to the average market income in the fourth decile (table 9). Netting off the impact of indirect taxes would take post-fiscal income to R 2,131.

2. How does South Africa compare in fiscal redistribution relative to other middle-income countries?

South Africa performs quite well when compared with other middle-income countries (see Lustig, 2014). As shown in figure 19, the reduction in the disposable income Gini (vis-à-vis market income Gini) is higher in South Africa than in the other countries included in our sample, even though the level still remains very high. Nonetheless at 0.596, the Gini on final income (or 0.695 if the monetized value of education and health services are excluded) in South Africa which reflects the full impact of redistribution via the fiscal instruments that we examined is still higher than what the 2nd most unequal country in our sample, Brazil, starts with in terms of its market income Gini before it even begins to implement redistribution via its fiscal system (Table 10).

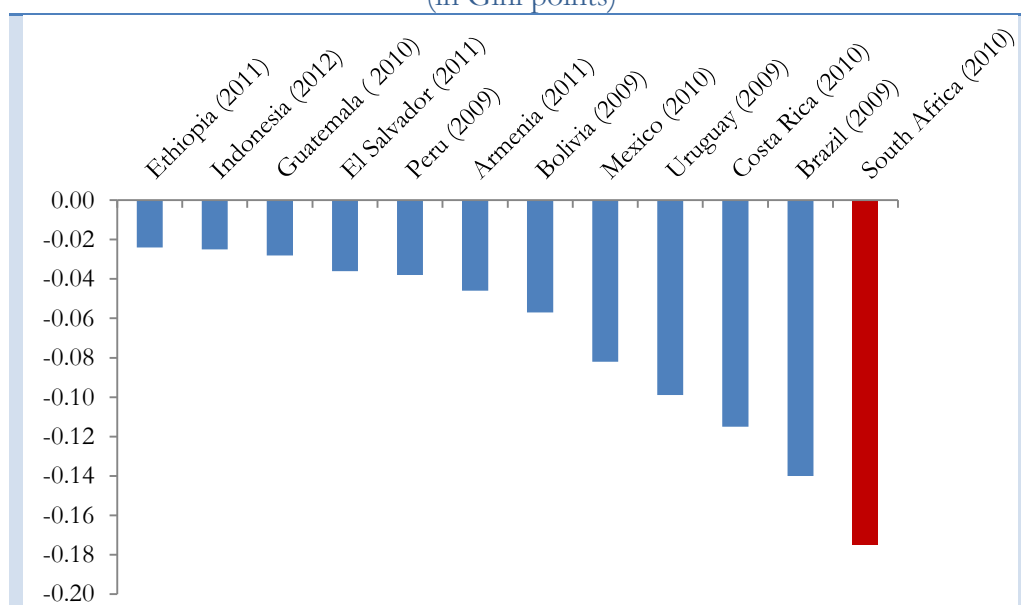
As can be observed in Table 9, direct taxes reduce inequality: i.e., the net market income Gini

coefficient is (statistically significantly) lower than the market income Gini. PIT in South Africa makes up a higher share of GDP relative to other middle-income countries and is progressive due to its rate structure and exemption threshold that helps exclude poorer households. When the impact of indirect taxes is added to the impact of direct

	Market income (1)	Net market income (2)	Disposable income (3)	Post-fiscal income (4)
		(2) = (1) -- <i>Direct taxes</i>	(3) = (2) + <i>Cash transfers</i>	(4) = (3) -- <i>Indirect taxes</i>
Poorest decile	200	200	2,363	2,131
2	736	735	2,997	2,669
3	1,497	1,493	3,691	3,264
4	2,761	2,748	4,679	4,106
5	4,925	4,887	6,609	5,755
6	8,653	8,535	9,970	8,627
7	14,793	14,397	15,662	13,481
8	27,119	25,762	26,658	22,828
9	57,711	51,994	52,661	44,822
Richest decile	207,639	166,52	166,803	141,075

Source: Own estimates based on IES 2010/2011. Note column 3 excludes free basic services

Figure 19. Change in Gini: disposable vs market income (in Gini points)



Source : Armenia (Younger and Khachatryan, forthcoming); Bolivia (Paz et al, 2014); Brazil (Higgins and Pereira, 2014); Ethiopia (Woldehanna et al, forthcoming); Indonesia (Jellema et al forthcoming); Mexico (Scott, 2014); Peru (Jaramillo, 2014); Uruguay (Bucheli et al, 2014); Lustig (forthcoming) based on Costa Rica (Sauma et al, 2014), El Salvador (Beneke et al, 2015), and Guatemala (Cabrera et al, 2014); and own estimates for South Africa based on IES 2010/11.

between the Gini coefficient for post-fiscal and disposable income is not equal to the contribution of indirect subsidies and indirect taxes to the decline of inequality from market to post-fiscal income. This is simply because the contribution of each intervention is path dependent and what we are showing is just one of the paths. We can compare, however, the impact of interventions on any indicator with respect to market income which is what we do in this section.

taxes and transfers, post-fiscal income is (statistically significantly) lower than market income inequality (Table 10). However, when we compare the Gini coefficient of post-fiscal income with the Gini of disposable income, there is a slight increase in inequality reflecting the impact of indirect taxes (particularly excises).⁶¹

How does spending work to redistribute the tax resources generated to benefit the poor and make the overall fiscal system so progressive? As shown on Table 10, adding the impact of direct transfers to the redistributive effect of direct taxes lowers the Gini coefficient from 0.771 to 0.694. Adding the impact of indirect taxes and the monetized value of in-kind transfers lowers the Gini further to 0.596. This means an overall reduction of 17.5 Gini points or 22 percent. This puts South Africa at the top in terms of the scale of redistribution of the CEQ comparator countries, even though the final level still remains higher than elsewhere.

Table 10. Gini for each income concept

	Market income	Net market income	Disposable income	Post-fiscal income	Final income
	(1)	(2)	(3)	(4)	(5)
		(2) = (1) - <i>Direct</i> <i>taxes</i>	(3) = (2) + <i>Cash</i> <i>transfers</i>	(4) = (3) - <i>Indirect</i> <i>taxes</i>	(5) = (4) + <i>In-kind</i> <i>transfers</i>
Armenia (2011)	0.403	0.393	0.373	0.374	0.357
Bolivia (2009)	0.503	0.503	0.493	0.503	0.446
Brazil (2009)	0.579	0.565	0.544	0.546	0.439
Costa Rica (2010)	0.508	0.500	0.489	0.486	0.393
El Salvador (2011)	0.440	0.436	0.430	0.429	0.404
Ethiopia (2011)	0.323	0.316	0.305	0.302	0.299
Guatemala (2010)	0.551	0.550	0.546	0.551	0.523
Indonesia (2012)	0.394	0.394	0.390	0.391	0.369
Mexico (2010)	0.511	0.497	0.488	0.481	0.429
Peru (2009)	0.504	0.498	0.494	0.492	0.466
South Africa (2010)	0.771	0.750	0.694	0.695	0.596
Uruguay (2009)	0.492	0.478	0.457	0.459	0.393

Notes: Year of the survey for each country is in parenthesis. Figures for Bolivia and Indonesia include indirect taxes only.

Sources: Armenia (Younger and Khachatryan, forthcoming); Bolivia (Paz et al, 2014); Brazil (Higgins and Pereira, 2014); Ethiopia (Woldehanna et al, forthcoming); Indonesia (Jellema et al forthcoming); Mexico (Scott, 2014); Peru (Jaramillo, 2014); Uruguay (Bucheli et al, 2014); Lustig (forthcoming) based on Costa Rica (Sauma et al, 2014), El Salvador (Beneke et al, 2015), and Guatemala (Cabrera et al, 2014); and own estimates for South Africa based on IES 2010/11.

In terms of poverty reduction, South Africa also stands out. As we can observe in Table 11, South Africa shows the largest poverty reduction of the CEQ comparators. Most notably, indirect taxes on consumption do not reverse the reduction in poverty associated with direct transfers so that post fiscal income poverty (column 4) is still lower than net market income (column 2) in contrast to what happens in other countries, including Brazil.

By how much does social spending in South Africa work to boost the incomes of the poor? Our analysis finds that households in the poorest decile receive transfers and indirect subsidies that are worth 11 times their market income (32 times their market income if the monetized value of in-kind benefits such as health and education are added to cash transfers). This compares to the burden of taxes, which amounted to 2 times market income.

⁶¹ We have not carried out tests of statistical significance of difference for every pair of indicators. All the tests were done for pairwise comparisons with respect to the indicator using market income only.

Households in the bottom half of the income distribution thus receive far more in direct transfers and FBS. The net cash position of the household after taxes and transfers is positive for the bottom 60 percent of the population, a far larger share of the population compared to other middle-income countries (Figure 20A). Once the monetized value of in-kind spending on education and health are also included in benefits, the bottom decile “receives” some R. 6900 (Or US\$ 945 in 2010/11) per annum per capita from the government, compared to the R. 724 (US\$ 99) that they pay in taxes. Only the top three deciles of the market income distribution pay more in taxes than they receive in benefits in all forms of cash and in-kind benefits (figure 20B).

