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Modelling value-added tax (VAT) in South Africa

Assessing the distributional impact of the recent increase in the VAT rate and options for redress through the benefits system

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Abstract: Using SAMOD, a tax-benefit microsimulation model for South Africa, this paper examines the joint distributional impact of the increase in the value-added tax (VAT) rate and increases in benefit amounts in 2018. Although poverty and inequality did not increase overall, the poorest still saw a reduction in their purchasing power, as many of those in the lowest decile do not receive any social benefits. The paper then explores the consequences of eliminating zero-rating in VAT and using the generated revenues to finance new social benefits. The results suggest that a policy package of a uniform VAT and an expanded set of social benefits would lead to reduced poverty and inequality in comparison to the current practice of zero rating of some consumption goods in the VAT. The findings demonstrate the superiority of using direct taxes and benefits as opposed to provisions in indirect taxes in achieving redistribution.

Keywords: value-added tax, microsimulation, redistribution, poverty, South Africa

JEL classification: H23, H53

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1 Introduction

In a democratic system, taxation is a critical part of the social contract between the state and its citizens. Given the unacceptably high levels of poverty, inequality, and unemployment in South Africa, the tax system can be used to help address these challenges in a way that is fully aligned with the progressive ethos of the constitution (Davis Tax Committee 2014; Republic of South Africa 1996).

Value-added tax (VAT) has received widespread attention in South Africa due to the recent decision to increase the standard rate of VAT from 14 to 15 per cent with effect from 1 April 2018 (National Treasury 2018a). Although the change to 15 per cent brings South Africa in line with some of its neighbours (Namibia and Zimbabwe) and is lower than Mozambique's standard rate of 17 per cent, there has been concern that low-income people would suffer disproportionately because of this policy reform. Certain other tax and benefit policy adjustments were also introduced in 2018, including increases to the benefit (or social grant) amounts, with the intention that they would ameliorate the impact of the VAT hike for low-income families, but the impacts of these adjustments are unclear.

VAT is an efficient, certain source of revenue if the design is kept simple. Increasing the VAT rate by 1 percentage point was estimated to have the least detrimental effects on economic growth and employment over the medium term. The ongoing zero-rating of basic food items and the above-inflation increase in social grants was intended to mitigate the effect of the increase on poor households. However, these measures did not eliminate concerns about the impact the increase would have on poor and low-income households. While the South African Government has explored implementing a luxury VAT rate to make the tax more progressive, the VAT system is often not considered the best instrument for achieving redistributive goals. Inevitably, wealthier people also benefit most from zero-rating in absolute terms as they consume more than low-income people.

This paper seeks to explore the impact of VAT on the post-fiscal income (i.e. disposable income after subtracting indirect tax payments) of households in South Africa by using SAMOD, a South African tax-benefit microsimulation model. The SAMOD model provides an opportunity not only to examine and estimate the distributional impact of the recent VAT hike, complementing recent work by others, especially that undertaken by the Independent Panel (2018), but also to explore the impact of actual or hypothetical policy reforms by testing different tax-benefit scenarios to mitigate the impact of the VAT hike. Importantly, and as will be elaborated later, the paper explores the impact of redirecting revenue towards the benefit system that is currently foregone by government due to the zero-rating of certain items. Although potentially running counter to policy debates that focus mainly on the call to expand the list of zero-rated items, this paper builds on empirical studies from South Africa and elsewhere which make the case that it would be more effective to alleviate poverty via the benefit system rather than by zero-rating certain VAT items. The analysis also responds to a key concern raised about the recent VAT hike and the current strategies for redress, that increases in existing grant amounts will not, and would never be able to, mitigate the impact of the VAT hike for those who do not live in grant-receiving households.

The paper is structured as follows. Section 2 reviews the literature on VAT while Section 3 provides an account of the recent change to the VAT policy in South Africa as well as reactions to that change. In Section 4, various tax-benefit scenarios are introduced, which were modelled

by the authors using SAMOD, and the data and assumptions are set out. Section 5 presents the results. Section 6 highlights the main findings and raises issues for further consideration.

2 Literature review

A good tax system reaches a balance between the need to raise revenues in an efficient manner, without distorting economic activity unnecessarily, with redistributing income according to the values of the country's citizens. The Mirrlees Review (Mirrlees and IFS 2011), a comprehensive review of optimal tax literature and an expert opinion on the policy implications of such work, recommends that the tax system should be assessed as a whole. For the distributional impacts, this means that it is sufficient that the tax-benefit system reaches its redistributive goals; not every tax instrument has to be set with distributional concerns in mind.

Crawford et al. (2011), also in the Mirrlees Review, synthesize the optimal commodity tax literature. They point out that the income tax and direct transfers are much better tools to achieve distributional targets than indirect taxes. While one can set lower (or zero) rates for the consumption of some items, even though lower-income households would benefit from such tax relief more as a share of their income, the absolute gains would still be greater in the upper end of the income distribution. That is why the authors recommend a system where distributional concerns are handled via income tax and social benefits, and that the VAT rate should be uniform across all goods. The only exceptions are goods consumed in conjunction with work (such as day-care services) and goods whose consumption creates internalities (harm to own health) or externalities (spillover effects) (e.g. environmental damage).

The recommendations were originally written for a developed country case. In a developing/transition country such as South Africa, the case for completely neglecting distributional concerns when setting commodity tax rates is weaker. The reason is that such countries do not necessarily have comprehensive transfer or benefit systems that could be relied on for distributional goals (Abramovsky et al. 2017). While South Africa has many benefits for certain groups of population, some households do not receive any benefits (or social grants as they are called in South Africa). This means that without structural reforms to the transfer system, some households cannot be compensated through the benefit system for increases in the VAT rate.

One reason for not having a complete transfer system is that maintaining a full system of transfers is administratively difficult. However, the transfer system does not need to be complicated at all to work better as a distributive device than differentiated commodity taxes. Keen (2013) examines general conditions under which a uniform lump-sum grant, financed via removing zero-rating, leads to more redistribution and finds the conditions fairly easy to satisfy. This is demonstrated in practice by Harris et al. (2018) who simulate the impacts of introducing a universal basic income financed, in part, by a more uniform VAT in four countries (Ghana, Ethiopia, Senegal, and Zambia). The results reveal that introducing universal grants would lead to lower-income inequality and poverty than what can be achieved via zero-rating.

In an earlier study, Jansen and Calitz (2015) demonstrated using South Africa's 2010/11 Income and Expenditure Survey that it would be more cost-effective to redirect resources towards social assistance programmes than to zero-rate items in the VAT policy. More recently and using the same dataset, van Oordt (2018) considered removing zero-rating and recycling the revenues either fully or partially as increased social grants. The analysis involved behavioural reactions to prices, using Quadratic Almost Ideal Demand System models. The results from the van Oordt

study suggest that social grants are a more efficient tool than zero-rating for redistribution, assuming that there are no significant leakages in the benefit system. Our paper differs from the work of Jansen and Calitz (2015) and van Oordt (2018) by considering new designs of the benefit systems, which would allow compensation for both the recent VAT hike and the hypothetical removal of the zero-rating in a way that includes people who do not currently receive any grants.

3 VAT in South Africa

In South Africa, the standard rate of VAT was fixed at 14 per cent from 1993 to 2018, and provides for the zero-rating of 19 food categories (Republic of South Africa 1991). The introduction of these zero-rated items was made on the grounds that they provide a means by which the government could indirectly target the poor, for whom such expenses may take up a large amount of their budget.

In 2018, the standard rate of VAT was increased by 1 percentage point to 15 per cent in order to generate additional revenue (National Treasury 2018a). This took place alongside other adjustments to the tax system, including the use of fiscal drag, an increase in ad-valorem excise duty on luxury goods to 9 per cent, the introduction of a higher estate duty tax rate for estates greater than R30 million, increases to the fuel levy and the Road Accident Fund Levy, and increases in excise duty for alcohol and tobacco (National Treasury 2018a). It was argued that the increase in VAT was ‘unavoidable if we are to maintain the integrity of our public finances’ [but that] ‘vulnerable households will also be compensated through an above average increase in social grants’ (National Treasury 2018a: 11–12). The social grants were increased in the usual way on 1 April 2018, and unusually—but not for the first time—were increased a second time on 1 October 2018, with the intention that these increases would be ‘above inflation to at least partially cover for the proposed increase in VAT’ (National Treasury 2018a: 15).

Concerns about these measures and the VAT hike in particular were raised through public hearings and submissions from various sectors, including a joint written statement from 42 civil society organizations (Civil Society 2018). The Minister of Finance through the Davis Tax Committee appointed a panel of experts to review the list of zero-rated items (National Treasury 2018b), and their report-back was published in August 2018 (Independent Panel 2018). The Independent Panel undertook extensive analysis and argued that the increase in VAT would raise the tax on the poorest 50 per cent of households by around R1.8 billion or an average of R216 per household per annum (Independent Panel 2018). The panel observed that ‘it would be cheaper to return the cost of the VAT increase to the poorest households than to extend zero rating’ (Independent Panel 2018: 8), but nevertheless recommended that various additional items should be zero-rated alongside other measures, such as nutritional support, free provision of sanitary products, and cash transfer amount increases. More recently, the Medium-Term Budget Policy Statement for 2018 announced the intention to additionally zero-rate some of the Independent Panel’s recommended items including sanitary pads and bread and cake flour in April 2019 (National Treasury 2018c).

