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# Prioritarian rates of return to antipoverty transfers

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## Abstract

A growing impact evaluation literature on antipoverty transfer programmes in low- and middle-income countries measures changes in utilitarian terms, at their unit value. The paper argues that valuing antipoverty transfers is more appropriately done within a framework of prioritarian social welfare functions, as the very presence of these programmes indicates that polities place a greater value on gains and losses among the disadvantaged. The paper applies this framework to the Senior Citizen Grant in Uganda, including survey and experimental work throwing light on social preferences for redistribution. It finds that default utilitarian valuation significantly underestimates the social value of transfer programmes.

## KEYWORDS

antipoverty transfers, preferences for redistribution, priority, rate of return, Uganda, welfare weights

## 1 | INTRODUCTION

It has been estimated that antipoverty transfer programmes reach nearly one billion individuals in low- and middle-income countries (LMICs) (Barrientos, 2013). LMICs spend on average 1.5% of GDP on programmes supporting the poor (World Bank, 2018). Moreover, these programmes are being widely used to address the current COVID-19 crisis (Gentilini et al., 2020). A fast-growing impact evaluation literature has accompanied the expansion of antipoverty transfer programmes. Impact evaluations of antipoverty programmes estimate mean effects from

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programme participation on particular variables of interest (Ravallion, 2005). With variation across programmes, they find significant and positive effects of antipoverty transfer programmes on poverty alleviation and human capital indicators (Bastagli et al., 2018; Gitter & Barham, 2009). From a public policy perspective, impact studies are a welcomed development, providing information on what works. However, few studies consider the social value of antipoverty transfers. Knowledge of programme outcomes is not knowledge of the value of the programmes to the polities that implement them (Barrett & Carter, 2010; Deaton, 2010). Moreover, inattention to distributional concerns often defaults to utilitarian assumptions regarding programme outcomes. This paper argues that assessments of antipoverty transfer programmes are more appropriately undertaken within prioritarian social welfare functions and demonstrates this with an application to the Senior Citizen Grant in Uganda.

Impact evaluation studies of antipoverty transfers are building a strong evidence base on their impact on participating households. In a general metastudy, Bastagli et al. (2018) find that programme impact on poverty (percentage point change) for nine studies selected ranges from  $-0.21$  to  $+0.07$  for the poverty headcount;  $-5.5$  to  $+0.01$  for the poverty gap, and  $-6.5$  to  $+0.005$  for the poverty gap squared (p.103–104).<sup>1</sup> In a meta study of schooling effects of programme participation conducted by Baird et al. (2013), for example, it is reported that: 'For the 35 conditional cash transfer (CCT) and unconditional cash transfer (UCT) interventions studies combined, the pooled ES [effect size] is 1.36 (95% CI 1.24–1.48), meaning that the odds of children being enrolled in school is 36 per cent higher among children in households offered cash transfers compared with children in households who were not offered to participate in a cash transfer intervention. The effect is statistically significant at the 99% level (p-value < 0.001)' (Baird et al., 2013, p. 37). The studies reported provide valuable information on whether transfers work, a particular focus of international debates. Transfer programmes, conditional income transfers in particular, have an important social investment component. From a public policy perspective, an assessment of the returns from investing in transfers is essential to the choice over alternative programmes.

The focus on mean effects in impact evaluation studies often defaults to an utilitarian perspective, one in which increases in consumption or improvements in school enrolments are aggregated at unit value. In actual fact, the pursuit of antipoverty policies implies that improvements in consumption, income, and productive capacity among low-income groups have a higher value to society than, say, similar benefits to the better off. This public policy stand reflects a prioritarian perspective in which benefits to disadvantaged groups are especially valuable to society (Adler, 2013; Fleurbaey et al., 2013). As far as these societies are concerned, it matters who are the beneficiaries of improvements in consumption or school enrolments.

The main objective of the paper is to demonstrate that assessments of the social value of antipoverty programme outcomes can best be framed within social welfare functions that reflect the very poverty and inequality reduction preferences that motivated their introduction. This involves moving away from an implicit utilitarian default and towards explicit consideration of prioritarian social welfare functions in assessing the welfare gains or social worth of antipoverty transfers. Welfare weights are essential to allowing social preferences to inform valuation of policies and outcomes. The analysis in the paper compares rates of return to antipoverty transfers using utilitarian and a range of prioritarian welfare weights.

To date, the literature embedding the valuation of antipoverty transfers in social welfare functions is regrettably scarce. Skoufias et al. (2010) compare the outcomes of a range of social transfer programmes (insurance and assistance) within a social welfare function framework. They compute a distributional characteristics index enabling an ordering of transfer programmes according to their redistributive capacity. Welfare weights are applied to the transfers according to the consumption levels of recipient households relative to a poverty line. Brent (2013) develops a cost–benefit analysis of conditional income transfer programmes and makes a strong case for using welfare weights.<sup>2</sup> He employs a version of the weights in Skoufias et al. (2010). Alderman et al. (2019) develop an approach to the valuation of outcomes from Mexico's PROGRESA using a range of existing redistribution parameters. The studies conclude that social welfare functions and welfare weights are crucial to the social valuation of the programmes, and that their absence underestimates the contribution of these programmes.