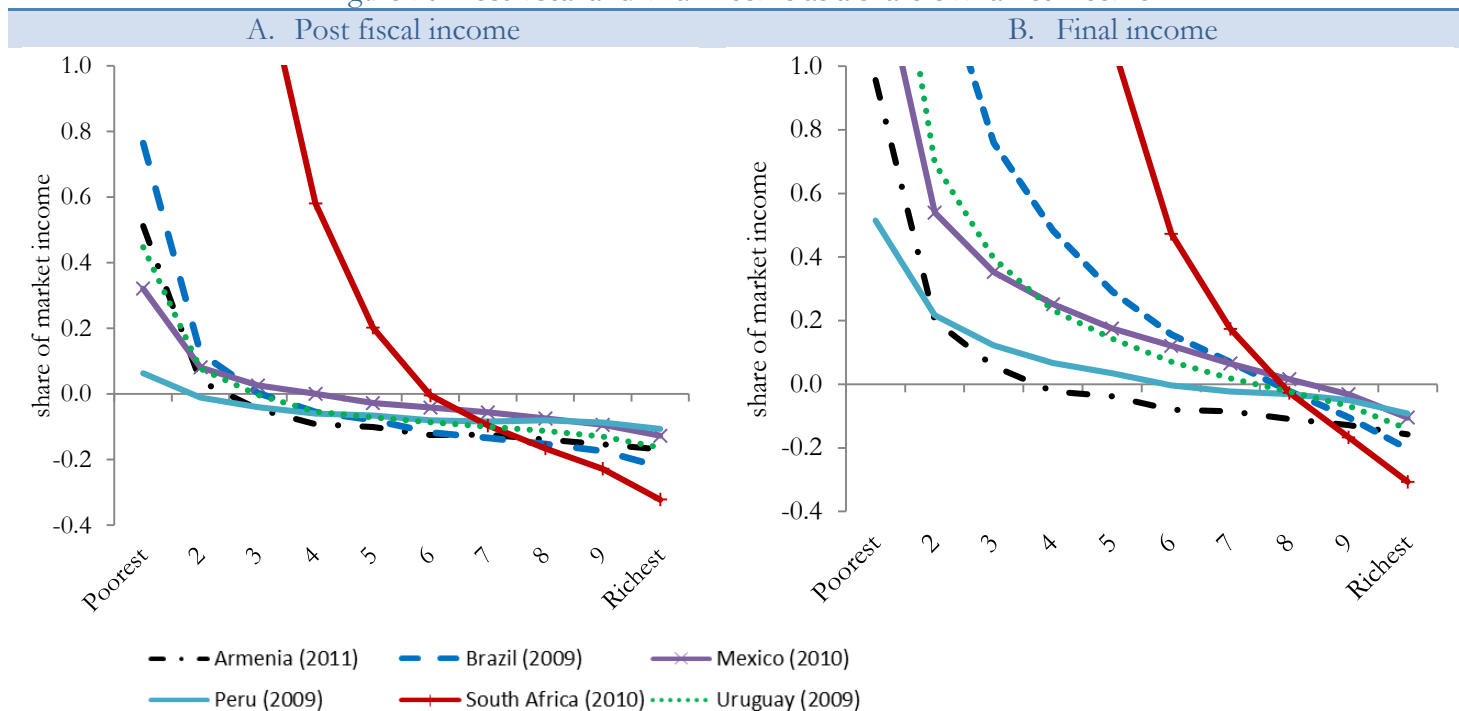
Table 11. Poverty headcount rate for the US\$ 2.50 PPP a day for each income concept

	Market income (1)	Net market income (2)	Disposable income (3)	Post-fiscal income (4)
		(2) = (1) -- <i>Direct taxes</i>	(3) = (2) + <i>Cash transfers</i>	(4) = (3) -- <i>Indirect taxes</i>
Armenia (2011)	31.3	32.0	28.9	34.9
Bolivia (2009)	19.6	19.6	17.6	20.2
Brazil (2009)	15.1	15.7	11.2	16.3
Costa Rica (2010)	5.4	5.7	3.9	4.2
El Salvador (2011)	14.7	15.1	12.9	14.4
Guatemala (2010)	35.9	36.2	34.6	36.5
Indonesia (2012)	56.4	56.4	55.9	54.9
Mexico (2010)	12.6	12.6	10.7	10.7
Peru (2009)	15.2	15.2	14.0	14.5
South Africa (2010)	46.2	46.4	33.4	39.0
Uruguay (2009)	5.1	5.1	1.5	2.3

Notes: Year of the survey in parenthesis. Bolivia and Indonesia include indirect taxes only.

Sources: Armenia (Younger and Khachatryan, forthcoming), Bolivia (Paz et al, 2014), Brazil (Higgins and Pereira, 2014), Indonesia (Jellema et al forthcoming), Mexico (Scott, 2014), Peru (Jaramillo, 2014), Uruguay (Bucheli et al, 2014), adapted from Lustig (forthcoming) for Costa Rica (Sauma et al, 2014), El Salvador (Beneke et al, 2015), and Guatemala (Cabrera et al, 2014), and own estimates for South Africa based on IES 2010/11.

Figure 20. Post fiscal and final income as a share of market income



Sources: Armenia (Younger and Khachatryan, forthcoming); Brazil (Higgins and Pereira, 2014), Mexico (Scott, 2014), Peru (Jaramillo, 2014), Uruguay (Bucheli et al, 2014), and own estimates for South Africa based on IES 2010/11.

3. Income Redistribution: Vertical and Horizontal Equity

Analyzing the equity dimension of a fiscal system should also assess how much horizontal inequity is generated by fiscal policy⁶². As discussed in Section III.2, the re-ranking definition of horizontal equity postulates that the pre-fiscal policy income ranking should be preserved. In other words, if individual A was poorer than individual B before an intervention, let's say, cash transfers, but receives transfer benefits that makes A richer than individual B after the transfer, there is horizontal inequity or re-ranking.

In table 12, we show the RE, VE and RR effects for five middle-income countries with comparable data. Here the RE is measured by subtracting the Gini coefficient for post-fiscal income from the market income Gini; in other words, it is the change in inequality associated with direct and indirect taxes as well as direct transfers and subsidies. As one can observe, South Africa is the country that has both the highest redistributive effect and the lowest extent of horizontal inequity. Re-ranking as a proportion of the VE effect is significantly lower in South Africa (7.6 percent) than, for example, in Brazil (30 percent), the country with the second lowest ratio of RR/VE.⁶³ An extreme case of horizontal inequity induced by fiscal policy is Bolivia, where re-ranking completely wipes out the reduction in vertical inequity.

Table 12. Taxes, Transfer and Subsidies: Overall Redistributive Effect*
(Decline in Gini Points; shown as positive)

	South Africa (2010)	Bolivia (2009)	Brazil (2009)	Indonesia (2012)
Gini (Market income)	0.771	0.503	0.579	0.418
Gini (Post-fiscal income)	0.695	0.503	0.546	0.416
Redistributive Effect ¹	0.077	0.000	0.033	0.002
Vertical Equity (VE) ²	0.083	0.003	0.048	0.007
Reranking Effect (RR) ³	0.006	0.003	0.014	0.005
RR/VE	0.075	1.000	0.300	0.706

Source: Lustig (forthcoming) based on:

South Africa (income-based): Ingrid Woolard, Catriona Purfield, Mashekwa Maboshe (Master Workbook August 5, 2014)

Bolivia (income-based): Paz Arauco, Verónica, George Gray Molina, Wilson Jiménez Pozo, and Ernesto Yáñez Aguilar (Master Workbook of CEQ-IDB project "Applying the Commitment to Equity (CEQ) Framework by Ethnicity and Race," July 18, 2014)

Brazil (income-based): Sean Higgins and Claudiney Pereira (Master Workbook of CEQ-IDB project "Applying the Commitment to Equity (CEQ) Framework by Ethnicity and Race," July 18, 2014)

Indonesia (consumption-based): Mathew Grant Wai-Poi, Jon Jellema, Rythia Afkar (Master Workbook CEQ-World Bank, May 28, 2014)

* Market income includes contributory pensions in all cases. Results with contributory pensions as government transfers are available upon request (except in South Africa, where social security pensions are not separately identified in the household survey).

1. Calculated as the difference between Market Income and Post-Fiscal Income Gini where Post-Fiscal Income includes the effects of Direct Taxes (PIT) and Social Security Contributions, Cash Transfers, Consumption subsidies and taxes.

2. Reynolds-Smolensky Index.

3. Atkinson-Plotnick Index.

4. From July 2009 to June 2010

NA: Not Available

⁶² See Duclos and Araar (2006), op. cit., Chapter 8.

⁶³ One element that causes re-ranking in Brazil is the large Special Circumstances Pension, a social safety net program designed to assist households coping with adverse shocks (unemployment, illness, death, disability). The program is available regardless of poverty level of the household, and since the size of compensation is determined by the previous labor income of the household it can lead to larger transfers to non-poor families.