The Independent Panel acknowledged the challenge that some individuals do not live in households in receipt of social assistance, and so any increase in grant values would not mitigate the impact of the VAT increase: ‘For example, working-age adults who are either unemployed or have poorly paid employment and who do not live with children or older persons would be essentially excluded from the benefits of higher social grants’ (Independent Panel 2018: 71). This observation was elaborated by the South African Human Rights Commission (SAHRC) which

argued for the urgent consideration of an expansion to the social grant system in the light of the VAT hike:

The proposed increase in VAT seriously threatens the human rights of the poor. It is therefore found that it is unjustifiable to expect the poor to effectively finance radical socio-economic transformation and the achievement of substantive socio-economic equality. [...] Given government's increase of VAT, it is recommended that the social grant system be further expanded to accommodate able-bodied, poor adults—including unemployed youth—who do not currently qualify for a specific social grant or social security. (SAHRC 2018: 27)

According to the Independent Panel, 'the increase in VAT across the entire population is not regressive; it is more or less proportional' (Independent Panel 2018: 17). However, and as will be elaborated later, they also acknowledge that 'VAT does place a proportionately heavy burden on some of the poor deciles who also have a low ability to pay' (Independent Panel 2018: 18).

Nevertheless, VAT has been found to be a highly effective instrument for generating government revenue and has the lower marginal cost of raising funds for public purposes compared with other taxes. VAT is relatively secure from serious fraud in a domestic market, and it has been argued that VAT is a particularly efficient tax because its revenue is secured while collected throughout the chain of production, unlike a retail sales tax under which all tax is lost if there is evasion at the final stage (Charlet and Owens 2010).

4 Methodology

This paper explores the impact of VAT on post-fiscal incomes of households in South Africa by using SAMOD, a South African stand-alone tax-benefit microsimulation model developed for government over the past ten years (e.g. Wright et al. 2018). Static tax-benefit microsimulation is a technique that involves applying a set of policy rules to household survey data in order to calculate individual entitlement to benefits and/or liability for taxation. The results at household level enable analysis of the distributional impact of the VAT hike as well as assessment of options for redress. The advantage of using SAMOD, which makes it a suitable platform for the analysis presented here, is that all the calculations are transparent and can be easily modified by the user.

The analysis uses data derived from LCS 2014/15, which was conducted by Stats SA between 13 October 2014 and 25 October 2015, and contains detailed information on household expenditure, having more than 700 separate expenditure categories (see Stats SA 2017). The LCS was prepared as an underpinning dataset for the SAMOD model and, as part of this process, VAT was deducted from the expenditure items (at the applicable rate of the timepoint of the survey) so that the model's expenditure data was included net of VAT in the first instance. Also, expenditure was deflated to a timepoint of June 2015 within the data preparation stage. Within the model, the expenditure data was then uprated from 2015 to 2018 using 12 sub-categories of the consumer price index (CPI)—food, alcohol and tobacco, clothing and footwear, housing and utilities, household contents and equipment, health, transport, communications, recreation and culture, education, restaurants and hotels, and miscellaneous goods and services—which provided greater precision than using the overall CPI. Within SAMOD, each expenditure item was categorized as to whether the standard rate of VAT applies or if it is zero-rated or exempt supplies. The model also enables the user to specify the VAT standard rate.

For each scenario, a different tax-benefit system was created within SAMOD. Table 1 summarizes the different tax-benefit systems that were simulated using SAMOD in terms of their distinguishing features, and they are discussed briefly here. For the first phase of the analysis, the counterfactual was defined as being the tax-benefit situation in June 2018 but with a standard rate of VAT being 14 per cent (Scenario VAT1 in Table 1): in essence, this amounts to the tax-benefit arrangements that were introduced in April 2018 but without the impact of the increase in the standard rate of VAT from 14 to 15 per cent. All zero-rated items were zero-rated on-model (comprising a total of 88 codes under the Classification of Individual Consumption According to Purpose, better known as COICOP), and VAT at the rate of 14 per cent was applied to all standard rated items.

Two new scenarios were then introduced to the model to measure (i) the joint distributional impact of the VAT hike and the April 2018 uprating of social grants (VAT2) and (ii) the extent to which the additional uprating of social grants in October 2018 ameliorated the consequences of the VAT hike for poor people (VAT3) (see Section 5.1).

Building on the findings of this initial analysis, new hypothetical reform scenarios were explored which eliminated the zero-rating of VAT items, and instead redirected the tax revenue foregone through zero-rating into the benefit system. A suite of hypothetical scenarios were introduced, including various new means-tested benefits (Scenarios VAT4–VAT6b; see Section 5.2) and new universal benefits (Scenarios VAT7–VAT8; see Section 5.3).

Lastly, an alternative scenario was explored whereby the VAT hike was reversed, the zero-rating of VAT was eliminated, and the tax revenue foregone through zero-rating was redirected into the existing benefit system, via a higher payment amount for one of the means-tested benefits (Scenarios VAT9–VAT10; see Section 5.4).

For several of the hypothetical new benefits, the Child Support Grant (CSG) means test for primary caregivers was used: Scenarios VAT5, VAT6, and VAT6a used the CSG means test for single and couples, and VAT5a applied the CSG means test for couples only. For other non-universal scenarios, the criterion selected was that an individual should have zero income from employment or self-employment as well as various other characteristics (see Table 1). Although on the face of it a criterion of zero employment and self-employment income is simpler to conceptualize and implement on-model (e.g. VAT5b), it may inadvertently create a moral hazard that would discourage people from remaining in low-paid work whereas the CSG means test avoids such a situation as it accommodates people with small incomes from employment or self-employment. A further strength of the use of the CSG means test is that it is already applied by the South African Social Security Agency and so is familiar to people, and there are regular awareness raising campaigns about it as most children in South Africa are eligible for the CSG (80 per cent of all children). In 2018, the CSG means test was R48,000 per year for single people and R96,000 per year for couples. Within SAMOD, the CSG means test (and by extension the means test for the new benefits in VAT5, VAT6, and VAT6a) is applied to a composite income variable comprising the sum of reported income from employment, self-employment, property, private pensions, compensation, and investments/interest, minus reported expenditure on private healthcare and private pensions, minus simulated contributions to social insurance and personal income tax payments.

Table 1: Summary of tax-benefit systems that were simulated

System name and timepoint	Details
VAT1 (reform), June 2018	All tax-benefit rules applicable to June 2018 with one exception: (i) the standard rate of VAT is kept at 14% (the counterfactual).
VAT2 (actual), June 2018	All tax-benefit rules applicable to June 2018, including the VAT increase to 15%.
VAT3 (actual), October 2018	All tax-benefit rules applicable to October 2018, including the second increase to benefit amounts that took place in October.
VAT4 (reform), October 2018	All tax-benefit rules applicable to October 2018, but (i) apply standard rate of VAT to zero-rated VAT items.
VAT5 (reform), October 2018	All tax-benefit rules applicable to October 2018, but (i) apply standard rate of VAT to zero-rated VAT items; (ii) plough revenue generated from removing zero-rating back into the benefits system; and (iii) introduce a new benefit of R225 for young people aged 18–25 years inclusive if not receiving DG and who are means-tested using the (single and couple) means test as for CSG.
VAT5a (reform), October 2018	All tax-benefit rules applicable to October 2018, but (i) apply standard rate of VAT to zero-rated VAT items; (ii) plough revenue generated from removing zero-rating back into the benefits system; and (iii) introduce a new benefit of R200 for young people aged 18–30 years inclusive who have no employment income and no self-employment income and are not receiving DG, and (if married) have a combined means-testable income of less than the couple threshold of the means test for CSG.
VAT5b (reform), October 2018	All tax-benefit rules applicable to October 2018, but (i) apply standard rate of VAT to zero-rated VAT items; (ii) plough revenue generated from removing zero-rating back into the benefits system; and (iii) introduce a new benefit of R280 for young people aged 18–25 years inclusive who have no employment income and no self-employment income and are not receiving DG.
VAT6 (reform), October 2018	All tax-benefit rules applicable to October 2018, but (i) apply standard rate of VAT to zero-rated VAT items; (ii) plough revenue generated from removing zero-rating back into the benefits system; and (iii) introduce a new benefit of R120 for people aged 26–59 years inclusive if not receiving DG and means-tested using the (single and couple) means test of CSG.
VAT6a (reform), October 2018	All tax-benefit rules applicable to October 2018, but (i) apply standard rate of VAT to zero-rated VAT items; (ii) plough revenue generated from removing zero-rating back into the benefits system; and (iii) introduce a new benefit of R225 for people aged 36–59 years inclusive if not receiving DG and means-tested using the (single and couple) means test of CSG.
VAT6b (reform), October 2018	All tax-benefit rules applicable to October 2018, but (i) apply standard rate of VAT to zero-rated VAT items; (ii) plough revenue generated from removing zero-rating back into the benefits system; and (iii) introduce a new benefit of R200 for adults aged 26–59 years inclusive who have no employment income and no self-employment income and are not receiving DG.
VAT7 (reform), October 2018	All tax-benefit rules applicable to October 2018, but (i) apply standard rate of VAT to zero-rated VAT items; (ii) plough revenue generated from removing zero-rating back into the benefits system; and (iii) introduce a new non-means-tested benefit of R200 for all adults aged 18–59 years inclusive who are not receiving DG.
VAT8 (reform), October 2018	All tax-benefit rules applicable to October 2018, but (i) apply standard rate of VAT to zero-rated VAT items; (ii) plough revenue generated from removing zero-rating back into the benefits system; and (iii) introduce a new non-means-tested benefit of R200 for adults aged 18–30 years inclusive who are not receiving DG.
VAT9 (reform), October 2018	All tax-benefit rules applicable to October 2018, but (i) apply standard rate of VAT to zero-rated VAT items; and (ii) return the standard rate of VAT to 14%.
VAT10 (reform), October 2018	All tax-benefit rules applicable to October 2018, but (i) apply standard rate of VAT to zero-rated VAT items; (ii) return the standard rate of VAT to 14%; (iii) plough revenue generated from removing zero-rating back into the benefits system; and (iv) increase CSG to R450 per child.

