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Abstract

The paper investigates the structure and dynamics of consumption inequality and inequality of opportunity in Tanzania. The analysis covers the period 2001 to 2012. It reveals moderate and declining levels of consumption inequality at the national level, but increasing inequalities between geographic regions. Spatial inequalities are mainly driven by the disparities of households' characteristics and endowments across geographic locations.

An important part of these endowments results from intergenerational transmission of parental background. Father's education appears as the most important background variable affecting consumption and income in Tanzania. Without appropriate policy actions, there are few chances for the next generations to spring out of the poverty and inequality lived by their parents, engendering risks of poverty and inequality traps in the country.

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Inequality of Outcomes and Inequality of Opportunity in Tanzania

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I. Introduction

Tanzania is regarded as a model of economic performance in Sub-Saharan Africa, with remarkable economic growth and strong resilience to external shocks. Yet these achievements have been overshadowed by the sluggish response of poverty to the growing economy. Despite stable GDP growth at an annualized rate of approximately 7 percent for over a decade, the poverty rate has remained stagnant at around 33 percent until 2007 and started declining, albeit at a slow pace, attaining 28.2 percent in 2012. This apparent disconnect between growth and poverty reduction has raised concerns among researchers and policy makers, and spurred increased attention toward improving the participation of the poor in the growth process and enhancing more inclusive growth.

The poor appear to have shared little in the gains from Tanzania's growth and their prospects of escaping poverty seem to be hindered by high inequality. The current National Strategy for Growth and Reduction of Poverty in Tanzania has given high priority to accelerating poverty reduction and promoting growth with equity. This strategy is in line with the twin goals of ending extreme poverty and boosting shared prosperity by 2030 that are heading The World Bank's development agenda.

These goals cannot be achieved through stand-alone policy approaches, but rather through a multifaceted and cohesive reform agenda that involves the active participation of different sectors beyond the state and government. However, addressing inequality for the present and future generations has been identified as a critical step for promoting prosperity and inclusiveness.³

Inequality is no longer considered as an ineluctable precondition for growth, but a double blow to prospects for reducing poverty, entailing less economic growth and less pro-poor growth.⁴ The welfare cost of inequality is likely to be even higher in relation to inter-group inequalities, which lead to intergenerational transmission of inequities and self-perpetuation of poverty, driving social tensions and conflicts (Stewart and Langer, 2007; Kabeer, 2010). Rural-urban divide, in particular, may induce social and economic instability and could undermine popular support for reforms toward market-oriented and private sector-led economy, obstructing the process of economic transformation and development.

³ See <http://www.worldbank.org/content/dam/Worldbank/document/WB-goals2013.pdf>

⁴ See (Ravallion, 1997; Chambers and Krause, 2010; UNDP, 2013) among others.

The concerns for equity and social justice are generally about inequality of outcomes, with social inequalities often measured by examining the degree of income or consumption inequality. However, inequality of outcomes is viewed as a combination of inequality of effort and inequality of opportunity, and strategies for directly equalizing outcomes may come at the cost of weakening incentives for individual effort, investment, and innovation.

The equality of opportunity view is based on the distinction between circumstances that are beyond the individual's control and effort. Inequality of opportunity stemming from disparities in circumstances, such as gender, family background, and place of birth, is widely considered unfair and deserving of attention from policy makers. Constraints on access to basic services and resources perpetuate the lack of capabilities and opportunities for large parts of society (Roemer, 1998; Bourguignon, Ferreira, and Walton 2007; Elbers et al., 2008; Roemer, 2013). Such disparities in opportunity may discourage effort by individuals and lead to wasted productive potential.

Overall, this suggests that greater attention should be paid to the role played by factors for which individuals should not be held responsible in addressing welfare disparity. But equalizing opportunities can be constrained by high inequality of outcomes, which reduce the incentives to intergenerational mobility (Hassler et al., 2000; Solon, 2004).⁵ Thus, given the importance of inequality of outcomes and inequality of opportunity for poverty reduction and inclusive development, this paper attempts to analyze the extent and evolution of these inequalities in Tanzania.

First, it will examine the structure and dynamics of inequality of outcomes, measured by consumption inequality, using data from Tanzania Household Budget Surveys for 2001, 2007 and 2012. The study combines a descriptive analysis of inequality with an empirical investigation of the sources of urban-rural and regional disparities. The latter uses the Recentered Influence Function (RIF) regression approach proposed by Firpo, Fortin, and Lemieux (2009) to examine the sources of urban-rural, and metropolitan-nonmetropolitan, inequalities. More specifically, it explores how the disparities in the distribution of household characteristics and in the returns to these characteristics contribute to inequality across locations. This would shed light on the role of development policies in shaping the patterns of inequality within the country.