4. Effectiveness: Is the reduction in poverty and inequality commensurate with the amount spent?

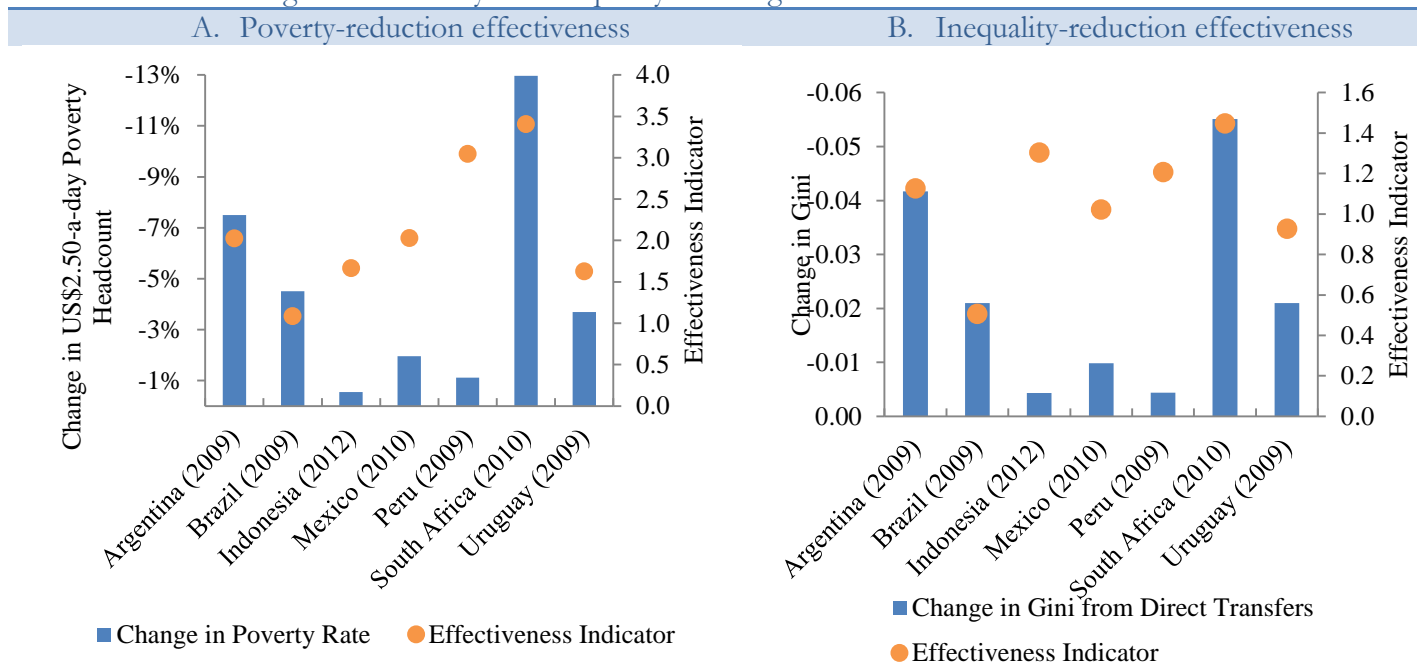
These favorable results for South Africa could simply reflect the fact that it may spend more than other countries. Therefore we ask: how effective are direct transfers in reducing poverty and inequality given the amount spent? We measure such “effectiveness” as the impact on poverty (or inequality) of the taxes or transfers being analyzed divided by their size relative to GDP (Lustig and Higgins, 2013). For example, for direct transfers, the effectiveness indicator (EI) for direct transfers is defined as:

$$EI = \frac{(X(I^n) - X(I^d)) / X(I^n)}{S^D / GDP}$$

where $X(I^j)$ is the inequality or poverty measure of interest (e.g., the Gini coefficient or headcount index), which is defined at each income concept (market income, net market income, disposable income, post-fiscal income and final income). Let S^D be total public spending on the direct transfer programs analyzed. This formulation allows us to compare across different programs within South Africa, as well as to compare South African programs to similar programs in other developing countries.

Looking just at direct cash transfers in South Africa, we find that they are highly effective at redistributing fiscal resources towards the poor and in reducing inequality. Figure 21A shows that the 3.8 percent of GDP spent on direct transfer programs (including FBS) reduced the headcount poverty rate for those living on less than US\$2.50 day in South Africa by 12.8 percentage points in 2010/11 before the impact of indirect taxes (or 7.2 percentage points if the impact of indirect taxes are included).⁶⁴ This is a much larger reduction than in any other country for which similar analysis is available. The reduction in poverty for the amount spent (effectiveness) is the highest in the sample of middle-income countries of similar size, and reflects the combination of effective targeting and large size of the programs. Similarly, direct transfers reduce the inequality coefficient by 0.055 of a Gini coefficient (figure 21).

Figure 21. Poverty and inequality reducing effectiveness of direct transfers

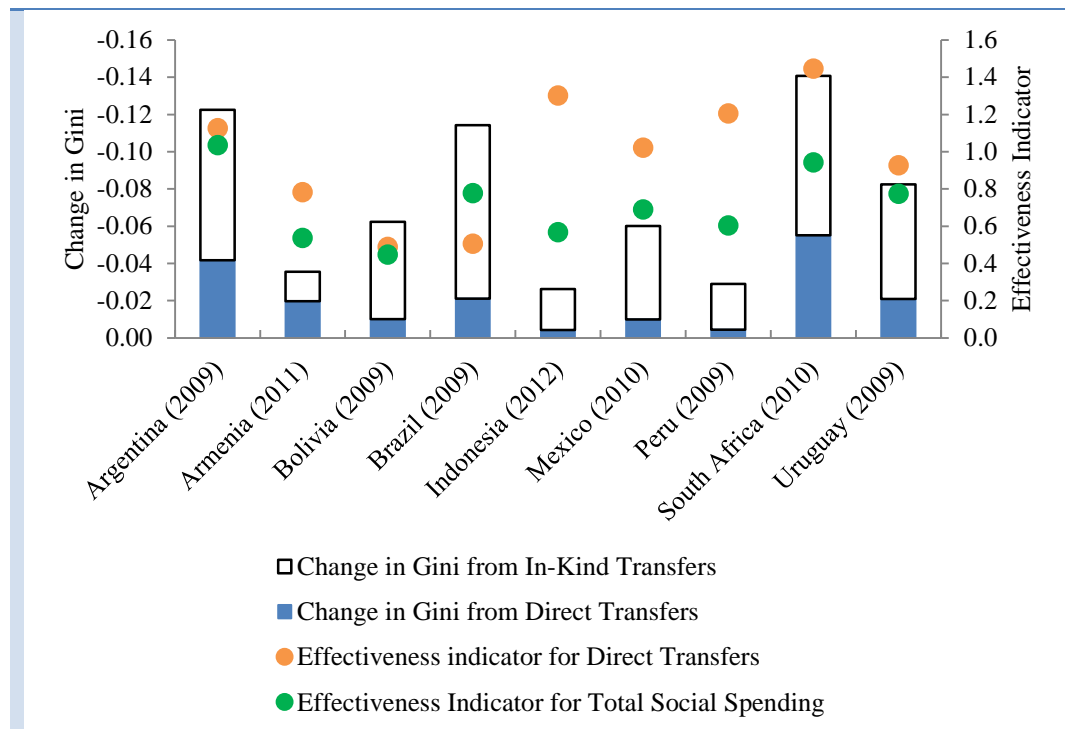


Source: Argentina (Lustig and Pessino, 2014); Brazil (Higgins and Pereira, 2014); Indonesia (Jellema et al, forthcoming), Mexico (Scott, 2014); Peru (Jaramillo, 2014), Uruguay (Bucheli et al, 2014); and own estimates based on IES 2010/11..

Figure 22. Inequality Reducing Effectiveness of Direct and In-Kind Transfers

⁶⁴ In line with standard practice in incidence studies, we do not include the impact of education and health spending on poverty because recipients may not be willing to pay in cash terms an amount equivalent to the outlays on these services in the budget.

Figure 22 shows that when combined with in-kind transfers, South Africa ranks among the more effective countries in translating its social spending into reductions in inequality. This is true relative to all countries for which similar analysis has been conducted, as well as relative to comparable middle-income, both in terms of their GDP per capita and the size of their population. The reduction in inequality owing to in-kind transfers amplify the already high benefits from direct transfers. The social spending items that we assess in this study which are equivalent to 14.9 percent of GDP in direct and in-kind transfers reduces inequality by 0.14 of a Gini coefficient.



Sources: Argentina (Lustig and Pessino, 2014), Armenia (Younger and Khachatryan, forthcoming), Bolivia (Paz et al, 2014), Brazil (Higgins and Pereira, 2014), Indonesia (Jellema et al forthcoming), Mexico (Scott, 2014), Peru (Jaramillo, 2014), Uruguay (Bucheli et al, 2014), and own estimates for South Africa based on IES 2010/11.

In sum, for the fiscal instruments we examined the South African fiscal system lifted some 3.6 million individuals out of poverty when measured as those living on less than US\$ 2.50 per day (PPP adjusted). When taxes and all social spending that we examined are combined, the gap in incomes between the rich and poor goes from a situation where the incomes of the richest decile are over 1,000 times higher than the poorest to one where they are about 66 times higher.

VI. Conclusions and Policy Implications

This paper aimed to assess the distributional impact of the main elements of general government taxation and spending in South Africa. On the tax side, the paper has analyzed the incidence of 64.5 percent of total tax revenue, including the personal income taxes, VAT, excise taxes on alcohol and tobacco, and the general fuel levy. On the expenditure side, the paper has analyzed the incidence of 43 percent of general government expenditures, focused on social spending including direct cash transfers, free basic services, health and education spending.

The results show that South Africa uses its fiscal instruments to effectively reduce market income poverty and inequality through a slightly progressive tax system and highly progressive social spending but despite this the levels of inequality and poverty remain unacceptably high. The rich in South Africa bear the brunt of taxes that we examined and the government redirects these resources to the poorest in society to raise their incomes. Only the top 3 deciles of the income distribution pay more in taxes that they receive in transfers. As a result of the fiscal system, some 3.6 million individuals are lifted out of poverty when measured as those living on less than US\$2.50 per day (PPP adjusted). Inequality goes from a situation where the incomes of the richest decile are over 1,000 times higher than the poorest, to one where they are about 66 times higher. The Gini coefficient falls from 0.77 before taxes and social spending programs to 0.59 after their application (or 0.695 when the monetized value of health and education spending are excluded).

On the tax side, fiscal policy relies on a mix of progressive direct taxes such personal income taxes, and slightly regressive indirect/consumption taxes, that when combined generate a slightly progressive tax system. Direct taxes (PIT and payroll taxes) were progressive, since the richer deciles pay a proportionally higher share of total direct tax collections than their share of market income. Moreover, because they make up a relatively high share of GDP,

they help to make inroads in the gap in incomes between the rich and poor. Indirect taxes are slightly regressive: the bottom 40 percent of the distribution contributed about 4.95 percent of total indirect tax collections, compared to their share of 4.78 percent in disposable income. This regressivity at the lower end of the income distribution largely reflects the impact of excises because VAT and fuel tax are progressive.