Notes: VAT, value-added tax; DG, Disability Grant; CSG, Child Support Grant. Data on general income and expenditure categories (excluding benefits) was updated in SAMOD to June 2018 for VAT1 and VAT2, and to October 2018 for all other scenarios.

Source: Authors' compilation.

In all of these scenarios, several assumptions were made. First, the tax and benefit system was applied as designed; that is, total compliance was assumed with respect to personal income tax

and full take-up was assumed for the social benefits, including any new benefits. Although this will not be the case in practice, it enabled the first-order effect of the policies to be assessed, and any adjustments to compliance or take-up levels could be undertaken as a second-order exercise. Second, it was assumed that the LCS is an adequate dataset for capturing household income and expenditure. With respect to the income data, Stats SA's documentation of the LCS (see Stats SA 2017) and separate analysis (e.g. Wright et al. 2018) have highlighted that high-income households are under-represented in the LCS: this will have some impact on the results. With respect to expenditure data, the Independent VAT Review stated that Stats SA recommended a 1.5 inflator to the expenditure data in the LCS due to an undercount for these items in the survey (Independent Panel 2018: 25). However, in line with the Independent VAT Review analysis, this inflator is not applied prior to the distributional analysis. Notwithstanding the second assumption, the third assumption made in this paper was that it is acceptable to apply Stats SA's inflator to adjust for undercounting expenditure when calculating the amount of government revenue that is foregone due to zero-rating, for ploughing back into the benefit system. Fourth, in the same way as the Independent VAT Review, it was assumed that VAT is carried in full by the end-user. Fifth, the implementation costs of hypothetical scenarios are not estimated. And lastly, constant consumption was assumed; that is, the analysis does not take into account any potential behavioural responses to policy changes, and so it was assumed that households continue to purchase the same types and quantity of items irrespective of the standard rate of VAT and the introduction of any new benefits.

As mentioned at the outset, the paper uses the concept of post-fiscal income to measure the distributional impact of different scenarios. Post-fiscal income was calculated as the per capita household disposable income minus indirect tax payments made in the form of VAT. Excise duties are not simulated in SAMOD currently and so any excise duty payments were not deducted in the calculation of post-fiscal income.

When measuring poverty, the Southern Africa Labour and Development Research Unit (SALDRU) lower-bound poverty line was adjusted to take into account the fact that the poverty line is applied to post-fiscal income rather than to disposable income.

5 Results

Each of the different scenarios shown in Table 1 were modelled and the outcomes evaluated both in terms of the overall impact on poverty and inequality and in terms of the distribution of post-fiscal income. The results section is presented in four parts:

- Section 5.1 presents analysis of the impact of the VAT rate increase and the second increase in social grant amounts that was implemented in October 2018;
- Section 5.2 explores the impact of various hypothetical means-tested benefits that are financed by applying the standard rate of VAT to items that are currently zero-rated;
- Section 5.3 explores the impact of introducing two types of basic income grant, again having applied the standard rate of VAT to items that are currently zero-rated; and
- Section 5.4 explores the impact of reversing the VAT hike, eliminating the zero-rating of certain items, and increasing the amount of an existing grant—the CSG.

5.1 Unpacking the impact of the VAT rate hike and the increase in benefit amounts

Table 2 shows the overall poverty levels for the first three scenarios, using post-fiscal income. As can be seen, using the counterfactual (VAT1: tax-benefit arrangements as in June 2018 but with the standard rate of VAT kept at 14 per cent), the poverty rate was 33.5 per cent. The introduction of the new standard rate of VAT at 15 per cent (VAT2) increases poverty slightly to 33.6 per cent, and inequality increases slightly too (from 0.638 to 0.639).

In October 2018, the second increase in the benefit levels took place (VAT3), causing poverty to fall to 33.2 per cent (0.3 percentage points lower than the counterfactual), and the poverty gap to fall to 14.4 per cent. Inequality falls very slightly to 0.637.

Table 2: Impact of the April 2018 VAT rate increase (VAT2) and the October 2018 increase in social grant amounts (VAT3) on post-fiscal income

Scenario	Indirect taxes change (Rand billion) compared with VAT1	Benefit expenditure change (Rand billion) compared with VAT1	Post-fiscal income poverty headcount ratio (%)	Post-fiscal income poverty gap (%)	Inequality (Gini coefficient)
VAT1 (counterfactual)	0	0	33.5	14.5	0.638
VAT2 (June 2018)	+R7.5	0	33.6	14.6	0.639
VAT3 (October 2018)	+R7.5	+2.7	33.2	14.4	0.637

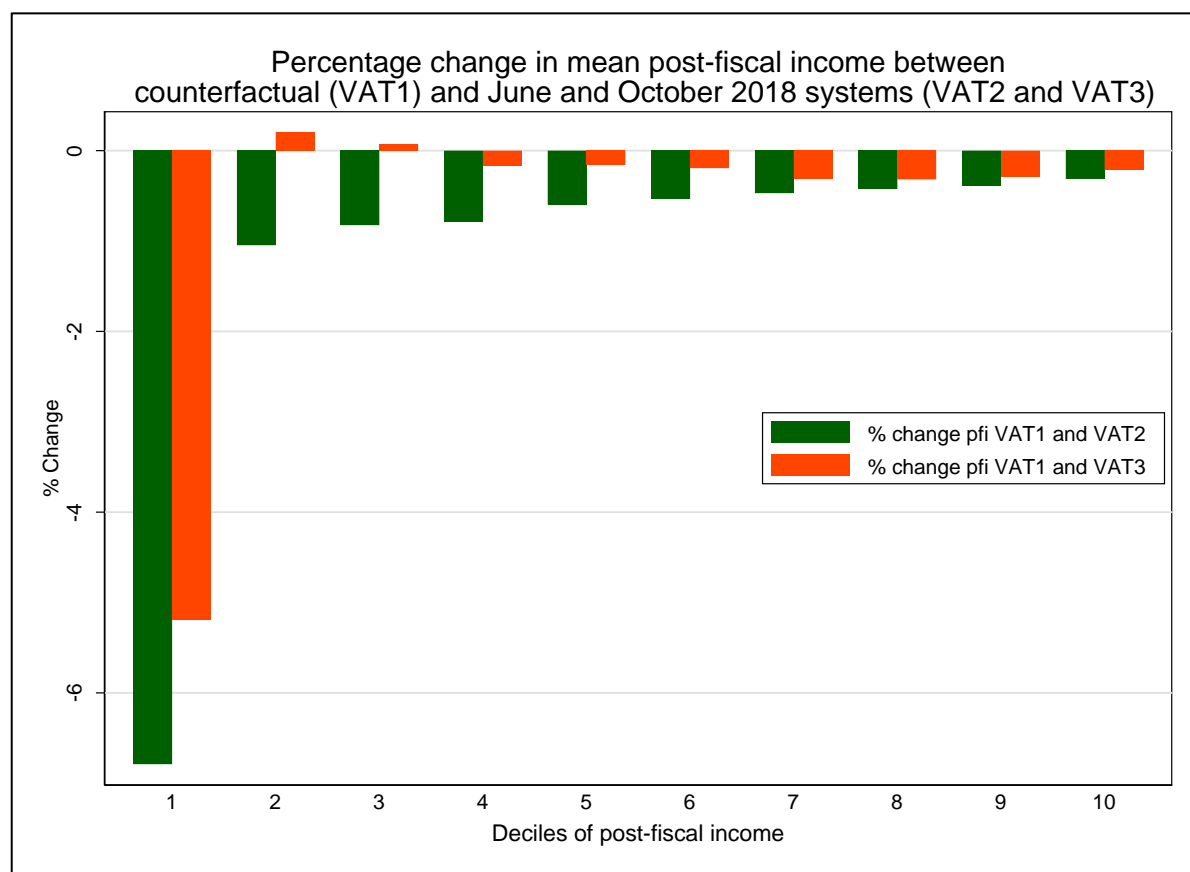
Notes: For details of the modelled scenarios, see Table 1. Post-fiscal income poverty gap is the average normalized poverty gap, FGT(1). Post-fiscal income poverty uses a modified form of the SALDRU lower-bound poverty line.