An application to the Senior Citizen Grant in Uganda helps demonstrate the relevance and significance of using prioritarian welfare weights for a comprehensive assessment of antipoverty transfer programmes. The choice of programme will also demonstrate that this approach can provide essential information in settings with limited data availability. At the time this research was undertaken, the programme was in its pilot stage. To our knowledge, there are no studies on social preferences for redistribution in Uganda. The empirical analysis was done in three stages. First, estimates for the unweighted (private) yearly costs and benefits of the programme when fully scaled up provided baseline information to compute rates of return (Dietrich et al., 2019). Second, we collected and analysed experimental and survey data from a student sample to construct estimates of social preferences for redistribution. The estimates help identify lower and upper bounds for welfare weights appropriate to Uganda. Third, we compared rates of return under utilitarian and prioritarian social welfare functions. By estimating year-on-year rates of return, as opposed to using the estimated present discounted value of future earnings from human capital investments (Alderman et al., 2019), we provide a more detailed and policy relevant analysis. The results underline the need to pay attention to distributional assumptions in the assessment of the welfare impact of antipoverty transfers. Experimental and survey methods used to estimate aversion to inequality in Uganda were found to be in a range of 0.17 and 0.56. These estimates reflect results obtained in studies from other countries. Comparison of utilitarian and prioritarian estimates of the rate of return (RoR) associated with programme participation finds that the latter generate significantly higher welfare benefits than those estimated under utilitarian assumptions. In this respect, we find that with even very low preferences for redistribution, the rates of return switch, compared to the utilitarian case, from negative to positive after 10 years.

The paper makes three contributions to the literature. First, it demonstrates that it is essential to explicitly address distributional concerns when estimating the welfare impact of antipoverty transfers. By estimating yearly rates of return, it shows that programs can have positive rates of return even in the short-term, which has significant political economy implications for African countries. It therefore shows the importance of choosing social welfare functions appropriate to poverty reduction. Second, the paper provides unique survey and experimental information on social preferences for redistribution in Uganda. To our knowledge, this is the first paper undertaking this task. The few other studies using welfare weights in the context of antipoverty programmes, such as Alderman et al. (2019), used existing inequality aversion parameters. Third, the paper demonstrates how distributional concerns could be addressed even in contexts with programmes with restricted coverage and limited data availability. The paper shows that applying appropriate welfare weights is essential to a more accurate assessment of antipoverty transfers and public policy more broadly. To our knowledge, this is the first paper constructing welfare estimates of antipoverty transfers in sub-Saharan Africa.

The rest of the paper is organised as follows. Section 2 discusses the relevance of welfare weights to assessing the value of antipoverty policies. It justifies implementing prioritarian welfare weights. Section 3 discusses strategies for estimating social preferences for redistribution. Section 4 introduces the Senior Citizen Grant programme in Uganda and reports its measured (utilitarian) rates of return. Section 5 reports on survey and experimental research measuring social preferences for redistribution in Uganda. Section 6 compares rates of return associated with participation in the Senior Citizen Grant programme under utilitarian and prioritarian welfare weights. A final section summarises the main conclusions.

## 2 | WHY ARE WELFARE WEIGHTS NEEDED TO EVALUATE ANTIPOVERTY TRANSFERS?

To date, the fast growing literature evaluating the outcomes of antipoverty transfer programmes has focused on developing reliable methods to identify the changes associated with programme participation, on the participants themselves and on their local economy (Angrist & Pischke, 2008; Blundell & Dias, 2009; Maluccio, 2010; Porreca & Rosati, 2019; Ravallion, 2005; Scarlato et al., 2016). Meta-studies compare estimates across programmes as in Baird

et al. (2013) and Bastagli et al. (2018). Impact evaluations studies provide valuable information on programme participation effects.

While developing a strong evidence base on the outcomes associated with programme participation, we lack reliable information on the social value of these outcomes. Evidence-based public policy requires in addition an assessment of rates of return on social investment in welfare terms (Alderman et al., 2019; Coady, 2003; Glewwe & Kassouf, 2012; Mideros et al., 2016). This section provides a brief explanation and justification for implementing welfare weights.