On the spending side of fiscal policy, social spending is not only progressive but also contributes to large reductions in poverty and inequality which nonetheless remain very high. Direct transfers are progressive in absolute terms, since they effectively target the poor (who are largely children and old age pensioners and benefits are means tested), and are sizable in terms of GDP, all of which leads to reductions in poverty and inequality. In fact, South Africa performs very well when compared with other middle-income countries: it achieves the most “redistribution” compared to the other middle-income countries in the CEQ analysis but that levels of inequality and poverty that remain are far higher than in other countries.⁶⁵ Our analysis suggests that while there is some scope to improve the targeting of certain social programs like free basic services, cash transfer programs are already well targeted and substantive. Education and health spending also benefit the poorer parts of the income distribution relatively more than the rich. However, there are concerns about the quality of such spending, which suggests that more could be done to improve the quality of such services to ensure that education and health spending maximize their potential in reducing poverty and inequality.

In sum, fiscal policy already goes a long way toward achieving redistribution. Nevertheless, the level of inequality and poverty in South Africa after taxes and spending remains unacceptably high. In fact, the level of inequality in South Africa after taxes and spending is still higher than the level of inequality in other middle-income countries before they begin to use fiscal policy interventions. More can and needs to be done to improve the quality of service delivery. But South Africa’s fiscal deficit and debt indicators show that the fiscal space to do so is extremely limited and little room remains on the macro front to spend more to achieve even greater redistribution. Addressing the twin challenges of poverty and inequality going forward in a way that is consistent with fiscal sustainability requires higher and more inclusive economic growth to support fiscal policy. This would be particularly important in addressing the need for jobs and higher incomes, especially at the lower end of the income distribution, helping narrow the gap in incomes between the rich and the poor and reinforcing the effectiveness of fiscal policy.

⁶⁵ See Lustig (2014).

References

- Beneke, Margarita, Nora Lustig y José Andrés Oliva. 2015. “El impacto de los impuestos y el gasto social en la desigualdad y la pobreza en El Salvador.” CEQ Working Paper No. 26, Center for Inter-American Policy and Research and Department of Economics, Tulane University and Inter-American Dialogue.
- Bibi, Sami and Jean-Yves Duclos. 2010. “A Comparison of the Poverty Impact of Transfers, Taxes and Market Income Across Five OECD Countries.” *Bulletin of Economic Research*, 62:4, pp. 387-406.
- Bucheli, Marisa, Nora Lustig, Máximo Rossi, and Florencia Amábile. 2014. “Social Spending, Taxes and Income Redistribution in Uruguay.” In Lustig, Nora, Carola Pessino and John Scott. 2014. Editors. *The Redistributive Impact of Taxes and Social Spending in Latin America. Special Issue. Public Finance Review*, May, Volume 42, Issue 3.
- Cabrera, Maynor, Nora Lustig and Hilcías Morán. 2014. “Fiscal Policy, Inequality and the Ethnic Divide in Guatemala.” CEQ Working Paper No. 20, Center for Inter-American Policy and Research and Department of Economics, Tulane University and Inter-American Dialogue, October.
- Coady, David. 2008. “The Distributional Impacts of Indirect Tax and Public Pricing Reforms: A Review of Methods and Empirical Evidence.” In Gillingham, Robert. Editor. *Poverty and Social Impact Analysis by the IMF: Review of Methodology and Selected Evidence*. Washington DC: International Monetary Fund.
- Duclos, Jean-Yves and Abdelkrim Araar. 2006. *Poverty and Equity: Measurement, Policy, and Estimation with DAD*. New York: Springer and International Development Research Centre.
- _____ and Martin Tabi. 1996. “The measurement of progressivity, with an application to Canada.” *The Canadian Journal of Economics*. Volume 1, Special Issue (Part 1), April, pp. S165-S170.
- Higgins, Sean and Claudiney Pereira. 2014. “The Effects of Brazil’s Taxation and Social Spending on the Distribution of Household Income.” In Lustig, Nora, Carola Pessino and John Scott. 2014. Editors. *The Redistributive Impact of Taxes and Social Spending in Latin America. Special Issue. Public Finance Review*, May, Volume 42, Issue 3.
- Jaramillo, Miguel. 2014. “The Incidence of Social Spending and Taxes in Peru.” In Lustig, Nora, Carola Pessino and John Scott. 2014. Editors. *The Redistributive Impact of Taxes and Social Spending in Latin America. Special Issue. Public Finance Review*, May, Volume 42, Issue 3.
- Jellema, Jon, Matthew Wai-Poi, and Rythia Afkar.. “The Distributional Impact of Fiscal Policy in Indonesia.” World Bank. Forthcoming.
- Kakwani, Nanak C. 1977. “Measurement of Tax Progressivity: An International Comparison.” *The Economic Journal* 87(345): 71-80.
- Lambert, Peter. 2002. *The Distribution and Redistribution of Income*. Third Edition. Manchester United Kingdom: Manchester University Press.
- Leibbrandt, Murray, Ingrid Woolard, Arden Finn, and Jonathan Argent. 2010. “Trends in South African Income Distribution and Poverty since the Fall of Apartheid.” OECD Social, Employment and Migration Working Papers, No. 101, OECD Publishing, OECD. doi:10.1787/5kmms0t7p1ms-en.
- Lustig, Nora. 2015. “Fiscal Policy, Inequality and the Poor in the Developing World. Round 1.” CEQ Working Paper No. 23, Center for Inter-American Policy and Research and Department of Economics, Tulane University and Inter-American Dialogue. Forthcoming.

- _____. (editor). *Commitment to Equity Assessment: Estimating the Impact of Fiscal Policy on Inequality and Poverty*. Handbook. Forthcoming.
- _____ and Sean Higgins. 2013. *Commitment to Equity Assessment (CEQ): Estimating the Incidence of Social Spending, Subsidies and Taxes. Handbook*. CEQ Working Paper No. 1, Center for Inter-American Policy and Research and Department of Economics, Tulane University and Inter-American Dialogue, September.
- _____, Rodrigo Aranda and Ali Enami. 2015. “Measuring the Contribution of Taxes and Transfers to Changes in Inequality and Poverty: How to Address Path Dependency.” CEQ Working Paper No. 25, Center for Inter-American Policy and Research and Department of Economics, Tulane University and Inter-American Dialogue. Forthcoming.
- _____ and Carola Pessino. 2014. “Social Spending and Income Redistribution in Argentina in the 2000s: the Rising Role of Noncontributory Pensions.” In Lustig, Nora, Carola Pessino and John Scott. 2014. Editors. *The Redistributive Impact of Taxes and Social Spending in Latin America. Special Issue. Public Finance Review*, May, Volume 42, Issue 3.
- National Planning Commission. 2011. “National Development Plan 2030: Our Future- Make it Work.”
- National Treasury. 2013. *Budget Review 2013*, Pretoria: National Treasury.
- National Treasury. 2014. *Budget Review 2014*, Pretoria: National Treasury.
- Paz Arauco, Verónica, George Gray Molina, Wilson Jiménez Pozo, and Ernesto Yáñez Aguilar. 2014. “Explaining Low Redistributive Impact in Bolivia.” In Lustig, Nora, Carola Pessino and John Scott. 2014. Editors. *The Redistributive Impact of Taxes and Social Spending in Latin America. Special Issue. Public Finance Review*, May, Volume 42, Issue 3.
- Presidency of the Republic of South Africa. 2013. *Development Indicators 2012*. Pretoria: Presidency of the Republic of South Africa.
- _____. 2014. *Twenty-Year Review*. Pretoria: Presidency of the Republic of South Africa.
- Sauma, Juan Diego Trejos. 2014. “Social Public Spending, Taxes, Redistribution of Income, and Poverty in Costa.” CEQ Working Paper No. 18, Center for Inter-American Policy and Research and Department of Economics, Tulane University and Inter-American Dialogue, January.
- Scott, John. 2014. “Redistributive Impact and Efficiency of Mexico’s Fiscal System.” In Lustig, Nora, Carola Pessino and John Scott. 2014. Editors. *The Redistributive Impact of Taxes and Social Spending in Latin America. Special Issue. Public Finance Review*, May, Volume 42, Issue 3.
- SEDLAC (Socioeconomic Database for Latin America and the Caribbean, CEDLAS at Universidad de La Plata and World Bank). See <http://sedlac.econo.unlp.edu.ar/eng/>
- Southern Africa Labour and Development Research Unit (SALDRU). *National Income Dynamics Study 2008, Wave 1 [dataset]*. Version 5.2. Cape Town: Southern Africa Labour and Development Research Unit [producer], 2009. Cape Town: Data First [distributor], 2014.
- Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ). 2011. “Trends in Achievement Levels of Grade 6 Pupils in South Africa.” SACMEQ Policy Brief No. 1. Paris: SACMEQ.
- Statistics South Africa. 2012a. “Income and Expenditure Survey.” Pretoria: Statistics South Africa.
- Statistics South Africa. 2012b. “Financial statistics of Consolidated General Government.” November 22, 2012

- Statistics South Africa. 2014a. "Poverty Trends in South Africa: An Examination of Absolute Poverty Between 2006 and 2011." Pretoria, March 2014
- Statistics South Africa. 2014b. "The South African MPI: Creating a Multidimensional Poverty Index using Census Data." Pretoria, March 2014
- Van der Berg, S. 2006. "Fiscal Incidence of Social Spending in South Africa, 2006." Stellenbosch Economic Working Papers: 10/09.
- . 2009. "Fiscal Incidence of Social Spending in South Africa, 2006." A Report to National Treasury.
- Woldehanna, Tassew, Eyasu Tschaye, Hill, Ruth, Inchauste, Gabriela, and Nora Lustig. "A Fiscal Incidence Analysis for Ethiopia." Background Paper for World Bank Poverty Assessment. Forthcoming.
- Woolard, Ingrid, Simkins, Charles, Oosthuizen, Morné and Christopher Woolard. 2005. "Tax Incidence Analysis." Report for the Fiscal Incidence Study conducted for National Treasury.
- World Bank. 2009. "Levels and Patterns of Safety Net Spending in Developing and Transition Countries." Safety Net Primer, Washington DC: The World Bank.
- World Bank. 2012. "South Africa Economic Update: Focus on Inequality of Opportunity." World Bank Working Papers, No. 71553, Washington DC: World Bank.
- Younger, Stephen D. and Artsvi Khachatryan. "Fiscal Incidence in Armenia". Background Paper for World Bank Armenia Public Expenditure Review. Forthcoming.