Source: Authors' calculations using SAMOD V6.8x and LCS 2014/15 dataset.

At an aggregate level, therefore, the October 2018 increase in benefit amounts redresses the impact on post-fiscal income poverty caused by the increase in the VAT rate to 15 per cent both in terms of the headcount ratio and the poverty gap.

In order to explore the impact of the VAT rate increase on post-fiscal income in more detail, the percentage change in post-fiscal income was calculated by decile, for the scenarios VAT2 and VAT3. This enabled us to explore whether or not the impact was experienced equally across the income distribution. Figure 1 shows the percentage change in post-fiscal income for VAT2 and VAT3 compared with the counterfactual (VAT1). The green bars show the percentage change in post-fiscal income caused by the increase of the VAT rate to 15 per cent: strikingly, the first (poorest) decile is most affected, as their post-fiscal income falls by more than 6 per cent on average after the introduction of the 15 per cent rate if all else is held constant. The benefit amount increases that took place in October 2018 had the effect of reducing the fall in post-fiscal income to around 5 per cent for the poorest decile. Importantly, this figure demonstrates clearly that the poorest 10 per cent of households were the most affected group, when measured in terms of percentage change in post-fiscal income.

Figure 1: Percentage change in mean post-fiscal income by decile

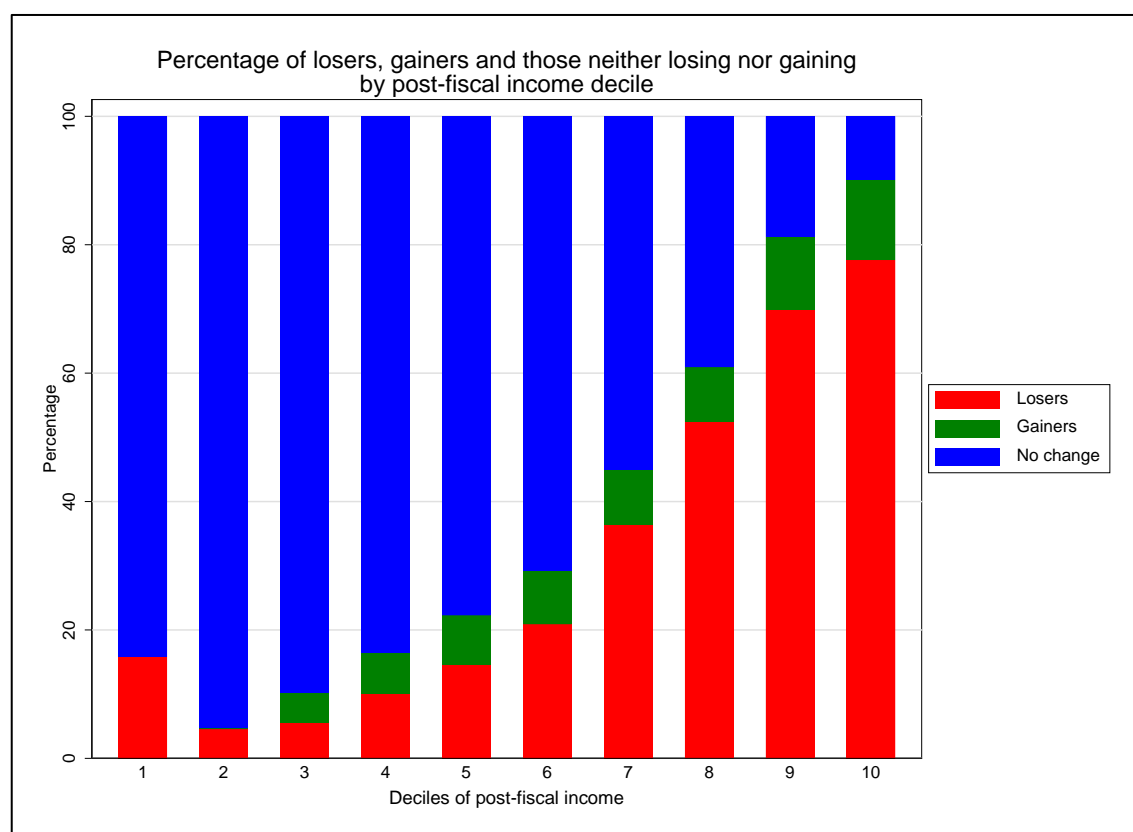


Notes: VAT, value-added tax; pfi, post-fiscal income. For details of the modelled scenarios, see Table 1.

Source: Authors' calculations using SAMOD V6.8x and LCS 2014/15 dataset.

Analysis was undertaken to profile the group of households that experienced a loss in the household per capita post-fiscal income of R10 or more per month, between the counterfactual (VAT1) and October 2018 arrangements (VAT3). Figure 2 shows the proportion of losers, gainers, and 'no change' households in each post-fiscal income decile, between VAT1 and VAT3. Gainers are defined as those whose household per capita post-fiscal income increased by R10 or more per month. Figure 2 demonstrates that, broadly speaking, the measures introduced to mitigate the impact of the VAT hike were successful, but with one important exception: 16 per cent of those in the first post-fiscal income decile were losers, which is higher than for deciles 2 (5 per cent), 3 (6 per cent), 4 (10 per cent), and 5 (15 per cent). It should be noted that the gainers/losers/no change categories are the combined effect of the tax-benefit policy changes between VAT1 and VAT3 and also the uprating indices that were applied to general income and expenditure categories data for the VAT3 system to reflect the October 2018 timepoint. Thus, any gainers in the higher deciles will be gaining due to increases in income categories other than social grants, as social grants do not feature in the higher deciles to any great extent (see also Annex Figure A1 that shows the contribution of social grants to disposable income by post-fiscal income decile).

Figure 2: Percentage of losers/gainers/neither by post-fiscal income decile, between VAT1 (June 2018 policies, but VAT at 14 per cent) and VAT3 (October 2018 policies, including VAT at 15 per cent)



Notes: For details of the modelled scenarios see, Table 1. Losers and gainers were defined as households that experienced a loss or a gain in their household per capita post-fiscal income of R10 or more per month, respectively.

Source: Authors' calculations using SAMOD V6.8x and LCS 2014/15 dataset.

Table 3 shows the mean household per capita loss or gain per month between VAT1 and VAT3. Although the mean loss per decile does not vary greatly (from R23 to R68 per month), if it is expressed as a percentage of mean post-fiscal income it again shows that the first decile is particularly detrimentally affected by the VAT hike even after the October benefit amount increases.

Table 3: Mean loss or gain in post-fiscal income between VAT1 and VAT3 by post-fiscal income decile, and mean loss as percentage of mean post-fiscal income by decile

Post-fiscal income decile	Loser: mean loss pcm (ZAR)	Gainer: mean gain pcm (ZAR)	Mean loss as % of mean pfi of counterfactual VAT1
1	-36	N/A	29.9
2	-25	10	5.8
3	-30	18	4.5
4	-34	17	3.7
5	-23	26	1.7
6	-29	34	1.5
7	-27	32	1.0
8	-31	39	0.7
9	-39	56	0.5
10	-68	119	0.4

Notes: ZAR, South African rand; pfi, post-fiscal income. For details of the modelled scenarios, see Table 1. Losers and gainers were defined as households that experienced a loss or a gain in their household per capita post-fiscal income of R10 or more per month, respectively.

Source: Authors' calculations using SAMOD V6.8x and LCS 2014/15 dataset.

In order to explore in more detail which households are worst affected, multivariate analysis was undertaken and, as might be expected, the losers in the bottom five deciles of post-fiscal income tended to be households that are ineligible for social grants. Additionally, having controlled for receipt of social grants, childless households were likely to be losers.

5.2 Eliminating zero-rating of items in the VAT policy and redirecting finances to the benefit system for new means-tested benefits

The results presented in Section 5.1 reveal that the poorest decile is not fully compensated by the benefit amount increases of October 2018. In order to explore ways in which to provide support for the poorest decile in particular, a number of reform scenarios were considered that used revenue neutral options involving standard-rating the zero-rated items and ploughing the finances back into the benefit system.

To set the scene, Table 4 presents the simulated results for several reform scenarios, compared with VAT3 (the status quo in October 2018, and the de facto baseline for this sub-section). In Scenario VAT4, zero-rated items are instead assigned the standard rate of VAT (15 per cent): this generates R13 billion additional revenue (compared with VAT3) through the VAT system.¹

Table 4: Impact of various reform scenarios on post-fiscal income

Scenario	Indirect taxes change (R billion) compared with VAT3	Benefit expenditure change (R billion) compared with VAT3	Post-fiscal income poverty headcount ratio (%)	Post-fiscal income poverty gap (%)	Inequality (Gini coefficient)
VAT3 (October 2018)	/	/	33.2	14.4	0.637
VAT4	+R13.0	/	34.0	15.1	0.641
VAT5	+R13.0	R19.6	32.2	13.3	0.633
VAT5a	+R13.0	R19.6	32.2	13.0	0.632
VAT5b	+R13.0	R19.8	31.9	13.0	0.632
VAT6	+R13.0	R19.6	32.3	13.4	0.633
VAT6a	+R13.0	R19.8	32.3	13.4	0.632
VAT6b	+R13.0	R19.0	32.5	13.0	0.632

Notes: For details of the modelled scenarios, see Table 1. Post-fiscal income poverty uses a modified form of the SALDRU lower-bound poverty line.