⁵ Some authors suggest that higher income inequality could lead to higher intergenerational mobility and therefore lower inequality of opportunity (Checchi *et al.*, 1999). See also Lefranc *et al.* (2008) for a discussion of this point.

Second, the paper assesses the degree of opportunity inequality in consumption and income inequality, drawing on data from Tanzania National Panel Surveys for 2008, 2010 and 2012. These are among the few surveys in the Africa region with information on family background. The analysis of inequality of opportunity in Tanzania can improve understanding of the economic mechanisms underpinning inequality and thus inform public actions to compensate for circumstances based on disadvantages, reduce poverty and inequality traps, and foster growth with equity.

To the best of our knowledge, this is the first paper providing a detailed analysis of inequality of outcomes and opportunity for an African country.

The study reveals moderate and relatively stable levels of inequality of outcomes, with the consumption-based Gini declining from 38.8 in 2001 to 35.8 in 2012. These levels are lower than average inequality in Sub-Saharan Africa, which had a Gini estimated at 45.1 for 2010 (Africa's Pulse, 2013). However, the analysis of the structure of inequality indicates a significant increase of inequality between urban and rural areas as well as between Dar es Salaam and the rest of the country. The differences in living standards between urban and rural sectors appear to be mainly driven by the better endowment of urban households of marketable characteristics compared to their rural counterparts. The results show that inequality between the wealthiest urban and rural households is larger and increasing compared to inequality between poor urban and rural households.

Urban households at upper living standards have been able to increase their welfare more rapidly than their rural counterparts because they are more educated and have better demographic structure, and thus were better able to benefit from the economic growth.

The consumption gap between Dar es Salaam and the rest of the country is also mainly explained by the fact that households in Dar es Salaam have superior characteristics. Inequality between both areas increased across the various quantiles of the consumption distribution, but more importantly at the highest tail. The results indicate that better-off households in Dar es Salaam have become richer because markets in Dar es Salaam offer better rewards for their attributes, but most importantly because their education, employment opportunities and family structure improved considerably compared to their counterparts in the rest of the country.

The findings show that the development policies in Tanzania contributed to improving education and employment opportunities for poor households in the rural sectors and outside Dar es Salaam, but the markets in their areas of residence could not offer them the returns they would have obtained in the urban and more developed zones.

The results of the analysis of inequality of opportunity reveal that around one-fourth of total inequality is attributable to circumstances that are beyond Tanzanian people's control. These are lower bound estimates of the true share of opportunity inequality that would likely be much higher if data for more circumstance variables were available. Inequality in Tanzania seems to a large extent to be the result of intergenerational transmission of low parental education, mainly father's education.

Inequality of opportunity appears to be higher in urban than in rural areas, suggesting that family background has greater influence on households and individuals with higher levels of education and engaged in more diversified occupations and jobs as is the case in urban sectors.

The rest of the paper is organized as follows: section II presents the analysis of inequality of outcomes and examines the evolution and structure of consumption inequality. Section III focuses on spatial inequality and investigates the sources of urban-rural and metropolitan-nonmetropolitan inequalities. Section IV explores the extent of the contribution of inequality of opportunity to income and consumption inequalities and section V concludes.

II. Inequality of Outcomes: *Dynamics and Structure of Consumption Inequality*

This section analyzes the extent and structure of inequality in the distribution of consumption expenditures. It draws on data from Tanzania Budget Household Surveys for 2001, 2007 and 2012, and uses a descriptive analysis to examine the trends and structure of inequality as it relates to the nature of the households in Tanzania.

Inequality is measured based on real monthly household per capita consumption expenditures adjusted for spatial and temporal variations in the cost of living.⁶ We chose the Gini coefficient as indicator of inequality, complemented by the ratio of consumption of the top and bottom deciles (P90/P10) as well as the consumption shares of the different population quintiles.

⁶The consumption aggregate includes expenditures on both food and nonfood items and excludes both rental housing and durable goods expenses. The aggregate is constructed following the methodology suggested by Deaton and Zaidi (2002). The adjustment for price variations across regions and over time is done using Fisher index of unit values from the surveys.