Appendix 1. Assumptions

Personal Income Taxes

Labor incomes reported in the household survey were assumed to reflect labor incomes net of taxes. As a result, personal income taxes (PIT) were imputed based on the 2010 personal income tax rules as specified in the Budget Review. Similarly, employee contributions to social security, including the unemployment insurance fund and skills development fund levy were imputed based on reported net incomes. Given imputed direct taxes and contributions, we construct a measure of market income for each individual, where market income is the imputed income before taxes and contributions.

Indirect Taxes

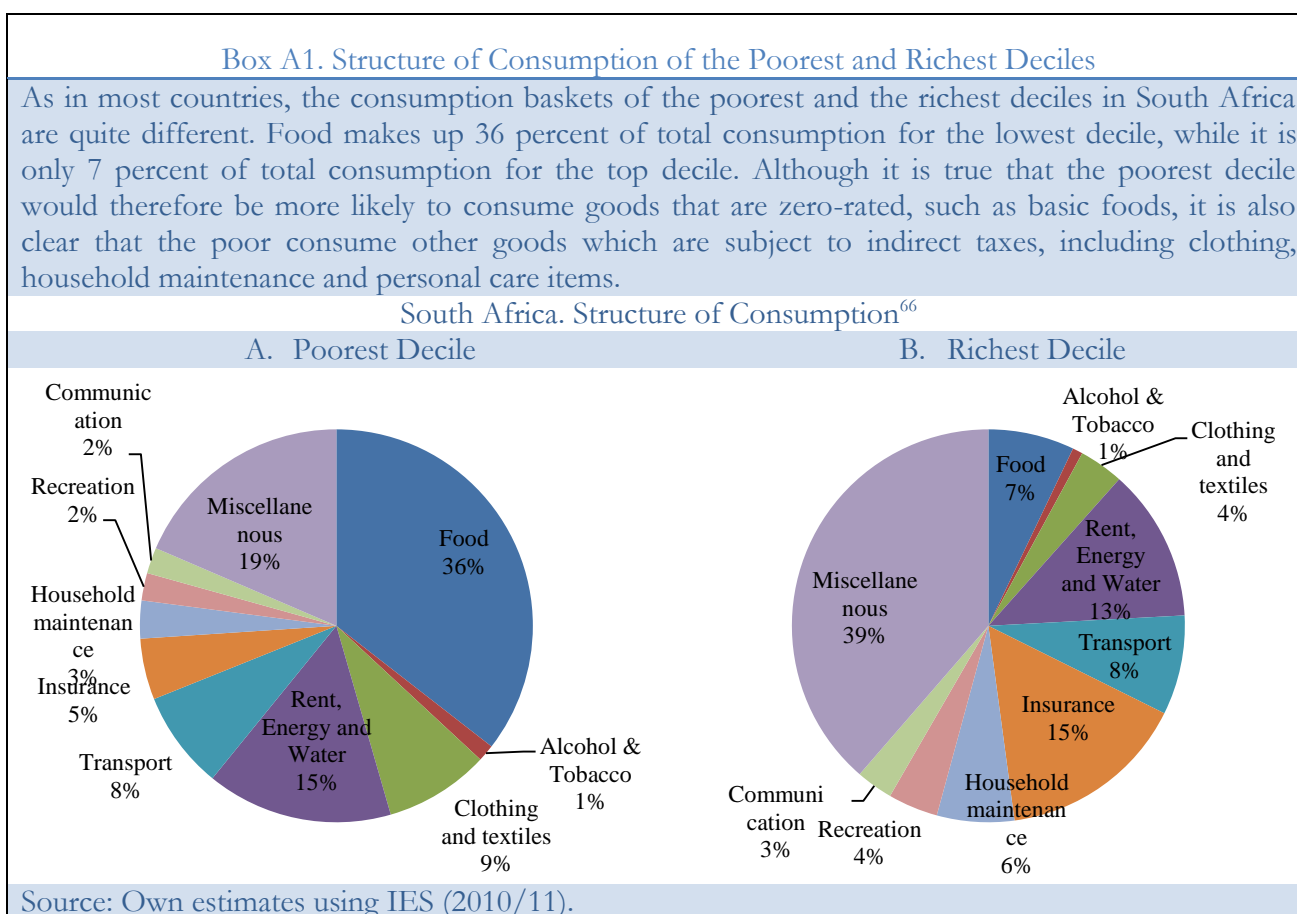
First, in order to find the incidence of VAT, we applied the statutory rate of 14 percent to all goods consumed by households in the survey, except for exempt items and the 19 food items and petroleum products that are zero-rated. In general, since retailers can claim VAT refunds for the inputs they used in production, the final burden on the consumer is simply the VAT rate at the final point of sale. For exempt goods, a final consumer pays no VAT *directly*; in exempt sectors VAT works exclusively *indirectly* when the final consumption price of a good in an exempt sector is higher by the amount of VAT paid on inputs (which a producer in an exempt sector cannot reclaim). To capture this effect, we used the 2009 Social Accounting Matrix for exempt goods and find that the indirect effect is 5 of the total incidence, given that exemptions are narrowly defined.

For excise taxes we found that the total weighted value of expenditure on excisable alcohol and tobacco products in the household survey is far below estimates from administrative data. For instance, the ratio of the value of IES consumption on alcohol is only 17 percent of total sales according to Reserve Bank records. This is due to a very large number of households that indicated purchasing zero amounts of alcohol and/or tobacco. To correct for this, the analysis: (i) rescaled verified excise tax collections from administrative data by the ratio of private consumption in the household survey to what is observed in National Accounts, (ii) calculated each (market income) decile's share of alcohol & tobacco expenditure in total alcohol & tobacco expenditure recorded in the household survey, and (iii) multiplied the shares calculated in (i) by the total calculated in (ii) and distribute that amount uniformly to every household in the market income decile. The allocation of excise collections in step (iii) is in essence an estimate of the expected burden. Since excises are primarily a tax to deter consumption, the burden on the income of those who consume these goods can be sizeable. Alcohol and tobacco outlays comprise about 1 percent of total expenditure in the bottom decile and thus as a share of their relatively low market income the excise on these goods is high (Box A1).

Finally, the fuel levy has a non-negligible impact across the income distribution reflecting not only direct taxes paid on fuel consumed, but also the indirect impact where it increases input costs for other sectors that use fuel. More specifically, the fuel levy was taken as a weighted average of the statutory rates on diesel and petrol which averages 31.75 percent. To calculate the direct incidence, this average rate was applied to the household purchases of these fuels observed in the IES survey. The indirect effects were calculated using a "price-shifting" model (Coady, 2008) and the 2009 Social Accounting Matrix to assess the price changes for goods/services in sectors that use fuel as an input and assuming that the fuel tax was passed onto the consumer in the form of higher prices. The price-shifting model is static and assumes that exogenously-generated price changes are either "pushed forward" to output prices or "pushed backwards" onto factor payments. We therefore take results generated as an upper-bound or "overnight" estimate of the impact of any change in government-administered price policy on household welfare. The percentage price changes derived from the SAM (in all sectors other than fuel) are multiplied by the household budget shares of those sectors to produce a total price change for each household's consumption basket. Because fuel is used as an input in so many sectors, the indirect effects are sizeable accounting for 58 percent of the total fuel tax incidence in South Africa.

Direct Transfers

Households receiving cash transfers are directly identified in the household survey. Direct transfers overwhelmingly benefit the poor in relative terms, regardless of whether we use market incomes or consumption as the welfare measure.



Health

We used the NIDS Wave 1 data to look at health facility utilization. We used the NIDS Wave 1 data (from 2008) in preference to the Wave 2 (from 2010) because of concerns about:

- the quality of the expenditure data in Wave 2
- selective attrition rates (as higher income households were much more likely to attrite) between Wave 1 and Wave 2.

A limitation of the data is that different questions were asked of adults and children. For individuals over the age of 14 ('adults' in the NIDS methodology), we have information about how long ago the last health visit occurred and the type of facility visited.

For children (i.e. individuals aged 14 and under), we know if the child has any routine health checks (when not ill) in the past year and whether the child has been ill and been taken to see a health care practitioner in the past 30 days. In cases where the child consulted a health worker, we do not know if this was at a public/private clinic, hospital or private doctor.

Medical Aid

The NIDS data suggests that 16% of adults and 12% of children (under the age of 15) in the NIDS sample are covered by medical aid (private health insurance). Reassuringly, 17% of adults and 12% of children in the IES 2010 data report that they are covered by medical aid. Taking adults and children together, this implies that 15% of the population were insured in 2010.

⁶⁶Note that these are based on reported consumption, and do not take into account the under-reporting of alcohol and tobacco consumption.

Type of facility visited

The table below shows that adults without medical aid typically utilize public clinics (49%) or public hospitals (21%) although large numbers choose to go to private doctors (25%). As one would expect, adults with medical aid rarely attend public facilities.

Table A1.1 South Africa Access to Medical Aid			
Last health consultation was at a...?	Adult has medical aid		
	Yes	No	Total
Public hospital	3.4	20.8	17.0
Private hospital	11.1	1.7	3.8
Public health clinic	5.8	48.9	39.5
Private clinic	3.6	2.6	2.8
Private doctor	74.5	25.0	35.7
Nurse or chemist	1.5	0.5	0.7
Traditional healer	0.1	0.3	0.2
Do not remember	0.0	0.3	0.2
Total	100.0	100.0	100.0

User fees

Primary health care user fees were abolished in 1996. Whereas Burger (2007) using 2003 General Household Survey data finds that 9% of public sector clinic users reported paying a fee for service, in the NIDS data this percentage is less than 2%. The median fee reported among the (60) respondents that did report a fee was R35. Given this, we assume that co-payments are zero.