Source: Authors' calculations using SAMOD V6.8x and LCS 2014/15 dataset.

For subsequent reform scenarios, the additional revenue obtained is then ploughed back through the social grant system as a more direct measure to combat poverty, as grants are more progressive and therefore better targeted at low-income groups than indirect taxes. The VAT5 and VAT6 scenarios explore alternative combinations of provision in order to preferentially support the poorest deciles. A decision was made to inflate the R13 billion additional revenue obtained by standard-rating the zero-rated items by a factor of 1.5 (Independent Panel 2018: 25) as all of the expenditure items that had been zero-rated (with just one exception) were food and non-alcoholic beverages. This resulted in an estimated R19.5 billion in available funds for the new simulated benefits in the six VAT5* and VAT6* scenarios.

Table 4 shows that all six of the VAT5* and VAT6* reform scenarios succeed in reducing the poverty headcount ratio, the poverty gap, and inequality to below the levels of the October 2018

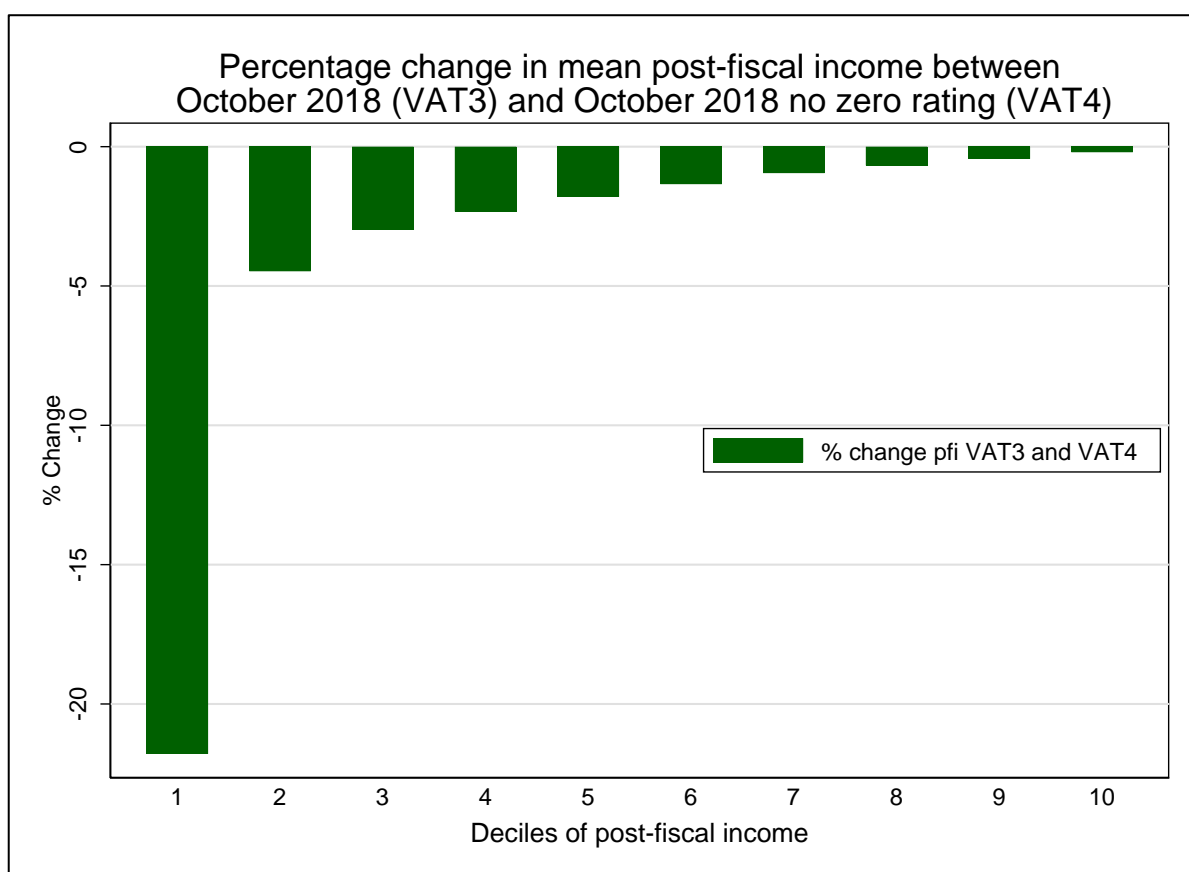
¹ This figure is close to that of the Independent Panel (2018) which estimates, using the same dataset, a revenue foregone of R13.645 billion due to zero-rating. The difference is likely to be due to the fact that the Independent Panel inflated expenditure items using the consumer price index (CPI) whereas in this paper 12 sub-categories of the CPI were used.

(VAT3) situation (and indeed to below the levels of VAT1 and VAT2 shown in Table 2). Regarding the hypothetical means-tested benefits for young people, VAT5 and VAT5a reduce post-fiscal income poverty to 32.2 per cent, and VAT5b reduces poverty even further, to 31.9 per cent. The hypothetical means-tested benefits for older people of working age (VAT6, VAT6a and VAT6b) all reduce poverty to 32.3–32.5 per cent. In terms of inequality, all VAT5* and VAT6* scenarios reduce inequality slightly to between 0.632 and 0.633.

Although Table 4 shows that by standard-rating the zero-rated items and ploughing the revenue into different types of benefits this would reduce overall poverty and inequality, the aggregate nature of the results disguises the impact of the reforms on the post-fiscal income distribution.

First, Figure 3 depicts the detrimental impact (on post-fiscal income) of standard-rating the zero-rated items, before ploughing the revenue back into the benefit system, showing the percentage change in post-fiscal income by decile, when comparing VAT4 (October 2018, but applying the standard rate of VAT to the zero-rated items) with the status quo in October 2018 (VAT3). The impact of taxing zero-rated items at the standard rate is that all of the deciles experience a percentage fall in post-fiscal income, but the first decile experiences the greatest impact with more than a 20 per cent fall in post-fiscal income.

Figure 3: Percentage change in mean post-fiscal income by decile, if zero-rated items were taxed at the standard rate of VAT (15 per cent) in October 2018



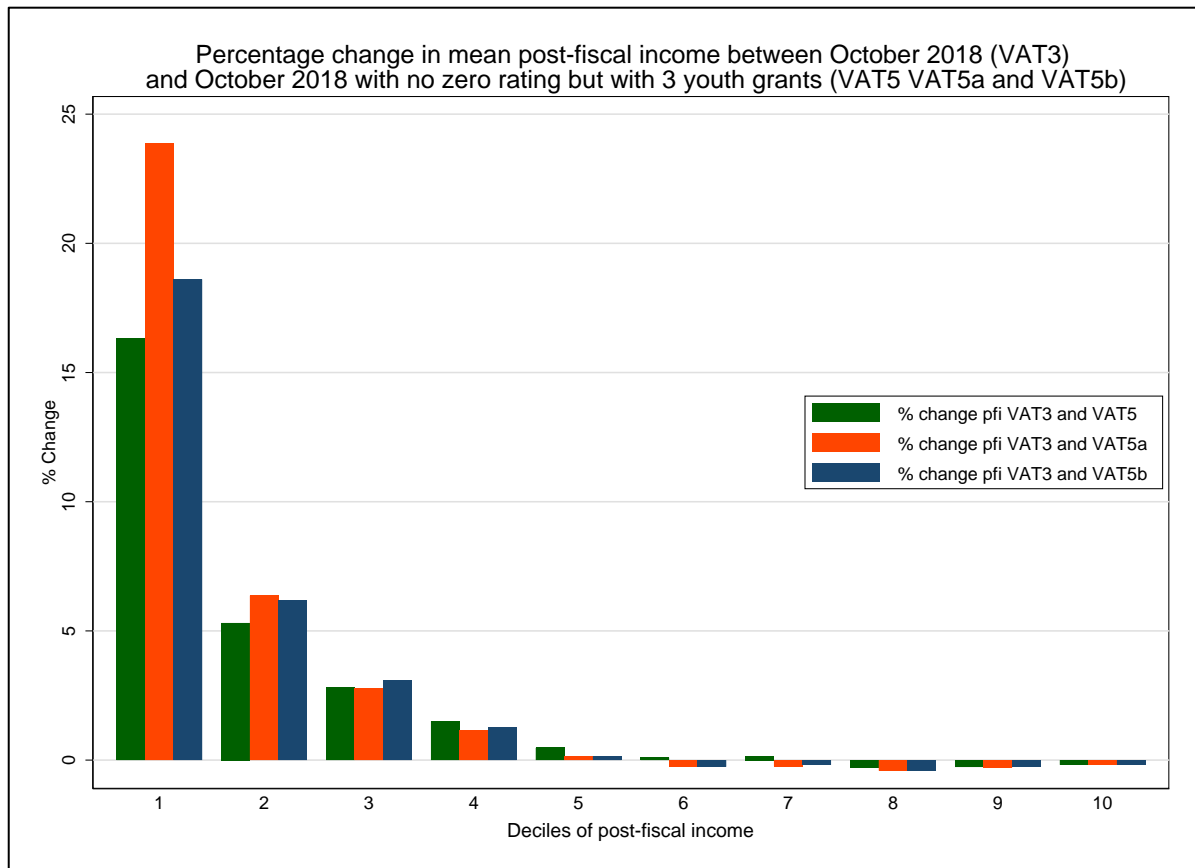
Note: For details of the modelled scenarios, see Table 1.