The Gini indicator is the most commonly used measure of inequality and is attractive because it facilitates comparison across countries.⁷ However, this indicator does not allow us to capture the changes that may occur in different parts of the welfare distribution, as redistribution from the middle to the poor class may be associated with the same change in the indicator as an increase in the share of consumption of the middle class at the expense of the top quintile. Information on consumption shares by population quintiles helps us to overcome this shortcoming and uncover potential movements in the consumption or income received by individual groups. The Gini and share data can helpfully complement each other for the analysis of the dynamics of inequality.

The results are presented in Figure 1 and reveal three main findings. First, Tanzania appears to have a moderately high level of inequality by international standards, but a lower level of inequality than in Sub-Saharan Africa. The Gini coefficient is estimated at 35.8 in 2012, below the Sub-Saharan Africa average of 45.1.⁸ In East Africa, Tanzania's Gini coefficient is below that of Kenya, Uganda and Rwanda, and is only slightly higher than Ethiopia, which has a Gini coefficient of 34. It is on par with levels of inequality in countries in South East Asia such as Indonesia, Thailand and Vietnam, and has significantly lower levels of inequality when compared to parts of South America, such as Mexico, Bolivia and Brazil, where levels of inequality range from 47 – 55.⁹

Second, inequality in Tanzania shows a slightly decreasing trend over time. As illustrated in Figure 1, the Gini coefficient decreased from 38.8 to 35.8 between 2001 and 2012. Third, Dar es Salaam and the other urban areas display more unequal distributions of real per capita consumption than the rural zones. The Gini coefficients for Dar es Salaam, other urban areas, and rural areas were, respectively, 36, 38 and 30 in 2012. The changing shape of the Lorenz curves, in Figure 1, indicates an improving distribution of welfare (consumption) over the last decade in all the regions, with the most substantial improvement occurring in the rural areas. Much of the reduction in inequality seems to be driven by an increase in the welfare share accruing to the poorest segment of the population which grew by more than 16 percent between 2001 and 2012, except in the urban sectors other than Dar es Salaam where it grew by only 11 percent.

⁷ The Gini coefficient is equal to twice the area between the Lorenz curve and the 45-degree line and is expressed as:

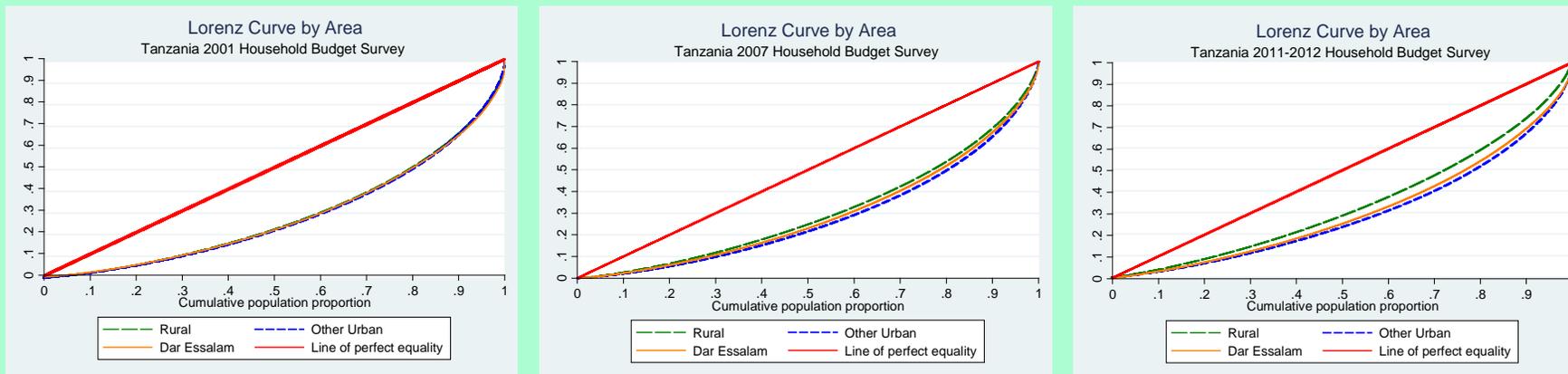
$$G = \frac{2}{\mu_x} \int_0^{\infty} F(x)f(x)dx - 1$$

, where μ_x is mean income/consumption and $f(x)=dF(x)/dx$ is the density function of income/consumption.

⁸ Africa's Pulse (2013).

⁹ World Development Indicators database. The GINI coefficient for Latin American countries is based on income which generally shows higher variability than consumption.