Fee-for-payment in public hospitals was more common, with almost a quarter (24%) of those that used public hospitals reporting that they had been charged a fee. In the cases where there was a charge, the fees were very low, with the median fee charged being R20 and the mean R51. Across all hospital visits, the mean co-payment was R12. Relative to the cost of a hospital visit (R2,782), these co-payments are so small as to be safely disregarded.

Number of visits

For adults, we know if the last visit to a health facility was in the last 30 days, 1-5 months ago, 6-12 months ago, etc. From this, we can estimate the number of visits per annum. The median number of visits per adult per annum is 1.33.

For children, we know very little. We know if the child went for a check-up (when not ill) once, more than once or not at all in the past 12 months. We also know if the child was ill for more than three days in the last month and whether the ill child was taken to a healthcare provider.

Almost one-tenth (9.6%) of children were reported to have been ill for more than 3 days in the past 30 days. Of these, more than three quarters (78%) sought medical attention. Of those that did not seek medical attention, almost half (48%) were regarded by their caregivers as 'not sick enough' to need to seek attention. Just over one-quarter (27%) of caregivers said that they did not take the child to a health facility because they 'did not have the money'.

Children that are covered by medical aid were much more likely to have been 'ill' in the past 30 days (13% versus 9%). This may simply reflect caregiver perceptions of what 'ill' means. Children with medical aid were more likely to be taken to a healthcare provider when ill (84% versus 76%).

In total, 7% of children sought medical attention for illness in the last 30 days. Among those with medical aid this percentage was 10%, versus 7% for the uninsured.

Assumptions

For children, the survey does not indicate what type of health facility the child visited.

For routine health checks (when the child is not sick), we assume that all these health checks occur at clinics. We assume that uninsured children only utilize public clinics for health checks. In the case of insured children, we assume that all health checks occur at private clinics. If more than one routine health check-up (when the child was not ill) occurred in the last year, we assume that there were two visits.

When children are sick, we assume that their patterns of health facility utilization will be similar to those of the adults in the same households. We thus assign facility utilization to children in proportion to the usage patterns (public clinic, public hospital, private facility) of all the adults in the household. In the 406 cases where no adults in the household report ever having made a health visit, we assume that insured children go to private doctors and uninsured children go to public clinics.

Ranking of households

We rank households based on per capita expenditure in order to later merge this data into our primary survey. In order to make expenditure broadly comparable between NIDS and IES we exclude income tax payments and 'lumpy' expenditures such as the purchase of jewelry and durables and expenditures on ceremonies such as weddings, bride payments and funerals.

We create expenditure ventiles (5% shares) where each ventile contains equal numbers of individuals, ranked on per capita expenditure. We played around with creating more groups (e.g. percentiles, but the small sample size – 28,226 individuals in 7296 households – made the results very sensitive to variations in the data.)

Value of a health visit

The total health budget in 2010/11 was R97.957 billion. Of this, R54.407 billion was for hospitals and R16.984 billion was for Primary Health Care. These line items are assigned to respondents in the survey that report using public hospitals and clinics, respectively.

An additional R7.265 billion went on medicines and R4.997 billion on medical supplies. These are assigned equally across all visits to public hospitals and clinics.

The residual of R14.304 billion is assumed to benefit all individuals that make contact with the health system, regardless of whether they are insured or uninsured and whether they use private or public facilities.

Appendix 2. Basic characteristics of individuals and households in the bottom decile

i) Income-based incidence analysis

The bottom market income decile has 5,044,995 individuals living in 1,121,682 households. Forty two percent (42%) of the households report zero market incomes with an a mean per capita market income of R200 compared to R207,639 for the top decile.

Forty seven percent 47% of the bottom decile households live in urban areas compared to 92% for top decile households. The average household size for the bottom decile is 4.5 while that for the top decile is 2.7. Households in the bottom decile have a lower average age of 24 years relative to 35 years in the top decile. Furthermore, the average number of years of schooling for household heads in the bottom decile is 6 years, compared to 13 years for household heads in the top decile. About 66% of the bottom decile households have children aged below 18 years, compared to 37% of the households in the top decile. Descriptive results further show that there is a higher proportion of pension-aged members in bottom decile households (28%) compared to top decile households (22%).

Table A2.1 South Africa. Features of Households at Bottom and Top of the Income Distribution

	Poorest Decile	Richest Decile
% of households in urban areas	47	92
Average household size	4.5	2.7
Average age	24	35
Years of Schooling	6	13
% of households with children < 18 years	66	37
% of households with pension aged adult	28	22
Per capita annual Rand income before taxes & cash transfers	200	207,369
Per capita annual Rand income after taxes & cash transfers, FBS	2,131	141,075

Source: Own Calculations from the 2010/11 IES, South Africa

ii) Consumption-based incidence analysis

There are 939,009 households with a total of 5,042,803 individuals in the bottom decile. Under the consumption approach, 66% of the households in the bottom decile have zero market incomes. The mean per capita market income in the bottom decile is R 96 compared to R146,743 in the top decile.

Descriptive statistics show that 35% of the households in the bottom decile live in urban areas versus 93% of the top decile households which live in the urban areas. The average household size for the bottom decile is 5.4 compared to 2.6 in the top decile.

The average age in the bottom decile is 27 years compared to 37 years in the top decile. Additionally, the average number of years of schooling for household heads in the bottom decile is 4 years, versus 13 years of schooling for household heads in the top decile. Further, results indicate that 75% of the bottom decile households have children aged below 18 years, compared to 36% of the households in the top decile. In addition, we note that 62% of the bottom decile households have at least a pension aged adult compared to only 27% in the top decile.

Appendix 3. Additional Tables

Appendix Table A3.1. South Africa. Reduction in Inequality across Income Concepts

	Market Income	Net Market Income	Disposable Income	Post-fiscal Income	Final Income
Gini	0.771	0.750	0.694	0.695	0.596
% change wrt market income	--	-2.2%	-7.7%	-7.7%	-17.5%
Significance (p-value)	--	0.000	0.000	0.000	0.000
% change wrt net market income	--	--	-5.5%	-5.5%	-15.3%
Significance (p-value)	--	--	0.000	0.000	0.000
Theil Index	1.222	1.119	0.973	0.971	0.724
% change wrt market income	--	-10.3%	-24.9%	-25.1%	-49.8%
Significance (p-value)	--	0.000	0.000	0.000	0.000
% change wrt net market income	--	--	-14.6%	-14.7%	-39.5%
Significance (p-value)	--	--	0.000	0.000	0.000
90/10	198.948	173.287	32.698	33.245	12.477
% change wrt market income	--	-2566.1%	-16625.0%	-16570.3%	-18647.1%
Significance (p-value)	--	0.000	0.000	0.000	0.000
% change wrt net market income	--	--	-14058.9%	-14004.1%	-16080.9%
Significance (p-value)	--	--	0.000	0.000	0.000

Note: significance is the significance (from zero) of the reduction from market or net market income; report the p-value to three decimal places.

Source: Own estimates based on IES 2010/11.

Appendix Table A3.2. South Africa. Reduction in Poverty across Income Concepts

		Market Income	Net Market Income	Disposable Income	Post-fiscal Income
US \$1.25 PPP	Headcount index	34.4%	34.4%	11.7%	16.5%
	% change wrt market income	--	0.0%	-22.6%	-17.9%
	Significance (p-value)	--	0.003	0.000	0.000
	% change wrt net market income	--	--	-22.7%	-17.9%
	Significance (p-value)	--	--	0.000	0.000
	Poverty Gap	21.2%	21.3%	3.9%	5.8%
	% change wrt market income	--	0.0%	-17.3%	-15.4%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-17.3%	-15.5%
	Significance (p-value)	--	--	0.000	0.000
	Squared Poverty Gap	15.8%	15.8%	2.0%	3.1%
	% change wrt market income	--	0.0%	-13.7%	-12.7%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-13.7%	-12.7%
	Significance (p-value)	--	--	0.000	0.000
US \$2.5 PPP	Headcount index	46.2%	46.4%	33.4%	39.0%
	% change wrt market income	--	0.2%	-12.8%	-7.2%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-13.0%	-7.4%
	Significance (p-value)	--	--	0.000	0.000
	Poverty Gap	31.0%	31.1%	13.7%	17.4%
	% change wrt market income	--	0.1%	-17.4%	-13.7%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-17.5%	-13.8%
	Significance (p-value)	--	--	0.000	0.000
	Squared Poverty Gap	24.3%	24.3%	7.4%	10.0%
	% change wrt market income	--	0.1%	-16.9%	-14.3%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-16.9%	-14.4%
	Significance (p-value)	--	--	0.000	0.000
US \$4 PPP	Headcount index	54.3%	54.6%	48.5%	53.1%
	% change wrt market income	--	0.4%	-5.8%	-1.2%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-6.2%	-1.5%
	Significance (p-value)	--	--	0.000	0.000
	Poverty Gap	38.4%	38.5%	24.2%	28.4%
	% change wrt market income	--	0.1%	-14.2%	-10.0%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-14.3%	-10.1%
	Significance (p-value)	--	--	0.000	0.000
	Squared Poverty Gap	31.0%	31.0%	14.8%	18.3%
	% change wrt market income	--	0.1%	-16.2%	-12.7%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-16.2%	-12.8%
	Significance (p-value)	--	--	0.000	0.000

Note: significance is the significance (from zero) of the reduction from market or net market income; report the p-value to three decimal places.

Source: Own estimates based on IES 2010/11.