Social welfare functions provide a framework for the evaluation of the benefits and costs of social programmes and policies. A Bergson-Samuelson social welfare function sets out an additive, individualistic, and impartial social welfare function<sup>3</sup>. It can be written as follows:

$$W = W(V_1(y_1), V_2(y_2), \dots, V_n(y_n)) = \sum_{i=1}^n W(V_i(y_i)) \tag{1}$$

Here,  $y_i$  is a measure of welfare for unit  $i$ , assuming a population  $n$ .  $V_i(\cdot)$  is the indirect utility function of unit  $i$ , and  $W(\cdot)$  is social welfare. The impact of an infinitesimal change in  $y_i$ , on social welfare associated with an antipoverty transfer for example, can be written as follows:

$$dW = \sum_{i=1}^N \frac{\partial W(\cdot)}{\partial y_i} dy_i = \sum_{i=1}^N \frac{\partial W(\cdot)}{\partial V_i} \frac{\partial V_i}{\partial y_i} dy_i = \sum_{i=1}^n \beta_i dy_i \tag{2}$$

$\beta_i$  is the welfare weight of unit  $i$ . It represents the change in social welfare associated with an infinitesimal small change in individual  $i$ 's welfare (Bångman, 2006). In this specification the welfare weight is defined as follows:

$$\beta_i = \frac{\partial W(\cdot)}{\partial V_i} \frac{\partial V_i}{\partial y_i} \tag{3}$$

This formulation highlights two distinct components, the valuation of a small change in welfare for individual  $i$ ,  $\partial V_i / \partial y_i$ , and society's valuation of the change in welfare  $\partial W(\cdot) / \partial V_i$ . Aversion to poverty and inequality, discussed in more detail below, implies  $\partial^2 W / \partial V_i^2 \leq 0$  with social welfare concave in indirect utility. Here we are interested only in the latter.<sup>4</sup> Impact evaluations of antipoverty transfer programmes measure  $dy_i$  but neglect to pay attention to  $\beta_i$ , the welfare weight or social marginal valuation attached to changes in welfare of unit  $i$ . Implicitly, therefore, they assume a utilitarian  $\beta_i = 1$ . Gains and losses are aggregated at unit value. Specifying welfare weights explicitly ensures that social preferences become transparent and contestable (Adler, 2013; Cowell & Gardiner, 1999; Creedy, 2007).<sup>5</sup>

Several specifications of the social welfare function are available, but the literature has focused on Atkinson (1970) constant elasticity social welfare function. For our purposes it has the advantage of nesting utilitarian and prioritarian perspectives on the valuation of programme outcomes. It can be written as follows:

$$W = W(V_1(y_1), V_2(y_2), \dots, V_n(y_n); \epsilon) = \begin{cases} \sum_{i=1}^n \left( \frac{V_i(\cdot)^{1-\epsilon}}{1-\epsilon} \right), & \epsilon \neq 1 \\ \sum_{i=1}^n \log V_i(\cdot), & \epsilon = 1 \end{cases} \tag{4}$$

Here the parameter  $\epsilon$  can be interpreted to represent social preferences towards poverty and inequality. In the extreme case of  $\epsilon = 0$  there is no inequality aversion and distributional issues are not relevant to social welfare. In the context of antipoverty transfers, only the absolute value of net programme benefits matter, but not who receives them. This is the utilitarian case. With  $\epsilon > 0$  benefits to the least advantaged are associated with a disproportionately greater improvement in social welfare. This is the prioritarian case. When  $\epsilon$  approaches infinity, only the situation of the worse off unit in society is of interest (following Rawls (1971)). A prioritarian social welfare function satisfies the

Pigou–Dalton transfer axiom and therefore assigns a higher value to improvements in the welfare of disadvantaged groups (Adler, 2012; Broome, 2015).

In the context of a prioritarian social welfare function of this type, assessing the gain in social welfare of a transfer will require applying welfare weights normalised as follows:

$$\beta_i = \left( \frac{V(\bar{y})}{V(y_i)} \right)^\varepsilon \quad (5)$$

where  $\bar{y}$  is a reference level of welfare.

### 3 | MEASURING SOCIAL PREFERENCES

The ‘leaky bucket’ hypothesis (Okun, 1975) provides a framework to inform empirical work aimed at generating estimates of social preferences for redistribution. It is important to place empirical estimates of social preferences in their proper context. Creedy refers to  $\varepsilon$  as the ‘elasticity of marginal valuation’ and notes that ‘it is not an objective measure relating to individuals in society, but reflects the subjective value judgment of a fictional judge who is evaluating the effects of alternative policies or outcomes’ (Creedy, 2007, p. 5).

Transfers from rich to poor are normally associated with deadweight losses, for example in the form of administrative costs. Willingness to accept significant deadweight losses could be associated with strong poverty and inequality aversion. Conversely, transfers from rich to poor with low levels of deadweight losses are likely to be rejected in circumstances where poverty and inequality aversion is weak.

Several approaches to the estimation of empirical counterparts to  $\varepsilon$  are available in the literature. In the analysis that follows we rely on two main approaches to capture measures of social preferences. First, the *survey approach* works by implementing a questionnaire on social preferences on a sample of respondents. Survey questionnaires ask respondents to place themselves in the position of a citizen having to choose between alternative future transfer schemes associated with different levels of deadweight losses. Their choices provide information on social preferences regarding antipoverty transfers (Amiel et al., 1999; Okun, 1975; Pirttilä & Uusitalo, 2010). Second, the *experimental approach* works by placing respondents in hypothetical situations in which they are incentivised to reveal social preferences.