Figure 1: Lorenz Curve and Inequality Coefficients



	2001				2007				2012			
	Gini	p90/p10	Income Shares		Gini	p90/p10	Income Shares		Gini	p90/p10	Income Shares	
			Low. Quintile	Top Quintile			Low. Quintile	Top Quintile			Low. Quintile	Top Quintile
National	38.78	5.42	6.52	45.88	38.50	5.18	6.62	45.72	35.84	4.39	7.73	44.07
Rural	37.23	5.08	6.83	44.55	35.54	4.66	7.26	43.33	29.86	3.53	8.98	39.06
Other Urban	38.80	5.69	6.27	45.49	39.96	5.96	5.98	46.58	38.14	4.92	6.96	45.65
Dar es Salaam	39.77	5.60	6.44	46.55	40.12	5.60	6.44	47.26	36.04	4.36	7.74	44.40

Source: Household Budget Surveys (HBS) for 2001, 2007 and 2011/12

However, this positive picture of equalization of real per capita consumption distribution patterns in Tanzania may hide persisting and widening between-group inequalities and regional disparities. It is interesting, thus, to examine the structure of inequality and to explore how the differences in households' characteristics affect the level of inequality over time. We focus on eight household attributes: the gender, age, educational attainment, activity status and sector of employment of the head; regional location; urban/rural status; and demographic composition of the household.

The gender of the household head is simply male or female. His age is split into five categories: (i) under 30, (ii) 30-39, (iii) 40-49, (iv) 50-59, and (v) 60+ years. The head's educational attainment is classified into six categories: (i) no education & illiterate; (ii) less than completed primary; (iii) completed primary; (iv) lower secondary; (v) upper secondary or equivalent; and (vi) university. Three groups are considered for the head's activity status: (i) employed; (ii) unemployed; and (iii) inactive, disabled or retired. The employment sector comprises six categories: (i) government; (ii) private sector, NGOs and international companies; (iii) self-employed with others; (iv) self-employed alone; (v) household duties; and (vi) unemployed & inactive. The regional locations are the 21 regions in the HBS surveys.¹⁰ Households are also grouped into five categories by the demographic types: (i) "single parent with no kids", (ii) "single parent with kids", (iii) "couple with no kids"; (iv) "couple with kids", and (v) "families of elderly whose head is aged 65 years old or above".

We measure the amount of inequality explained by these sets of characteristics following the conventional decomposition method of Cowell and Jenkins (1995). As the most commonly decomposed measures in the inequality literature come from the General Entropy class, we use the mean log deviation (Theil_L) and the Theil_T indices in per capita monthly total consumption expenditure to identify the share of inequality explained by the between-group differences in the attributes listed above, which is denoted by R_B .¹¹

¹⁰ The high number of regions (low number of observations in each group) may induce biases in the between groups inequality estimates. However, even when the regions are grouped into five main zones, a similar trend of sharply increasing interregional inequalities over the last ten years is observed.

¹¹ The mean log deviation (Theil_L or GE(0)) and the Theil_T (or GE(1)) allow total inequality to be decomposed into: between groups inequality defined, respectively, for GE(0) and GE(1) by:

$$I_{Betw} = \left[\sum_{j=1}^k f_j \log \left(\frac{\mu_x}{\mu_{x_j}} \right) \right] \quad I_{Betw} = \left[\sum_{j=1}^k f_j \left(\frac{\mu_{x_j}}{\mu} \right) \log \left(\frac{\mu_{x_j}}{\mu} \right) \right]$$

and within groups inequality: $I_{Within} = \sum_{j=1}^k f_j GE_0^j$ $I_{Within} = \sum_{j=1}^k v_j GE_1^j$

with $GE = I_{Betw} + I_{Within}$; f_j : the population share, μ_{x_j} : mean consumption of subgroup j , μ_x : total mean consumption, x_i : per capita consumption of household i , v_j : the consumption share, and GE^j the Theil index of subgroup j . The amount of inequality explained by households attributes (or group of attributes) is measured by $R_B = I_{Betw}/GE$.

The shares of inequality explained by the between-group differences in household attributes are displayed in Table 1. The results indicate that over 20 percent of total real per capita consumption inequality in 2012 can be accounted for by inequality between six groups of households sorted by the educational attainment of the head. As expected, mean consumption levels of the different educational groups increase with the education of the household head, and more than double when the education of the head is above completed primary. There are also substantial differences in average consumption levels between household groups headed by university graduates and those headed by secondary graduates.