Appendix Table A3.2. South Africa. Reduction in Poverty across Income Concepts (continued)

		Market Income	Net Market Income	Disposable Income	Post-fiscal Income
National food poverty line - R321 (US\$1.85 PPP) per person per month	Headcount index	40.8%	41.0%	23.4%	29.0%
	% change wrt market income	--	0.1%	-17.4%	-11.8%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-17.5%	-12.0%
	Significance (p-value)	--	--	0.000	0.000
	Poverty Gap	26.5%	26.6%	8.3%	11.3%
	% change wrt market income	--	0.1%	-18.2%	-15.2%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-18.3%	-15.3%
	Significance (p-value)	--	--	0.000	0.000
	Squared Poverty Gap	20.3%	20.4%	4.3%	6.1%
	% change wrt market income	--	0.0%	-16.0%	-14.2%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-16.1%	-14.2%
	Significance (p-value)	--	--	0.000	0.000
National lower bound poverty line- R 443 (US\$2.55) per person per month	Headcount index	46.5%	46.7%	34.2%	39.6%
	% change wrt market income	--	0.2%	-12.4%	-7.0%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-12.6%	-7.2%
	Significance (p-value)	--	--	0.000	0.000
	Poverty Gap	31.3%	31.4%	14.0%	17.8%
	% change wrt market income	--	0.1%	-17.3%	-13.6%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-17.4%	-13.6%
	Significance (p-value)	--	--	0.000	0.000
	Squared Poverty Gap	24.5%	24.6%	7.6%	10.2%
	% change wrt market income	--	0.1%	-16.9%	-14.3%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-16.9%	-14.3%
	Significance (p-value)	--	--	0.000	0.000
National upper bound poverty line- R 443 (US\$ 3.57) per person per month	Headcount index	52.3%	52.5%	45.1%	50.1%
	% change wrt market income	--	0.2%	-7.3%	-2.3%
	Significance (p-value)	--	0.000	0.000	0.246
	% change wrt net market income	--	--	-14.1%	-4.6%
	Significance (p-value)	--	--	0.000	0.000
	Poverty Gap	36.6%	36.7%	21.4%	25.6%
	% change wrt market income	--	0.1%	-15.2%	-11.0%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-15.3%	-11.1%
	Significance (p-value)	--	--	0.000	0.000
	Squared Poverty Gap	29.3%	29.3%	12.7%	16.0%
	% change wrt market income	--	0.1%	-16.5%	-13.3%
	Significance (p-value)	--	0.000	0.000	0.000
	% change wrt net market income	--	--	-16.6%	-13.3%
	Significance (p-value)	--	--	0.000	0.000

Note: significance is the significance (from zero) of the reduction from market or net market income; report the p-value to three decimal places.

Source: Own estimates based on IES 2010/11.

Appendix Table A3.3. South Africa. Incidence of Taxes and Transfers (share of market income and socioeconomic group)

		Direct Taxes	Contributions to SS	Direct Taxes and Contributions to SS	Old -age pension	Child support grant	Disability grant	Child care dependency grant	Child foster care	Grant-in-aid	Other grants	Free Basic Services (treated as a direct transfer)	All Direct Transfers	Indirect Taxes	Value-added tax	Excise Tax	Fuel levy	Net Indirect Taxes	In-kind Education	In-kind Health	In-kind Transfers plus Housing and Urban	All Transfers (excluding all Taxes)	All Transfers (excluding all Taxes) plus Indirect Subsidies	All Taxes (Direct and Indirect)
Deciles	1	0.0%	0.0%	0.0%	398.0%	397.7%	230.2%	14.3%	29.6%	6.1%	4.4%	231.9%	1312.1%	-227.0%	-133.1%	-59.7%	-34.2%	-227.0%	35.3%	889.0%	2083.6%	3395.7%	3395.7%	-227.0%
	2	0.0%	-0.1%	-0.1%	120.4%	108.1%	61.4%	4.7%	10.3%	1.5%	0.6%	57.3%	364.3%	-71.5%	-46.2%	-14.7%	-10.6%	-71.5%	4.3%	246.6%	598.1%	962.4%	962.4%	-71.5%
	3	0.0%	-0.3%	-0.3%	60.1%	48.4%	30.8%	4.1%	2.5%	0.7%	0.2%	32.1%	178.9%	-43.7%	-28.0%	-9.1%	-6.6%	-43.7%	3.2%	129.4%	297.8%	476.8%	476.8%	-43.7%
	4	0.0%	-0.5%	-0.5%	27.6%	25.8%	13.5%	1.2%	1.3%	0.3%	0.2%	18.4%	88.3%	-29.7%	-19.0%	-6.2%	-4.6%	-29.7%	1.9%	72.9%	165.7%	254.0%	254.0%	-29.7%
	5	0.0%	-0.7%	-0.8%	13.8%	12.4%	7.0%	0.3%	1.3%	0.2%	0.1%	8.4%	43.4%	-22.4%	-14.4%	-4.3%	-3.7%	-22.4%	1.9%	40.9%	87.7%	131.1%	131.1%	-22.5%
	6	-0.3%	-1.1%	-1.4%	6.0%	6.0%	3.7%	0.2%	0.5%	0.1%	0.1%	2.6%	19.2%	-18.3%	-11.9%	-3.2%	-3.2%	-18.3%	1.1%	24.1%	48.7%	68.0%	68.0%	-18.6%
	7	-1.2%	-1.5%	-2.7%	3.9%	2.4%	1.8%	0.1%	0.2%	0.1%	0.0%	0.9%	9.5%	-16.5%	-10.8%	-2.4%	-3.3%	-16.5%	1.4%	12.9%	26.5%	36.0%	36.0%	-17.7%
	8	-3.3%	-1.7%	-5.0%	1.7%	0.7%	0.7%	0.0%	0.1%	0.0%	0.0%	0.3%	3.6%	-15.2%	-10.2%	-1.7%	-3.3%	-15.2%	1.2%	7.8%	14.6%	18.2%	18.2%	-18.5%
	9	-8.1%	-1.8%	-9.9%	0.8%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	-14.1%	-9.8%	-1.1%	-3.2%	-14.1%	1.0%	2.8%	6.1%	7.3%	7.3%	-22.2%
	10	-18.5%	-1.3%	-19.8%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-12.6%	-9.4%	-0.5%	-2.7%	-12.6%	0.7%	0.3%	1.5%	1.6%	1.6%	-31.1%
Total Population		-13.6%	-1.4%	-15.0%	1.9%	1.5%	0.9%	0.1%	0.1%	0.0%	0.0%	0.8%	5.4%	-14.1%	-10.0%	-1.1%	-3.0%	-14.1%	0.9%	5.5%	12.5%	17.8%	17.8%	-27.7%

	Direct Taxes	Contributions to SS	Direct Taxes and Contributions to SS	Old -age pension	Child support grant	disability grant	child care dependency grant	child foster care	grant-in-aid	other grants	Free Basic Services (treated as a direct transfer)	All Direct Transfers	Indirect Taxes	Value-added tax	Excise Tax	Fuel levy	Net Indirect Taxes	In-kind Education	In-kind Health	In-kind Transfers plus Housing and Urban	All Transfers (excluding all Taxes)	All Transfers (excluding all Taxes) plus Indirect Subsidies	All Taxes (Direct and Indirect)
Group:																							
y < 1.25	0.0%	-0.3%	-0.3%	85.6%	76.9%	44.7%	4.0%	5.6%	1.1%	77.0%	46.8%	265.3%	-57.5%	-36.2%	-12.7%	-8.7%	-57.5%	4.8%	188.9%	439.4%	704.7%	704.7%	-57.5%
1.25 <= y < 2.50	0.0%	-0.6%	-0.7%	18.7%	17.4%	9.9%	0.6%	1.4%	0.3%	17.4%	11.8%	60.2%	-25.0%	-16.1%	-4.9%	-4.0%	-25.0%	2.2%	51.8%	117.9%	178.1%	178.1%	-25.0%
2.50 <= y < 4.00	-0.1%	-0.9%	-1.0%	9.5%	8.4%	4.6%	0.2%	0.7%	0.1%	8.4%	5.2%	28.8%	-20.1%	-12.9%	-3.8%	-3.4%	-20.1%	1.4%	30.2%	64.2%	93.1%	93.1%	-20.2%
4.00 <= y < 10.00	-1.1%	-1.4%	-2.5%	4.0%	3.0%	2.1%	0.1%	0.2%	0.1%	3.0%	1.1%	10.7%	-16.7%	-10.9%	-2.5%	-3.3%	-16.7%	1.2%	14.9%	29.7%	40.4%	40.4%	-17.8%
10.00 <= y < 50.00	-7.4%	-1.8%	-9.2%	1.0%	0.2%	0.3%	0.0%	0.0%	0.0%	0.2%	0.1%	1.6%	-14.3%	-9.8%	-1.2%	-3.2%	-14.3%	1.1%	3.6%	7.7%	9.3%	9.3%	-21.7%
50.00 <= y	-19.0%	-1.2%	-20.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-12.5%	-9.4%	-0.5%	-2.7%	-12.5%	0.6%	0.4%	1.4%	1.5%	1.5%	-31.5%
Total Population	-13.6%	-1.4%	-15.0%	1.9%	1.5%	0.9%	0.1%	0.1%	0.0%	1.5%	0.8%	5.4%	-14.1%	-10.0%	-1.1%	-3.0%	-14.1%	0.9%	5.5%	12.5%	17.8%	17.8%	-27.7%

Source: Own estimates using IES 2010/11.