There are potential confounders associated with this approach, as identified in the literature. People are more willing to endorse redistribution if they believe they will benefit directly from it (Beckman et al., 2004). Expectations of future incomes could also influence choices on alternative costs and benefits of redistribution (Alesina & La Ferrara, 2005; Benabou & Ok, 2001). Furthermore, aversion to inefficiency and maximin preferences could also potentially confound inequality aversion (Engelmann & Strobel, 2004).

The choice of the survey and experimental approaches follows tried and tested approaches in the relevant literature that can be feasibly applied to the Uganda context.<sup>6</sup> More generally they are approaches that can be implemented in contexts where reliable data on social preferences for public policy are scarce. The use of survey and experimental approaches for finding empirical counterparts to social preferences is motivated by the absence of available literature on low- and middle-income countries. The experimental approach can address some of the potential confounders undermining survey approaches (Traub et al., 2009).

### 4 | UGANDA'S SENIOR CITIZEN GRANT AND RATES OF RETURN

Uganda joined several other countries in East Africa in introducing a pilot antipoverty transfer programme. Social Assistance Grants for Empowerment (SAGE) was approved by Cabinet in July 2010 and began to be implemented in

2011 in six districts. When first implemented, it provided two types of social transfers: (i) the Senior Citizen Grant, an old age social pension for people aged 65 and over; and (ii) the Vulnerable Family Grant (VFG), a cash transfer targeted at vulnerable households. SAGE was scaled up to 14 districts by 2015, reaching around 15% of households in these districts. During the pilot phase both programme options were implemented in separate regions, to test which option is more effective in achieving the SAGE objectives. The Government of Uganda unveiled plans to scale up the Senior Citizen Grant to an additional 40 districts by 2019/2020 and to discontinue the Vulnerable Family Grant.<sup>7</sup> The analysis below focuses exclusively on the Senior Citizen Grant.

Beneficiaries of the Senior Citizen Grant are selected on age. All citizens aged 65 and over are entitled to receive the grant in the relevant districts, except in the Karamoja district where entitlement is extended to people aged 60 and over as a recognition of severe levels of deprivation in that district. The scaling up of the Senior Citizen Grant will extend entitlements across all districts, although the age limit may have to be increased. For the country as a whole, 3.2% of the population are aged 65 and over and 14% of households have at least one elderly member.

In 2011, monthly transfers were UGX 23,000 (approximately USD10). The level of the transfer was set to ensure the average household in the lowest decile of consumption equalled the consumption of households in the 11th percentile. Senior Citizen Grant transfers are paid directly to beneficiaries.

Dietrich et al. (2019) estimated the costs and benefits of the Senior Citizen Grant and associated rates of return. The analysis below will rely on their methodology to estimate rates of return as the utilitarian baseline. A brief description of their model is given here. Programme costs in their model include transfer values and operational costs. These are computed based on cost projections for a fully scaled up programme, assuming perfect targeting. Administrative cost for the Senior Citizen Grant were calculated at around 9% of transfer payments (Merttens et al., 2016). They are expected to fall to 0.2% of budget after full scale. As the model simulates costs and benefits over a 10-year period, the programme costs of the Senior Citizen Grant are set at 7.1% of programme payments.

Benefits are calculated using a mix of estimation and simulation based on data from the Uganda National Panel Survey (UNPS), a nationally representative panel household survey (UBOS, 2010). The modelling relied on survey data from 2009/2010, 2010/2011, 2012/2003 and 2013/2004. As noted, SAGE was a pilot programme at the time the research was conducted, so the first task was to simulate full scaling up. A dynamic micro-simulation model predicted programme participation in the Senior Citizen Grant using the 2011 UNPS wave, preceding the implementation of the programme. Eligibility for the Senior Citizen Grant is straightforward as the sole criterion is age and district residence. The next step was to compute direct consumption benefits for participant households for the first period, and then to simulate future consumption effects including indirect consumption benefits from human capital accumulation as a result of the transfers.<sup>8</sup> Estimates of schooling and health status (measured as child underweight) correlates were used to simulate for eligible households the effect of the transfer on child schooling and health status<sup>9</sup> and in turn the effects of improved schooling and health status on household consumption.

Aggregate benefits at time  $t$  are calculated as follows:

$$\sum_{i=1}^n (y_{i,t}^1 - y_{i,t}^0) = \sum_{i=1}^n \Delta y_{i,t}, \quad i = 1, \dots, n; t = 0, 1, \dots, 10 \quad (6)$$

Where  $y_{i,t}^1$  is the welfare outcome (proxied by consumption; Alderman et al. (2019)) for programme participant household  $i$  at time  $t$  under the programme scenario, and  $y_{i,t}^0$  is the outcome for the baseline scenario (without the policy intervention).  $\Delta y$  represents the benefits (in welfare terms) associated with participation in the programme.