Differences between education groups seems to be increasing over time, the share of inequality attributable to the household head's education in both Theil_L and Teil_T is around 6 percentage points higher in 2012 than in 2007 and more than doubled since 2001. This increase is mainly driven by the widening disparities between household groups whose head has less than completed primary

	2001		2007		2012	
	Share of inequality explained by (%)		Share of inequality explained by (%)		Share of inequality explained by (%)	
	<i>Theil-L</i>	<i>Theil-T</i>	<i>Theil-L</i>	<i>Theil-T</i>	<i>Theil-L</i>	<i>Theil-T</i>
Education Head	9.94*** (0.021)	10.20*** (0.028)	14.70*** (0.010)	15.40*** (0.012)	20.80*** (0.015)	21.10*** (0.014)
Gender Head	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.001 (0.001)	0.001 (0.001)
Age Head	1.99*** (0.006)	1.73*** (0.005)	1.19*** (0.003)	1.04*** (0.003)	1.32*** (0.003)	1.08*** (0.003)
Activity Status Head	0.751 (0.014)	0.700 (0.016)	0.48** (0.002)	0.39** (0.001)	0.32* (0.001)	0.25* (0.001)
Employment Sector Head	9.87*** (0.013)	9.13*** (0.011)	12.60*** (0.010)	12.10*** (0.010)	13.70*** (0.010)	12.60*** (0.009)
Family Type	12.10*** (0.018)	13.00*** (0.021)	10.50*** (0.008)	11.20*** (0.009)	10.60*** (0.008)	10.30*** (0.009)
Urban/Rural Status	5.76*** (0.009)	5.39*** (0.010)	8.69*** (0.007)	8.27*** (0.007)	19.10*** (0.012)	17.40*** (0.012)
Regional Location	6.79*** (0.012)	6.03*** (0.010)	11.50*** (0.010)	10.50*** (0.009)	18.40*** (0.011)	16.60*** (0.011)

Source: Household Budget Surveys (HBS) for 2001, 2007 and 2011/12
 * Significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. Numbers in parentheses are bootstrap standard deviations based on 100 replications.

education level and those whose head is illiterate as well as by the more than proportionate expansion of the mean consumption level of tertiary educated groups relative to the other groups. Families headed by university graduates seem to have been able to benefit from economic growth more than the other households.

Even though consumption inequality remained relatively stable or slightly decreased over time, the gaps between urban and rural locations as well as between geographic regions have widened over time. Differences between urban and rural areas as well as disparities between geographic locations account for more than 17 percent of overall inequality in the most recent survey. The differences in average consumption levels between household groups living in urban zones and those located in rural areas are quite substantial.

The welfare gap between these groups has widened over time, increasing by over 9 percentage points between 2007 and 2012 and more than tripling since 2001. This increase is driven by the considerable expansion of the average consumption level of households in Dar es Salaam, which grew proportionately much more than average consumption of household groups in the other locations.

Interregional discrepancy in average real per capita consumption, already important at the beginning of the decade, is gaining importance over time and seems to have increased by more than 6 and 10 percentage points since 2007 and 2001, respectively. These widening disparities can be mainly explained by the uneven growth of the average consumptions of household groups across the different geographic locations, as consumption levels for households in the coastal, central and south zones appear to have increased proportionately more than for households in the northern and southern highlands.

There are quite important welfare disparities between sectors of employment groups. The share of total inequality attributable to the differences in the mean consumption of these sectors is around 13 percent. Household groups headed by government employees and private sector employees are much better off than groups with heads employed in the other sectors. Inequality between these groups slightly increased in 2012 due to a more than proportionate increase of the average consumption level of household groups headed by private sector employees relative to the other groups.

Differences in households' demographic composition account for a quite significant share of total inequality, amounting to around 11 percent. Households comprised of only adults all aged over 14 years old, whether single or couple, are much better off than the rest of household groups, while elderly households whose head is aged 65 years old or over seem to face severe hardships and have the lowest mean per capita consumption levels. The contribution of family composition to inequality seems to slightly decline over time.

The gender, age, and activity status of the household head have marginal explanatory powers barely exceeding 1 percent. Total consumption inequality is overwhelmingly a matter of inequality within these various household groups. The low share of gender in these decompositions can be explained by the low proportion of women headed households in the sample, which amounts to less than 20 percent, and the particular status of women who head their own households, as most are widowed running their own agricultural business or benefitting from remittances from family abroad.