Source: Authors' calculations using SAMOD V6.8x and LCS 2014/15 dataset.

Next, Figure 4 shows the percentage change in post-fiscal income for three scenarios which each introduce a new social grant to compensate for the effect of applying the standard rate of VAT to zero-rated items. These three scenarios, described as VAT5, VAT5a. and VAT5b, each target

young people. VAT5 is a means-tested grant that uses the same means test as the CSG. VAT5a is targeted at young people with no employment income whatsoever (either from paid employment or self-employment) although for those with a spouse the couple-level CSG means test is applied to take account of cases where one spouse is in well-paid work while the other is not. Finally, VAT5b simply restricts the grant to those with no employment income whatsoever. Because the objective was to produce a fiscally neutral outcome, the three grants are paid at different rates as shown above in Table 1.

Figure 4: Percentage change in mean post-fiscal income by decile, comparing actual October 2018 arrangements (VAT3) with reform scenarios where zero-rated items are taxed at the standard rate of VAT (15 per cent) and new grants are introduced for young people (Scenarios VAT5, VAT5a, VAT5B)



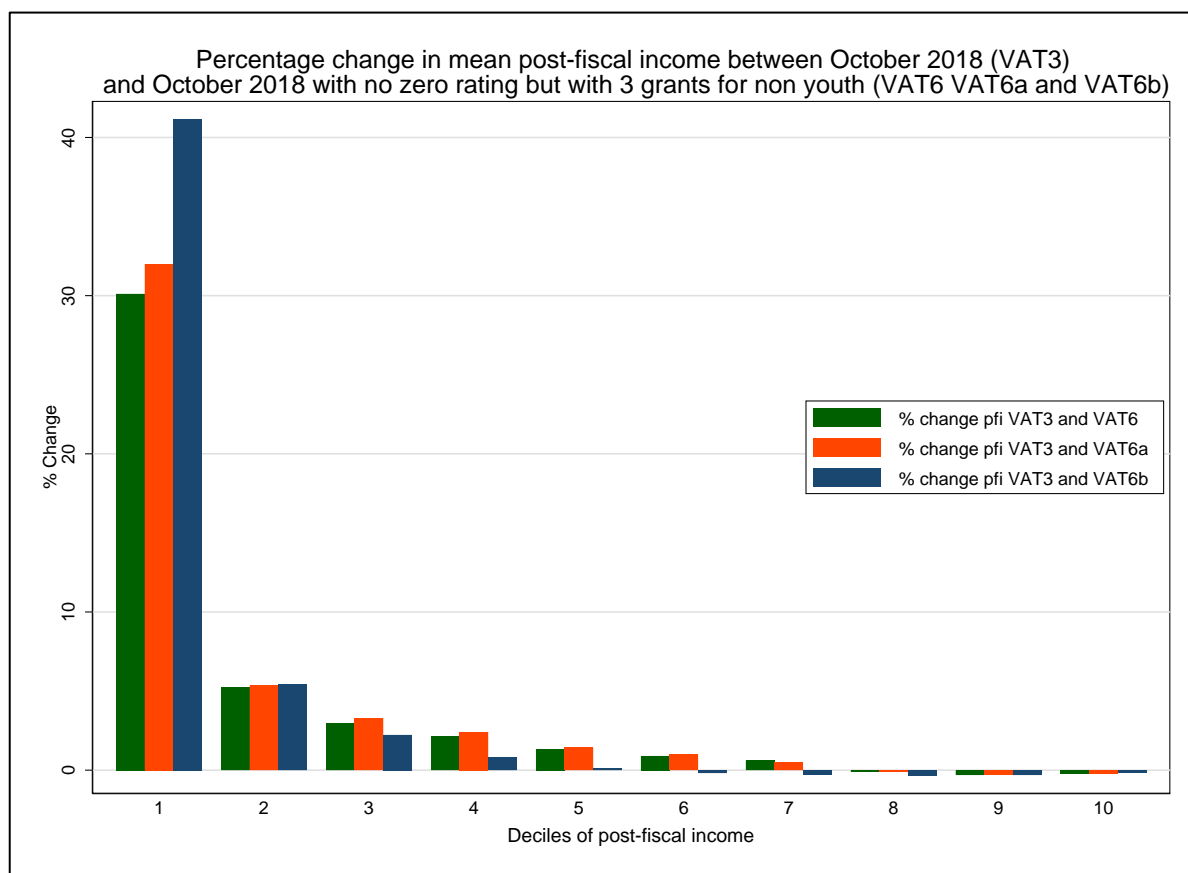
Note: For details of the modelled scenarios, see Table 1.

Source: Authors' calculations using SAMOD V6.8x and LCS 2014/15 dataset.

All three scenarios result in an increase in post-fiscal income for the poorest deciles, reversing the impact of the standard-rating of zero-rated items seen in Figure 3. The first (poorest) decile has the greatest percentage increase for each of the three scenarios, with the most effective scenario being VAT5a, with a 24 per cent increase in post-fiscal income. For all three scenarios, the impact on post-fiscal income is negligible for deciles 5–10, and so the positive impact is targeted well at the poorer deciles and the first decile in particular.

The scenarios shown in Figure 4 use the revenue gained by standard-rating all zero-rated items for different types of benefits targeted at young people. To complement this analysis, further scenarios were explored targeted at older people of working age: VAT6, VAT6a, and VAT6b. As with the grants for younger people, the amount of the grant and the age group targeted were varied to enable a revenue neutral solution to be implemented. Figure 5 shows the distribution of post-fiscal income for these three scenarios.

Figure 5: Percentage change in mean post-fiscal income by decile, comparing actual October 2018 arrangements (VAT3) with reform scenarios where zero-rated items are taxed at the standard rate of VAT (15 per cent) and new grants are introduced for older people of working age (VAT6, VAT6a, VAT6b)



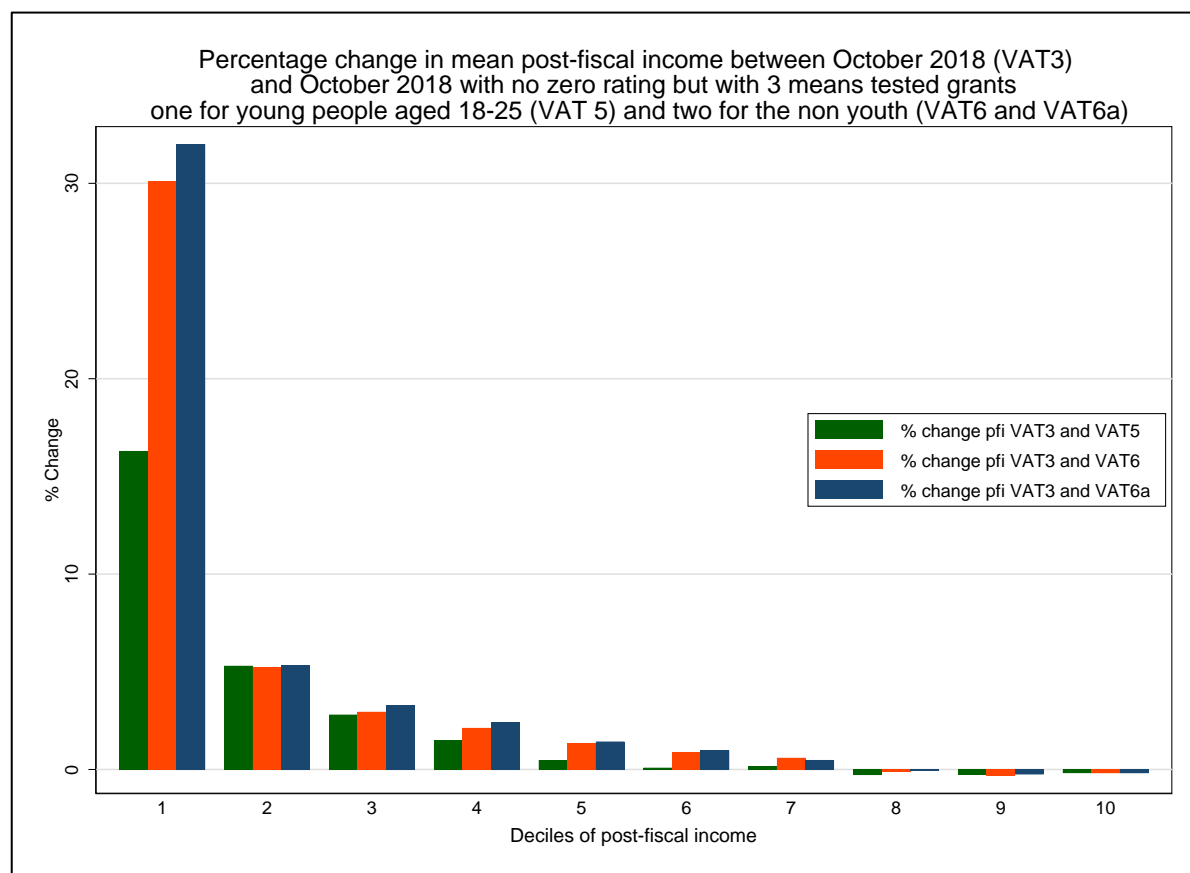
Note: For details of the modelled scenarios, see Table 1.