Yearly rates of return are calculated as follows:

$$\text{RoR} = \left( \frac{\sum_{t=1}^T \sum_{i=1}^n \Delta y_{i,t} (1 - \delta)^{-t}}{\sum_{t=1}^T C_t (1 - \delta)^{-t}} - 1 \right) * 100 \quad (7)$$

Cost at time  $t$  are  $C_t$ , and  $\delta$  is the discount rate. Assuming a propensity to consume out of transfers at 100% and a discount rate of 5%, the rate of return on the Senior Citizen Grant programme at year 10 is  $-1.64$ .<sup>10</sup>

## 5 | SOCIAL PREFERENCES FOR REDISTRIBUTION IN UGANDA

This section describes the implementation of, and results from, the survey and experimental work in Uganda aiming to identify empirical counterparts for  $\epsilon$ . A brief description of this work and its results follows here. Supporting information contains a more detailed discussion of the data collection and analysis.

The literature using survey and experimental approaches to estimate social preferences for redistribution has usually collected data from a sample of university students (Amiel et al., 1999; Fredrik Carlsson et al., 2005). Recall that the objective of the data collection is not to ascertain the respondents' own preferences for redistribution, in which case students might be considered to be out of the ordinary, but instead to capture their perceptions of preferences for redistribution in their societies. University students are as likely to be reasonably well informed on these as other population groups (Amiel et al., 1999; Carlsson et al., 2003; Gevers et al., 1981; Kamas & Preston, 2016). Amiel and Cowell (1992) find that university students are accustomed to arithmetical calculations and logical reasoning, which might be an advantage in this context (Gächter, 2010). Other studies find that students represent a lower bound of pro-social behaviour compared to nationally representative population (Cappelen et al., 2015; Kamas & Preston, 2016). Nonetheless, given the results of the paper, this strengthens our main messages and does not represent an issue. In addition, basing the analysis in this paper on student samples means that our results can be more easily compared with those from available studies.<sup>11</sup>

The data collection was carried out in June 2016 at the Christian University in Kampala, Uganda. Students were invited to sessions held on campus based on participation lists and in coordination with course coordinators. Up to 22 students participated in each session. Following three pilot sessions, we implemented 16 questionnaire sessions with 312 participants and 8 experiment sessions with 144 participants (see supporting information for detailed information).

The experimental strategy follows the design used in the literature (Beckman et al., 2004). In order to disentangle inequality aversion from risk aversion (see Section 2), we captured participants' choices under three slightly different sets of conditions. The interaction of responses across the different sets of conditions helped discriminate risk aversion preferences from inequality aversion preferences. Participants were grouped into five different income levels and were asked to choose whether they preferred to belong to society A or society B, represented by their respective income distributions. Incomes in society B are more equally distributed than in society A, but this comes at a cost of lower mean incomes, a leakage rate. We used leakage rates (deadweight losses) of 0%, 50%, 67% and 100% of redistributed incomes to classify responses. The analysis of respondents' choices indicates that a leakage rate of 50% constituted a threshold between acceptance or rejection of redistribution. This threshold corresponds to a value of 0.17 for the redistribution parameter.

Survey respondents were asked to choose between a fixed distribution and 12 alternative distributions with different mean incomes (see supporting information for more details). The mean incomes and the spread of the distributions are associated *ex ante* with values of the redistribution parameter in Amiel et al. (1999). Survey responses indicate a range for the redistribution parameter of  $-0.12$  to 4, with a mode at 0.56.

The survey and experiment data for Uganda therefore indicate a lower bound for the redistribution parameter at 0.17 and an upper bound at 0.56. To our knowledge there are no other empirical studies of social preferences for redistribution in sub-Saharan Africa against which to compare our results. But because available studies in high-income countries also relied on student samples and a similar approach, we can compare our findings with international evidence. For example, Fredrik Carlsson et al. (2005) report an inequality aversion range of 0.09–0.22 from students in Sweden and Amiel et al. (1999) a redistribution parameter in the range of 0.1–0.22 with students in Israel and Australia. Pirttilä and Uusitalo (2010) find a parameter of just below 0.5 for Finland. Empirical estimates of



preferences for redistribution in developing countries are scarce. To our knowledge, only one study is available. Behrman and Birdsall (1988) found a redistribution parameter estimate equal to 0.68 for Brazil.<sup>12</sup> The estimated values of the inequality aversion parameter resulting from the experimental approach and the survey approach for Uganda (0.17 and 0.56, respectively) are within the range of estimates generated by the existing literature.

## 6 | UTILITARIAN AND PRIORITARIAN RATES OF RETURN

We are now in a position to compare rates of return calculated using utilitarian and prioritarian assumptions regarding social preferences for redistribution. Following 7 and adding explicit welfare weights, the Senior Citizen Grant programme rates of return are calculated as

$$\text{RoR} = \left( \frac{\sum_{t=1}^T \sum_{i=1}^n (\beta_i \Delta y_{it}) (1-\delta)^{-t}}{\sum_{t=1}^T C_t (1-\delta)^{-t}} - 1 \right) * 100 \quad (8)$$

where  $C_t$  are programme costs at time  $t$ ,  $\beta_i$  is the welfare weight of unit  $i$  and  $\Delta y_{it}$  is the benefit associated with programme participation, measured as the change in welfare (proxied by consumption)<sup>13</sup> of unit  $i$  at time  $t$ .