Despite the moderate level of inequality in Tanzania, the pronounced and increasing regional disparities and the rural–urban divide are worrisome, as they undermine inclusive growth prospects and may jeopardize economic and social stability. The decomposition in Table 1, while informative regarding the role played by certain household attributes, gives little information regarding the importance of interregional and urban–rural welfare gaps across the various quantiles of the distribution and about the sources of these gaps.

The next section attempts to address this drawback by analyzing the difference in the distribution of consumption expenditures between geographic locations, and by examining the contribution of households' characteristics to the gaps at different points of the welfare distribution.

III. The Sources of Spatial Inequalities

This section analyzes the sources of inequality between rural and urban areas as well as between Dar es Salaam (metropolitan) and the rest of the country (non-metropolitan). It applies the unconditional quantile regression method to understand how the differences in the distributions of observed household characteristics between the locations contribute to the welfare gap and how the marginal effects of these characteristics vary across the entire distribution. The method allows us to identify the contributions of: (a) differences of household characteristics (*endowment effects*); and, (b) disparities of returns to these characteristics (*returns effect*) to inequality.

Popular approaches used in the decomposition of distributional statistics and the analysis of the sources of inequality include the standard Oaxaca–Blinder decomposition method, the reweighting procedure of DiNardo, Fortin, and Lemieux (1996) and the quantile-based decomposition approach of Machado and Mata (2005). The main drawback of the Oaxaca–Blinder technique is that it applies the decomposition to only the mean welfare differences between two population sub-groups and yields an incomplete representation of the inequality sources. The other conventional methods extend the decomposition beyond the mean and permit the analysis of the entire distribution. Nevertheless they all share the same shortcoming in that they involve a number of assumptions and computational difficulties (Fortin *et al.*, 2010).

The Recentered Influence Function (RIF) regression approach recently proposed by Firpo, Fortin and Lemieux (2009) addresses these shortcomings and provides a simple regression-based procedure for performing a detailed decomposition of different distributional statistics such as quantiles, variance and Gini coefficient. The RIF-regression model is called unconditional quantile regression when applied to the quantiles. The technique consists of decomposing the welfare gaps at various quantiles of the unconditional

distribution into differences in households' endowment characteristics such as education, age, employment etc., and differences in the returns to these characteristics. These components are then further decomposed to identify the specific attributes which contribute to the widening welfare gap.

We apply the RIF unconditional quantile regression to examine the rural-urban as well as the metropolitan-nonmetropolitan welfare differentials at various points of the consumption distribution. The procedure is carried out in two stages. The first stage consists of estimating unconditional quantile regressions on log real per capita monthly household consumption for rural and urban (metropolitan and non-metropolitan) households, then constructing a counterfactual distribution that would prevail if rural (non-metropolitan) households have received the returns that pertained to urban (metropolitan) area. The comparison of the counterfactual and empirical distributions allows us to estimate the part of the welfare gap attributable to households characteristics differentials, the *endowment effect*, and the part explained by differences in returns to those characteristics, the *return effect*. The second stage involves dividing the *endowment* and *return* components into the contribution of each specific characteristic variable.

The method can be easily implemented as a standard linear regression, and an ordinary least squares (OLS) regression of the following form can be estimated:

$$RIF(y, Q_\theta) = X\beta + \varepsilon \quad (1)$$

where y is log real per capita monthly household consumption, and $RIF(y, Q_\theta)$ is the RIF of the θ^{th} quantile of y estimated by computing the sample quantile Q_θ and estimating the density of y at that point by kernel method:

$RIF(y, Q_\theta) = Q_\theta + (\theta - I\{y \leq Q_\theta\}) / f_Y(Q_\theta)$, f_Y is the marginal density function of y and I is an indicator function. RIF can be estimated by replacing Q_θ by θ^{th} sample quantile and estimating f_Y by kernel density.¹²

X is the regressors matrix including the intercept, β is the regression coefficient vector and ε is the error term. The regressors include seven groups of variables: (1) the household demographic and general characteristics variables including household size, the proportion of household members aged below 14 years and the proportion of those aged over 65 years, and the gender of the household head; (2) the household human capital measured by the number of years of schooling of the more highly educated of the

¹² For more details see Firpo, Fortin and Lemieux (2009).