Source: Authors' calculations using SAMOD V6.8x and LCS 2014/15 dataset.

Again, for all three scenarios, the revenue gained by standard-rating all zero-rated items and reassigned as benefits targeted at older people of working age has the impact of increasing post-fiscal income for the poorer deciles. The most effective scenario is VAT6b, with a 41 per cent increase in post-fiscal income compared with the status quo in October 2018 (VAT3). Even the least effective reform (VAT6) achieves a 30 per cent increase in post-fiscal income.

Figure 6 compares the three scenarios that apply the CSG means test (VAT5, VAT6, and VAT6b). These options are important as the South African Social Security Agency is, in practice, well accustomed to administering a grant with such criteria and this may be an important implementation consideration should any of these options be explored further. As can be seen, the two 'older people of working age' benefits (VAT6 and VAT6b) have a greater positive impact on the post-fiscal incomes of the poorest decile than the youth benefit (VAT5).

Figure 6: Percentage change in mean post-fiscal income by decile, comparing actual October 2018 arrangements (VAT3) with reform scenarios where zero-rated items are taxed at the standard rate of VAT (15 per cent) and new grants are introduced with the CSG means test (VAT5, VAT6, VAT6a)



Note: For details of the modelled scenarios, see Table 1.

Source: Authors' calculations using SAMOD V6.8x and LCS 2014/15 dataset.

5.3 Assign standard rate of VAT to zero-rated items and redirect finances to the benefit system for new universal benefits

Table 5 compares two alternative scenarios with the de facto baseline of VAT3. In both scenarios, the zero-rating of certain items is abolished (as in Section 5.2) but instead the revenue foregone is ploughed back as universal benefits. The systems VAT7 and VAT8 each include a universal benefit payable at R200 per month to adults who are not in receipt of the Disability Grant, with VAT7 being payable to those aged 18–59 years inclusive and VAT8 payable to those aged 18–30 years inclusive.

Table 5: Impact of various reform scenarios on post-fiscal income

Scenario	Indirect taxes change (R billion) compared with VAT3	Benefit expenditure change (R billion) compared with VAT3	Post-fiscal income poverty headcount ratio (%)	Post-fiscal income poverty gap (%)	Inequality (Gini coefficient)
VAT3 (October 2018)	/	/	33.2	14.4	0.637
VAT7	+R13.0	R70.8	29.6	10.8	0.620
VAT8	+R13.0	R31.7	31.7	12.8	0.630

Notes: For details of the modelled scenarios, see Table 1. Post-fiscal income poverty uses a modified form of the SALDRU lower-bound poverty line.

Source: Authors' calculations using SAMOD V6.8x and LCS 2014/15 dataset.

As can be seen, both scenarios reduce the poverty headcount ratio and the poverty gap considerably, with post-fiscal income poverty headcount ratio falling to 29.6 per cent for VAT7 and the poverty gap falling to 10.8 per cent. However, the cost of these reforms is far greater than that which could be obtained by applying the standard rate of VAT to zero-rated items, and so alternative and additional sources of revenue would need to be sought, including the clawing back of the benefit from tax payers through the tax system, though this is not explored further here.

5.4 Assign standard rate of VAT to zero-rated items, return the standard rate of VAT to 14 per cent, and increase the amount of CSG

Finally, we explore a scenario for October 2018 where the increase in the VAT rate is reversed from 15 to 14 per cent, and all zero-rated items are also assigned the standard rate of VAT. Table 6 shows that to do so would yield an additional revenue of R4.7 billion (Scenario VAT9). Applying the same 1.5 inflator would result in R7.1 billion which is then ploughed back in the form of an additional increase to the amount of CSG in Scenario VAT10. CSG is raised by R40, to R450 per child per month, and as can be seen the impact of this change is that poverty and inequality are reduced, compared with the de facto baseline VAT3.

Table 6: Impact of various reform scenarios on post-fiscal income

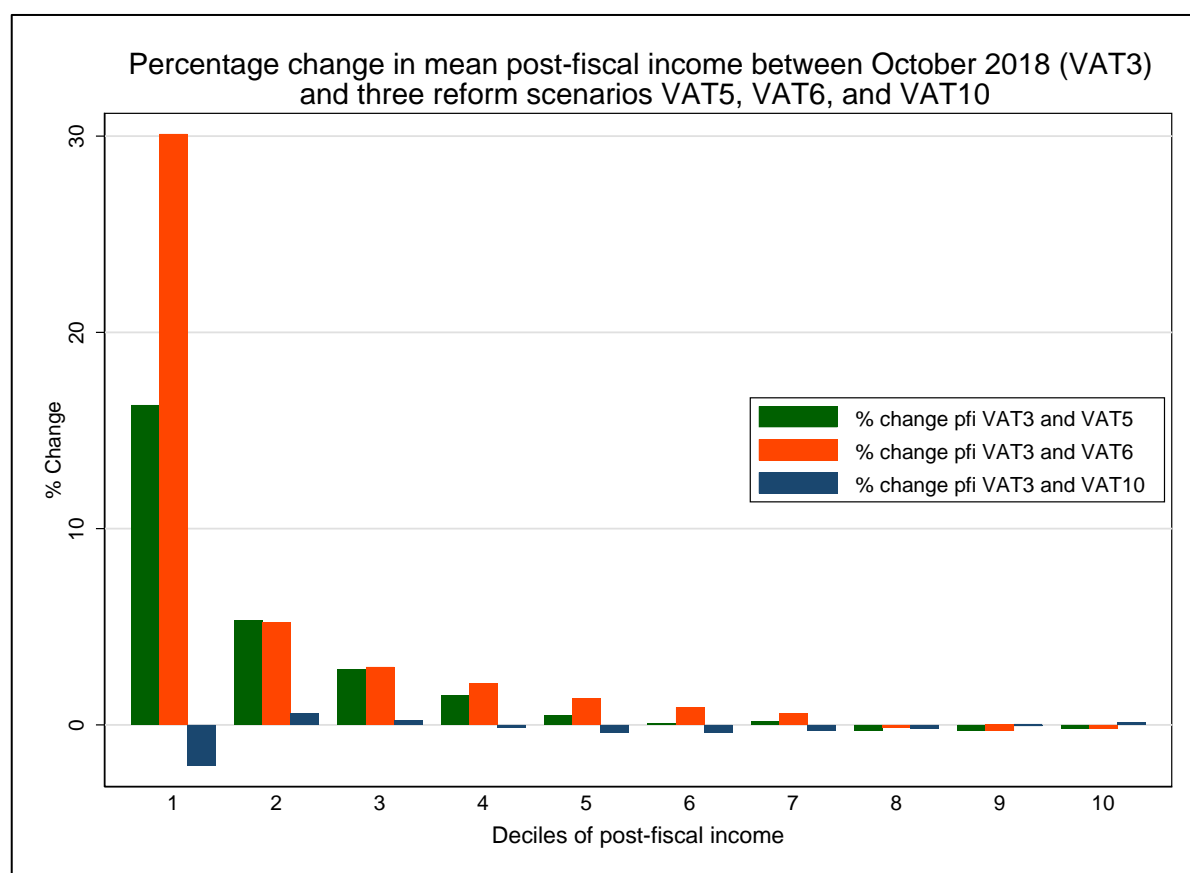
Scenario	Indirect taxes change (R billion) compared with VAT3	Benefit expenditure change (R billion) compared with VAT3	Post-fiscal income poverty headcount	Post-fiscal income poverty gap	Inequality
VAT3 (October 2018)	/	/	33.2	14.4	0.637
VAT9	+R4.7	0	33.7	14.9	0.640
VAT10	+R4.7	R7.0	32.8	14.1	0.637

Note: Post-fiscal income poverty uses a modified form of the SALDRU lower-bound poverty line.

Source: Authors' calculations using SAMOD V6.8x and LCS 2014/15 dataset.

Although VAT10 does reduce poverty overall, when the distributional impact of the policy is compared with VAT3, it is evident that VAT10 does not achieve the impact on the first decile that is found with VAT5 or VAT6 (Figure 7). Thus, even if the VAT hike is retained, the detrimental impact on the poorest decile can be reversed by re-routing revenue foregone through zero-rating to means-tested benefits. The positive impact of new benefits is further borne out in Annex Figure A2, which presents the contribution of social grants to disposable income for each of the simulated scenarios listed in Table 1, for households in the poorest post-fiscal income decile.

Figure 7: Percentage change in mean post-fiscal income by decile, comparing actual October 2018 arrangements (VAT3) with reform scenarios (VAT5, VAT6, and VAT10)



Note: For details of the modelled scenarios, see Table 1.