Applying the model in Dietrich et al. (2019) to estimate rates of return for the Senior Citizen Grant in Uganda provides a utilitarian benchmark. In the utilitarian case, the redistribution parameter representing social preferences for redistribution is zero, so that social weights  $\beta_i$  are equal to 1 and therefore benefits are equal to the estimated changes in welfare. Dietrich et al. (2019), in line with the overwhelming majority of the impact evaluation literature, implicitly assume a utilitarian perspective.

Welfare weights are not applied to the costs. The main reason for this is that the programme is funded mainly by donors. Therefore, the political economy of the costs, which holds if the programme is funded by government budgets, does not hold for the analysed case in Uganda. Second, preferences for taxes should already be included in current tax schemes, so it would be doubling the weights.

Preferences for redistribution to worse off units are equivalent to  $\varepsilon > 0$ , with preferences for redistribution becoming stronger as  $\varepsilon > 0$  rises. This is the prioritarian case. Following Equation 5, Table 1 summarises rates of return for the Senior Citizen Grant in Uganda at full scale and after 10 periods. Figure 1 plots the RoR for the Senior Citizen Grant for a wider range of values of  $\varepsilon$ .

At the utilitarian benchmark  $\varepsilon = 0$ , the Senior Citizen Grant shows a negative RoR. Taking the lower bound of our estimates of the redistribution parameter from the experimental work in Uganda at  $\varepsilon = -0.17$ , the estimated rate of return turns positive at 3.45%. This means that after 10 years, the cumulative benefits from the programme exceed cumulative costs by almost 3.5 percentage points. At the upper bound of our estimates from the survey work in Uganda at  $\varepsilon = 0.56$ , the rate of return rises to 22.2%. And at the unity value for the redistribution parameter commonly employed in the literature,  $\varepsilon = 1$ , the rate of return rises to 59.9%. The exercise shows that the utilitarian default used in much of the literature evaluating antipoverty transfers programmes significantly underestimates the contribution of these programmes to social welfare.

An alternative way to interpret these results is to ask the following: What inequality aversion parameter is needed to balance out the welfare 'loss' due to the administrative programme costs? From the data presented in Figure 1 the breakeven point is around  $\varepsilon = 0.05$  for the Senior Citizen Grant. Therefore, modest preferences for redistribution change the rates of return, compared to the utilitarian case, from negative to positive.

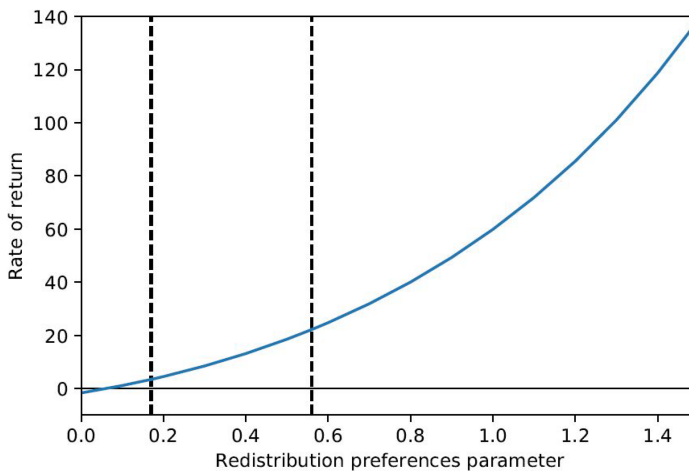
Figure 2 provides rate of return estimates at the end of each period. Our analysis gives a more detailed temporal breakdown of the rates of return of cash transfer programs compared to existing studies that use present discounted

**TABLE 1** Estimated Rates of return for the Senior Citizen Grant after 10 periods under alternative social preferences for redistribution

Value of $\varepsilon$	Rate of return (%)
Utilitarian $\varepsilon = 0$	-1.64
Prioritarian $\varepsilon = 0.17$	3.45
Prioritarian $\varepsilon = 0.56$	22.22
Prioritarian $\varepsilon = 1$	59.92