head or his spouse, and the head's years of experience.¹³ The choice of the years of schooling variable is motivated by capturing the influence that family members with more education may have in household decision making; (3) the household head employment sector and other attributes, which include a dummy variable indicating whether the head is over 65 years old, his marital status, and his sector of employment recoded as a categorical variable: (i) government; (ii) private sector, NGOs and international companies; (iii) self-employed with others; (iv) self-employed alone; (v) household duties; (vi) farming and fishing; and (vii) unemployed & inactive; (4) asset ownership including the area of land owned, rented and provided for free; dummy variables indicating respectively whether the household owns livestock, bicycle, cell phone, telephone, computer; and dummies capturing the housing conditions; (5) the sources of income, captured by categorical variables indicating the main source of income of the household and including: (i) cash and in-kind income from employment; (ii) income from non-agricultural household business; (iii) income from agricultural household business; (iv) transfers/assistance/remittances; and (v) other sources; (6) access to basic services measured by categorical variables indicating the sources of lighting and of drinking water; (7) external factors to the household capturing the community characteristics such as access to transportation, schooling and hospital facilities as well as geographic location fixed effects. It is worth mentioning that the 2012 household surveys includes observations on migration status and access to drinking water that are absent in the previous surveys, and that the categories of sector of employment and source of income variables differ somewhat in 2012 data. However, the results remain consistent to different specifications, whether considering the same variables and categories across the three waves or using the more detailed information available in the latest survey.

We estimate model (1) for the 10th to 90th quantiles and use the unconditional quantile regression estimates to decompose the rural-urban inequality, as well as the metropolitan-nonmetropolitan, inequality into a component attributable to differences in the distribution of characteristics and a component due to differences in the distribution of returns as follows:

$$\hat{Q}_\theta^i - \hat{Q}_\theta^{i'} = \{\hat{Q}_\theta^i - \hat{Q}_\theta^*\} + \{\hat{Q}_\theta^* - \hat{Q}_\theta^{i'}\} = (\bar{X}^i - \bar{X}^{i'})\hat{\beta}_\theta^i + \bar{X}^{i'}(\hat{\beta}_\theta^i - \hat{\beta}_\theta^{i'}) \quad (2)$$

where \hat{Q}_θ is the θ^{th} unconditional quantile of log real per capita monthly household consumption, \bar{X} represents the vector of covariate averages and $\hat{\beta}_\theta$ the estimate of the unconditional quantile partial effect. Superscripts i , i' and $*$ designate, respectively, the urban (or metropolitan), rural (or nonmetropolitan) and counterfactual values.

¹³ The squared schooling years and the squared experience were not significant in any equation, thus we excluded them.

$\hat{Q}_\theta^* = X^{i'} \hat{\beta}^i$ is the counterfactual quantile of the unconditional counterfactual distribution which represents the distribution of welfare that would have prevailed for group i' (rural/non-metropolitan households) if they have received group i (urban/metropolitan households) returns to their characteristics.¹⁴

The first term on the right-hand side of equation (2) represents the contribution of the differences in distributions of household characteristics to inequality at the θ^{th} unconditional quantile, denoted *endowment effect*. The second term of the right-hand side of the equation represents the inequality due to differences (or discrimination) in returns to the household characteristics at the θ^{th} unconditional quantile.

The *endowment* and *return* effects can be further decomposed into the contribution of individual specific household characteristics (or group of some characteristics) as follows:

$$\hat{Q}_\theta^i - \hat{Q}_\theta^* = \sum_k (\bar{X}_k^i - \bar{X}_k^{i'}) \hat{\beta}_{\theta,k}^i \quad \text{and} \quad \hat{Q}_\theta^* - \hat{Q}_\theta^{i'} = \sum_k \bar{X}_k^{i'} (\hat{\beta}_{\theta,k}^i - \hat{\beta}_{\theta,k}^{i'}) \quad k:1 \dots K \quad (3)$$

where k designates the individual specific household characteristics.

The following two subsections respectively discuss the decomposition results of the rural-urban gaps and the metropolitan-nonmetropolitan inequality.

A. Sources of Urban-Rural Inequality

The decomposition results of the rural-urban gaps are presented in Figure 2 and show that differences in households' endowments are the main sources of inequality between the two sectors. The contribution of the difference in households' endowments to the urban-rural gap, significantly dominates the contribution of returns across the entire distribution, indicating that urban households are better off because they have superior characteristics than their rural counterparts.