Source: Authors' calculations using SAMOD V6.8x and LCS 2014/15 dataset.

6 Discussion

In this paper, a tax-benefit microsimulation model for South Africa—SAMOD—has been used to explore the impact of the recent increase in the standard rate of VAT from 14 to 15 per cent, with respect to the impact on post-fiscal income. Using updated data from the LCS 2014/15 as the underpinning dataset, it is estimated that although the increase in VAT caused a slight rise in poverty and inequality, this was reversed by the second increase in benefit amounts which was implemented as a remedial measure by the government of South Africa in October 2018.

Notwithstanding this positive finding, it is demonstrated that the group worst affected by the VAT increase, when measured as percentage change in post-fiscal income, was the poorest post-fiscal income decile. For this group, post-fiscal income fell by more than 6 per cent as a result of the VAT increase, and the increase in benefit amounts that took place in October 2018 did not wholly eliminate the negative impact of the VAT hike.

Building on these findings, a number of hypothetical reform scenarios were explored to identify options that might achieve redress for the poorest households. In order to generate revenue for the redress, the zero-rating of VAT was abolished and instead the revenue generated by doing so (just under R20 billion) was ploughed back into the benefit system. Options were explored for new means-tested benefits for young people (VAT5–VAT5b), and for older people of working

age (VAT6–VAT6b). Of these, VAT5 and VAT6 are the most straightforward as they appropriate the same means test as is used currently for CSG, for which 80 per cent of all children in South Africa are eligible and about which there are regular take-up campaigns. The overall cost and impact on poverty and inequality of VAT5 (for young people aged 18–25 years) and VAT6 (for older people of working age, aged 26–59 years) are similar. However, with reference to the first post-fiscal income decile, the impact of VAT6 is much greater—increasing post-fiscal income of the first decile by around 30 per cent—than the impact of VAT5 which increases post-fiscal income for the poorest decile by around 16 per cent only. This is in spite of the benefit for those aged 18–25 years being paid at almost twice the value of the benefit for those aged 26–59 years (R225 and R120 per month, respectively).

Two further strands of analysis were pursued. First, two universal benefits were tested and it was demonstrated that these would have a greater poverty-reducing effect than the means-tested benefits, although at a greater cost (Section 5.3). Second, a scenario was tested whereby the VAT hike was reversed, zero-rating was eliminated, and the revenue generated was applied to CSG (Section 5.4): although this did reduce poverty overall, it failed to provide redress for the poorest post-fiscal income decile to counter the VAT hike.

What can be inferred from these findings? First, the analysis supports the widely held concern that the VAT hike disproportionately and negatively affected the poorest households. Second, it provides a positive message about the ameliorating impact of the October 2018 benefit hike, overall. However, by drilling down to look at post-fiscal income deciles we have been able to demonstrate that the poorest households continue to be negatively affected.

Tax-benefit microsimulation provides an opportunity to test out the first-order effects of an almost infinite number of reform scenarios to explore options for redress. We demonstrate that benefits aimed at those who currently fall outside the benefit system (i.e. those who are aged 18–59 years and are not disabled) most effectively reverses the negative impact of the VAT hike. Furthermore, the elimination of the zero-rating of VAT provides sufficient income to provide redress through the benefits system.

Clearly, the options presented here mainly fall outside the scope of current debates that focus on calls for the reversal of the VAT hike (e.g. Civil Society 2018) and/or the expansion of zero-rated VAT items (e.g. Independent Panel 2018) and introduction of a luxury VAT rate (e.g. Njozela and Isaacs 2018). In contrast, the scenarios presented here involve the elimination of zero-rated VAT items, which, as Jansen and Calitz (2015: 14) have observed, is a ‘thorny issue’ in the South African context. This was done partly in order to achieve revenue neutral solutions that achieve redress for the impact of the VAT hike on low-income households (while also, of course, mitigating the impact of removing zero-rating). The selected scenarios also demonstrate the ‘poverty-zapping power’ of government resources when they are directed through the benefit system rather than indirectly through the zero-rating of items, further substantiating arguments that have been made internationally (e.g. Keen 2013; Harris et al. 2018) and in South Africa (e.g. Jansen and Calitz 2015; van Oordt 2018). The hypothetical scenarios also respond to the call made on constitutional grounds by the SAHRC (2018) and others to broaden the social security coverage to mitigate the impact of the VAT hike. In practice, the introduction of a new benefit need not have to compete for the revenue foregone by the zero-rating of food items, as alternative sources of revenue could be explored which would leave most or all zero-rated items untouched.

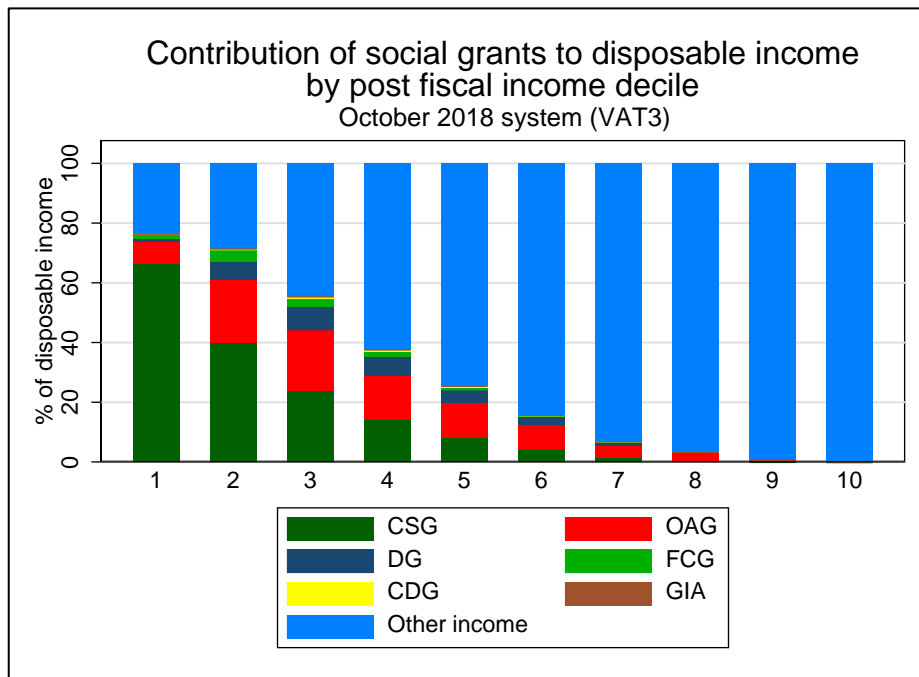
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Annex A Contribution of social grants to disposable income

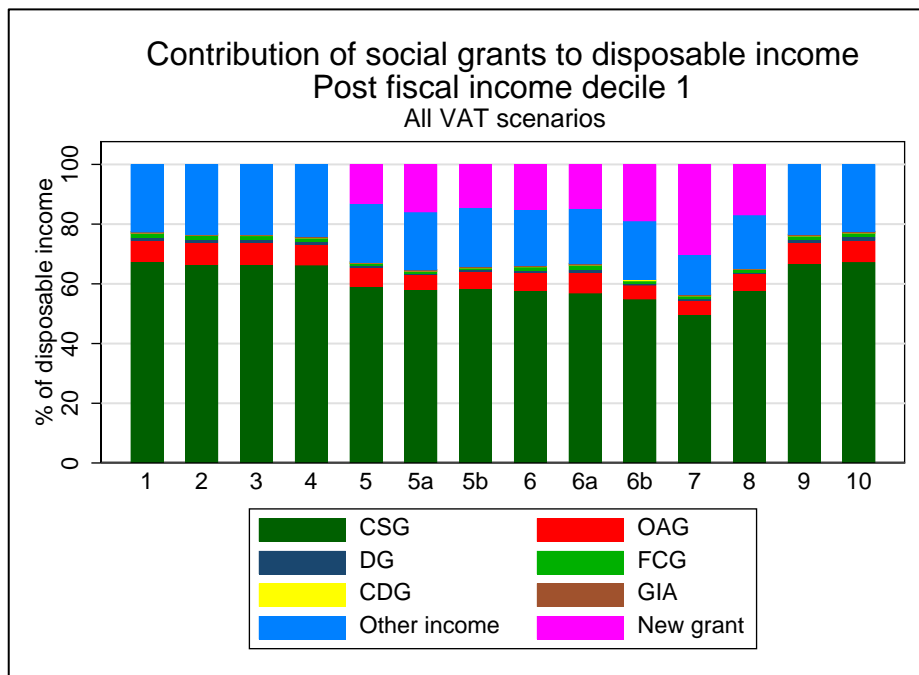
Figure A1: Contribution of social grants to disposable income by post-fiscal income decile, October 2018 (VAT3)



Notes: CSG, Child Support Grant; DG, Disability Grant; CDG, Care Dependency Grant; OAG, Old Age Grant; FCG, Foster Child Grant; GIA, Grant in Aid.

Source: Authors' calculations using SAMOD V6.8x and LCS 2014/15 dataset.

Figure A2: Contribution of social grants to disposable income by post-fiscal income decile 1, for all modelled scenarios



Notes: Same as Figure A1.

Source: Authors' calculations using SAMOD V6.8x and LCS 2014/15 dataset.