Appendix Table A3.4. South Africa. Concentration of Taxes and Transfers (by market income deciles and socioeconomic group)

BY DECILES - Deciles use market income

PERCENTS

		Market Income - DOES NOT INCLUDE CONTRIBUTORY PENSIONS	Direct Taxes	Contributions	Direct Taxes and Contributions to SS	Old -age pension	Child support grant	Disability grant	Child care dependency grant	Child foster care	Grant-in-aid	Other grants	Free Basic Services (treated as a direct transfer)	All Direct Transfers	Indirect Taxes	Value- added tax	Excise Tax	Fuel levy	Net Indirect Taxes	Pre-school	Primary School	Secondary School	College education	Adult education	University education	In-kind Education	In-kind Health	In-kind Transfers plus Housing and Urban	All Transfers (excluding all Taxes)	All Transfers (excluding all Taxes) plus Indirect Subsidies	All Taxes (Direct and Indirect)
Deciles	1	0.1%	0.0%	0.0%	0.0%	12.7%	16.7%	15.2%	13.3%	16.4%	13.9%	15.2%	17.0%	15.0%	1.0%	0.8%	3.4%	0.7%	1.0%	13.4%	13.4%	10.1%	5.7%	10.2%	2.5%	10.6%	9.9%	10.3%	11.7%	11.7%	0.5%
	2	0.2%	0.0%	0.0%	0.0%	14.1%	16.7%	14.9%	15.9%	20.9%	12.3%	9.2%	15.5%	15.3%	1.1%	1.0%	3.1%	0.8%	1.1%	12.2%	14.1%	12.4%	3.3%	12.0%	1.1%	11.5%	10.1%	10.8%	12.2%	12.2%	0.6%
	3	0.5%	0.0%	0.1%	0.0%	14.3%	15.2%	15.2%	28.5%	10.2%	12.2%	5.4%	17.7%	15.3%	1.4%	1.3%	3.9%	1.0%	1.4%	11.7%	13.4%	12.4%	4.4%	10.1%	1.7%	11.2%	10.8%	11.0%	12.3%	12.3%	0.7%
	4	0.8%	0.0%	0.3%	0.0%	12.1%	14.9%	12.3%	15.4%	10.2%	10.6%	7.4%	18.6%	13.9%	1.8%	1.6%	4.9%	1.3%	1.8%	10.5%	12.8%	13.7%	4.8%	14.7%	1.8%	11.3%	11.2%	11.3%	12.1%	12.1%	0.9%
	5	1.5%	0.0%	0.8%	0.1%	10.8%	12.8%	11.4%	6.0%	17.1%	11.3%	5.2%	15.2%	12.2%	2.4%	2.2%	6.1%	1.9%	2.4%	9.7%	11.0%	12.0%	7.7%	9.6%	3.4%	10.2%	11.2%	10.7%	11.1%	11.1%	1.2%
	6	2.7%	0.1%	2.1%	0.2%	8.3%	10.8%	10.4%	8.5%	11.2%	12.4%	18.9%	8.4%	9.5%	3.5%	3.1%	7.9%	2.9%	3.5%	11.1%	10.3%	10.6%	9.0%	9.6%	3.3%	9.4%	11.6%	10.4%	10.1%	10.1%	1.8%
	7	4.5%	0.4%	4.8%	0.8%	9.2%	7.5%	8.9%	9.6%	6.3%	11.5%	7.3%	5.1%	8.0%	5.3%	4.9%	10.2%	5.0%	5.3%	9.5%	8.8%	9.2%	12.6%	10.3%	7.2%	8.9%	10.6%	9.6%	9.2%	9.2%	2.9%
	8	8.3%	2.0%	10.2%	2.8%	7.5%	4.2%	6.2%	1.1%	5.0%	6.9%	9.9%	2.6%	5.5%	9.0%	8.4%	13.4%	9.1%	9.0%	8.3%	6.6%	8.1%	16.8%	8.1%	11.8%	8.2%	11.8%	9.8%	8.5%	8.5%	5.6%
	9	17.7%	10.6%	23.3%	11.7%	7.5%	1.1%	4.1%	1.1%	1.9%	5.7%	8.1%	0.0%	3.8%	17.7%	17.2%	18.3%	19.3%	17.7%	8.1%	5.9%	6.6%	20.0%	11.1%	19.2%	8.5%	9.1%	8.7%	7.2%	7.2%	14.2%
	10	63.7%	86.9%	58.4%	84.3%	3.4%	0.2%	1.4%	0.6%	0.7%	3.1%	13.5%	0.0%	1.6%	56.8%	59.4%	28.9%	57.9%	56.8%	5.5%	3.8%	4.9%	15.8%	4.3%	48.0%	10.2%	3.9%	7.4%	5.7%	5.7%	71.6%
Total Population		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

BY SOCIOECONOMIC GROUPS - Groups use market income

PERCENTS

		Market Income - DOES NOT INCLUDE CONTRIBUTORY PENSIONS	Direct Taxes	Contributions	Direct Taxes and Contributions to SS	Old -age pension	Child support grant	Disability grant	Child care dependency grant	Child foster care	Grant-in-aid	Other grants	Free Basic Services (treated as a direct transfer)	All Direct Transfers	Indirect Taxes	Value- added tax	Excise Tax	Fuel levy	Net Indirect Taxes	Pre-school	Primary School	Secondary School	College education	Adult education	University education	In-kind Education	In-kind Health	In-kind Transfers plus Housing and Urban	All Transfers (excluding all Taxes)	All Transfers (excluding all Taxes) plus Indirect Subsidies	All Taxes (Direct and Indirect)
Group:																															
y < 1.25		1.1%	0.0%	0.2%	0.0%	46.7%	55.1%	50.4%	64.5%	53.3%	41.8%	32.5%	58.7%	51.8%	4.3%	3.8%	12.4%	3.1%	4.3%	40.9%	46.5%	40.3%	15.1%	38.4%	5.8%	38.0%	35.9%	37.1%	41.5%	41.5%	2.2%
1.25 <= y < 2.50		1.4%	0.0%	0.6%	0.1%	13.4%	16.3%	14.6%	13.3%	17.1%	13.9%	7.5%	19.5%	15.4%	2.4%	2.2%	6.3%	1.8%	2.4%	12.7%	14.0%	16.2%	8.7%	13.5%	3.5%	13.2%	12.9%	13.1%	13.8%	13.8%	1.2%
2.50 <= y < 4.00		1.6%	0.0%	1.0%	0.1%	8.0%	9.4%	8.0%	5.3%	10.7%	8.4%	10.2%	10.0%	8.7%	2.3%	2.1%	5.8%	1.9%	2.3%	7.7%	9.0%	9.0%	4.9%	8.4%	2.6%	8.0%	8.9%	8.4%	8.5%	8.5%	1.2%
4.00 <= y < 10.00		7.0%	0.6%	7.1%	1.2%	14.3%	14.3%	16.0%	14.2%	11.7%	21.0%	20.0%	9.6%	13.8%	8.3%	7.6%	16.3%	7.6%	8.3%	17.5%	15.0%	16.2%	19.9%	18.0%	9.4%	14.9%	18.8%	16.6%	15.8%	15.8%	4.5%
10.00 <= y < 50.00		29.7%	16.2%	38.5%	18.3%	14.7%	4.7%	9.9%	2.2%	6.5%	12.7%	17.9%	2.1%	8.9%	30.1%	29.0%	33.9%	32.2%	30.1%	16.2%	12.5%	14.4%	40.6%	18.2%	36.4%	17.3%	19.5%	18.3%	15.4%	15.4%	23.3%
50.00 <= y		59.3%	83.2%	52.6%	80.4%	2.9%	0.2%	1.1%	0.6%	0.6%	2.2%	11.9%	0.0%	1.3%	52.6%	55.3%	25.3%	53.3%	52.6%	5.0%	2.9%	4.0%	10.9%	3.5%	42.2%	8.6%	4.0%	6.5%	5.0%	5.0%	67.6%
Total Population		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Own estimates using IES 2010/11.

Appendix Table A3.5. South Africa. Concentration Coefficients and Budget Shares by Program

Program	Concentration Coefficient Benchmark (FBS treated as transfers)	Concentration Coefficient Benchmark (FBS treated as indirect subsidies)	Size of budget from National Accounts as a % of GDP from National Accounts
Old age pension	-0.174	-0.174	1.27%
Standard Error	0.005	0.005	
Child support grant	-0.335	-0.335	1.14%
Standard Error	0.002	0.002	
Disability grant	-0.255	-0.255	0.63%
Standard Error	0.006	0.006	
Care dependency	-0.373	-0.373	0.06%
Standard Error	0.018	0.018	
Foster Care grant	-0.320	-0.320	0.17%
Standard Error	0.012	0.012	
Grant-in-aid	-0.154	-0.154	0.01%
Standard Error	0.017	0.017	
war veterans	-0.101	-0.101	0.00%
Standard Error	0.186	0.186	
Other grants	0.011	0.011	0.01%
Standard Error	0.024	0.024	
Pre-school education	-0.114	-0.114	0.00%
Standard Error	0.012	0.012	
Primary education	-0.190	-0.190	0.00%
Standard Error	0.002	0.002	
Pre and Primary education	-0.189	-0.189	2.47%
Standard Error	0.002	0.002	
Secondary School Education	-0.123	-0.123	1.87%
Standard Error	0.003	0.003	
Tertiary Education Spending	0.498	0.498	1.61%
Standard Error	0.007	0.007	
Health Spending	-0.056	-0.056	4.11%
Standard Error	0.001	0.001	
free basic services	-0.389	0.163	0.52%
Standard Error	0.003	0.002	
Direct Cash Transfers	-0.271	-0.249	3.29%
Standard Error	0.002	0.003	
Total Non-contributory pensions	-0.174	-0.174	1.27%
Standard Error	0.005	0.005	
Total Education Spending	-0.046	-0.046	7.00%
Standard Error	0.002	0.002	
Total Health Spending	-0.056	-0.056	4.11%
Standard Error	0.001	0.001	
Total CEQ Social Spending	-0.117	-0.104	14.40%
Standard Error	0.001	0.001	
Total CEQ Social Spending plus Contrib Pensions		--	14.40%
Standard Error		--	

Source: Own estimates using IES 2010/11.