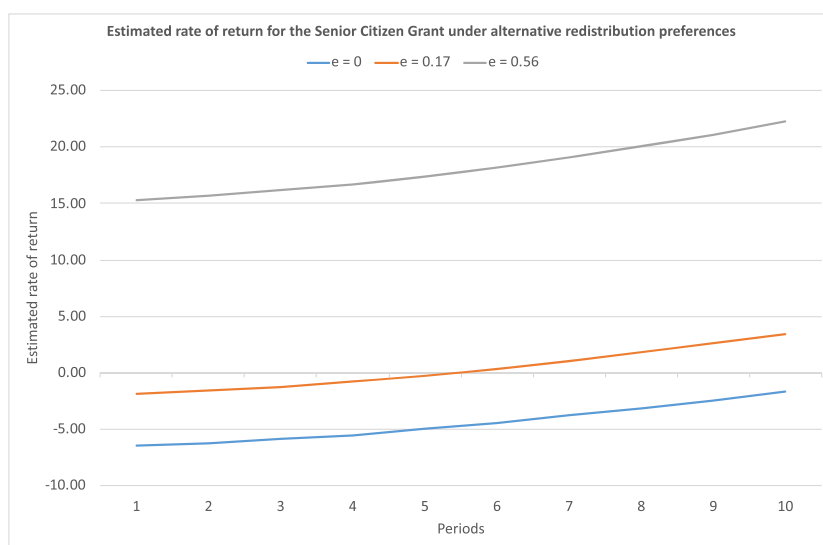
Note: The figures in the table represent estimated rates of return after 10 periods for a fully scaled up programme. The model for the calculation of costs and benefits and associated rates of return is described in detail in Dietrich et al. (2019). The figures in the Table assume a 100% propensity to consume and a 5% rate of interest. They exclude trimmed extreme values in the distribution of programme benefits (1% and below, 99% and above).

Source: author's elaboration.

**FIGURE 1** Estimated Rates of return to the Senior Citizen Grant after 10 periods under alternative social preferences for redistribution. Source: author's elaboration

value of future earnings (Alderman et al., 2019) and therefore do not estimate year-on-year rates of return as the present study.

Rates of return rise over time as the benefits of the programme cumulate due to human capital improvements. Under utilitarian assumptions, the rate of return starts at -6.4% in period 1 and it remains negative at the end of period 10 at -1.64%. Under the lower bound social preferences for redistribution, rates of return are negative at the end of the first period at -1.85% but turn positive at the end of period 5. Under the upper bound of social preferences for redistribution, rates of return at positive from the start at 15.3%. One implication from these estimates is that utilitarian assessments of antipoverty transfers provide few incentives for policy makers to adopt them. In conditions of weak redistribution preferences, short-term focused policy makers would be reluctant to support antipoverty transfer programmes, but policy makers with a long-term agenda would have strong incentives to do so. In conditions of strong redistribution preferences, antipoverty transfers would be significantly attractive to policy makers.



**FIGURE 2** Estimated year-by-year rates of return for the Senior Citizen Grant under alternative social preferences for redistribution. Source: author's elaboration

## 7 | CONCLUSIONS

There is a growing literature evaluating the impact of antipoverty transfers in low- and middle-income countries. It has benefited from the ascendance of experimental and quasi-experimental helping to implement reliable and precise methods to identify the changes associated with programme participation. The findings from this literature consolidate into a strong body of evidence on their effectiveness in reducing poverty and in facilitating the accumulation of human capital. While extremely valuable in helping identify what works in poverty reduction, knowledge on outcomes is not knowledge on the social valuation of these outcomes.

The paper argues that a social valuation of antipoverty transfer outcomes requires attention to social preferences for redistribution within a social welfare function framework. The very fact that polities implement antipoverty policies and transfer programmes indicates that welfare gains to disadvantaged groups have a greater social value than similar welfare gains to the better off. Lack of attention to social preferences for poverty and inequality reduction defaults to a utilitarian assessment of policies and programmes. In the impact evaluation literature, the gains, in say consumption or human capital, are measured at unit value. However, it matters who captures these gains. Prioritarian social welfare functions attach a higher social value to policies and programmes that support disadvantaged groups. Assessment of the value of antipoverty transfer programmes is more appropriately measured within the framework of Prioritarian social welfare functions.

The research reported in the paper makes several contributions to the literature.

First, the analysis in the paper demonstrates the need to pay explicit attention to social welfare in the assessment of antipoverty transfers. Estimates of antipoverty transfer programme participation effects measured at unit value provide at best a partial, and at worst a misleading, assessment of their social value. The paper shows that valuations of the contribution of antipoverty transfer programmes are best done within a social welfare function framework. Prioritarian social welfare functions embed poverty and inequality aversion in their valuation of policies and programmes.

Second, the paper constructs, for the first time, empirical estimates of redistribution preferences in Uganda. We find that survey methods indicate a redistribution parameter of 0.17 and experimental estimates find a value for this parameter of 0.56. Reassuringly, survey and experimental estimates of redistribution preferences in Uganda yield results that are similar to those in the literature, largely from high-income countries.

Our empirical analysis shows that nesting utilitarian and prioritarian judgements within an appropriate social welfare function yield rates of return to the Senior Citizen Grant antipoverty transfer programmes in Uganda that go from negative rates of return under utilitarian assumptions, to positive, and large, rates of return under prioritarian assumptions. Social preferences for redistribution are therefore crucial to the valuation of the contribution of antipoverty transfers. Default utilitarian valuation significantly understates the contribution of antipoverty transfers to social welfare.

In addition, positive rates of return to the Senior Citizen Grant in Uganda require only weak preferences for redistribution, in fact well below the range of estimates from survey and experimental research. By estimating year-on-year returns, we also find that positive returns can be achieved also in the first years of the programs if aversion to inequality is high enough. With strong redistribution preferences, even short-term focused policy makers will have incentives to support antipoverty transfer programmes.

Third, the paper set out an approach to valuation that can be implemented in challenging conditions, pilot programmes, limited evaluation data and limited scale up.

The paper confirms that antipoverty transfers can show positive and significant rates of return once redistribution preferences are considered. By estimating year-on-year values, we also show that positive rates of return can be achieved after just few years. This is crucial in the context of the political economy of antipoverty transfers, including the priority given to economic growth and the short-term political focus. Further research is needed to improve the precision of estimates of redistribution preferences in low- and middle-income countries and to assess the validity of alternative functional forms used to estimate social welfare.

## CONFLICT OF INTEREST

None.

## ENDNOTES

- <sup>1</sup> One study on a transfer programme in Albania reports higher poverty among participating households, all other studies report lower poverty outcomes.
- <sup>2</sup> ‘... in the CCT [conditional cash transfers. Author] context ...if one wants to adopt equal weights [the utilitarian approach. Author] then one cannot really evaluate a cash transfer programme in the sense that a CBA [cost benefit analysis. Author] will always find most of the design features of such programmes to be contributing negatively to social welfare’ Brent (2013, p. 175).
- <sup>3</sup> Individualistic because only the welfare of the individuals in society counts so that if  $y_i^A > y_i^B$  in social state A and social state B, then  $W^A > W^B$ ; and impartial because social welfare does not depend on a particular assignment of labels to the individuals in society, so that  $W(y_1, y_2, \dots, y_n) = W(y_n, y_2, \dots, y_1)$  (Cowell & Gardiner, 1999).
- <sup>4</sup> Aversion to risk also implies  $\partial^2 V_i / \partial y_i^2 \leq 0$  with indirect utility being concave in the welfare measure. Fredrik Carlsson et al. (2005) provide separate estimates of aversion to risk and preferences for redistribution. (Kaplow, 2010, p. 39) examines the two components analytically. He finds that “concavity of the underlying social welfare function remains significant at low levels of income” (p.39).
- <sup>5</sup> Distributional welfare weights are a core component in the analysis of economic projects (Squire & Van der Tak, 1975). In high-income countries with substantive progressive income taxation a strand in the literature argues welfare weights are unnecessary (Kaplow, 2004).
- <sup>6</sup> The literature points out to additional methodologies to estimate inequality aversion, which are not optimal in the case of Uganda due to data constraints. First, it might be possible to establish social inequality aversion by working backwards from existing policies that are assumed to reflect distributive preferences, such as national taxation systems. This is the *policy revealed preference approach* (Bargain et al., 2011; Bourguignon & Spadaro, 2012). Second, in the context of optimal taxation, (Saez & Stantcheva, 2016) argue that distributional objectives can be modelled directly, without the need for

social welfare functions. This is the *generalised social marginal welfare weights approach*. Third, Bångman (2006) discusses a further approach to estimating preferences for redistribution, the one-person-one-vote approach. This is relevant to projects where prices take account of beneficiaries' differential resources. Finally, social inequality aversion could be specified *analytically* by working out the properties of  $\epsilon$  which could satisfy fairness axioms (Adler, 2012).

- <sup>7</sup> Two main reasons were advanced: (i) targeting and implementation proved complex for the VFG and (ii) beneficiaries had difficulties in understanding the targeting mechanism.
- <sup>8</sup> Consumption data is used throughout as in the income data in the survey was only available for a small proportion of the labour force.
- <sup>9</sup> In the simulation model, indirect effects accrue through human capital investments and returns to increased education in households of beneficiaries. Effects on adult health are not considered, which might result in underestimation of the indirect programme effects.
- <sup>10</sup> Dietrich et al. (2019) assumed a propensity to consume out of transfers of 80% and a discount rate of 10%. They find that the rate of return for the Senior Citizen Grant increases from  $-25.13$  in the first period to  $-21.34$  in the tenth period.
- <sup>11</sup> Attitudinal surveys provide limited information on this issue. The World Values Survey does not have an updated questionnaire for Uganda (the last was conducted in 2001). Afrobarometer survey contains the following questions 'In your opinion, what are the most important problems facing this country that government should address?', where inequality is one of the possible answers.
- <sup>12</sup> The rest of the literature in developing countries relies on ad hoc choice of redistribution parameters. Alderman et al. (2019) adopt a parameter of 0.7, while Brent (2013) adopts a parameter of 1. These ad hoc redistribution parameters are above the upper bound of our estimates.
- <sup>13</sup> As specified in Section 2, the focus of our analysis is welfare and not income. We define utilitarianism as a social welfare function that is the sum of the welfare of all single individuals; on the other hand, for prioritarianism social welfare considers inequality aversion (see Equation 4). With few exceptions we mention in the paper (pages 3 and 6), the applied work on transfer programme evaluation does not consider utilitarianism so defined.

## DATA AVAILABILITY STATEMENT

Data available on request from the authors.

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