The results indicate that the gap between urban rich and rural rich households is larger than the gap between the urban poor and rural poor ones. The difference in real per capita consumption between richest urban and rural households is more than double of the difference between poorest urban and rural households (see bottom of Figure 2). This is mainly driven, in 2012, by higher endowment and returns effects at upper quantiles and, in 2001 and 2007, by significantly greater returns effects.

¹⁴ The decomposition results may vary with the choice of the counterfactual distribution. For example, if the counterfactual used is the distribution that would have prevailed for group i if they have received group i' returns we would obtain different results. The choice of the counterfactual in this analysis is motivated by the aim of emphasising household groups living in disadvantaged areas.

In the early and middle of the decade, the difference in household endowments matters more for the poorest segment of the population than for middle class and richest households. This reflects the huge gap that was subsisting between the urban and rural poor in terms of asset ownership, family composition, human capital and access to basic services. The difference between urban and rural areas in market returns to household characteristics does not appear to matter for poor household groups who are generally employed in sectors that pay slightly above the subsistence level. However, differences in the urban and rural distributions of returns to household characteristics matter at upper quantiles and particularly for the wealthiest. As apparent from Figure 2, the magnitude of the returns effects is increasing proportionately more than the magnitude of endowment effects at upper quantiles, showing that even though urban households have superior characteristics, the contribution to inequality of differences in market rewards of household attributes is gaining importance for most well-off households.

Rural households at the lower tail of the distribution have observed an improvement in their endowments over time and there are signs of convergence in household endowments between both sectors, even though returns differentials slightly increased over time. This suggests that the development policies implemented in Tanzania were appropriate to tackle some of the extreme rural poor problems such as combating illiteracy and promoting basic education, facilitating access to assets such as land etc., but did not adequately address the needs of better off rural households to help them catch up with their urban counterparts.

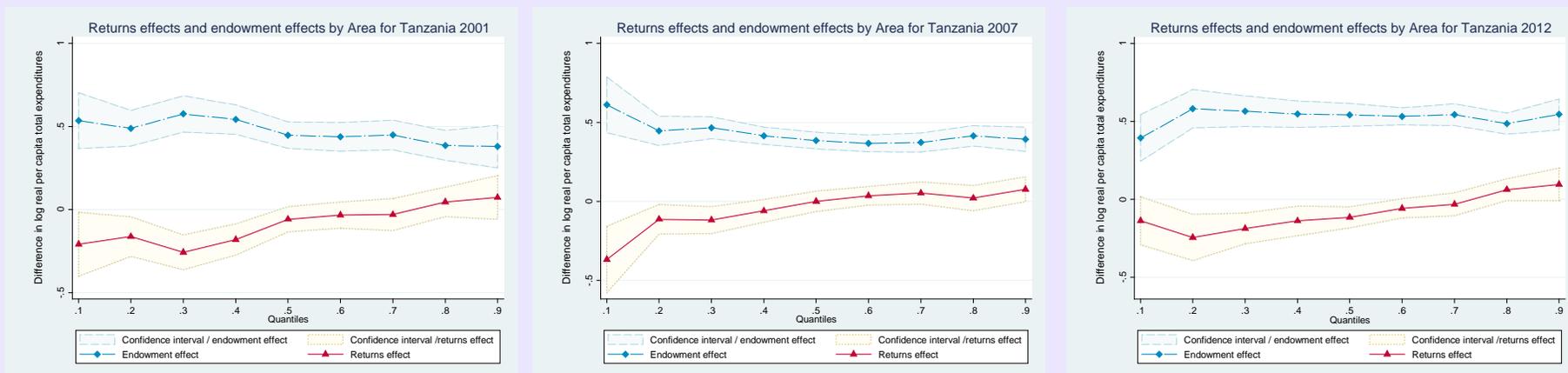
The analysis of the contribution of specific household characteristics to the urban-rural gap, in Table A.1 in Appendix A, reveals that differences in the distribution of household demographic characteristics and access to basic services, followed by differences in the sector of employment of the head matter the most for inequality between urban and rural households. In 2001 and 2007, differences in asset ownership, such as land, livestock, cell phones and transportation means, are found to significantly contribute to the welfare gap between urban and rural households particularly for less well-off segments of the population, but the difference in assets possession declined markedly over time mainly for the poor classes. These improvements have been largely offset by a widening gap in demographic structure and in access to basic services between urban and rural households. The effect of differentials in household human capital (measured by the highest number of years of schooling of the household head or his spouse and the experience of the head) have increased between 2001 and 2007 and then decreased in 2012 particularly for the poorest quantiles, while differences in the sector of employment of the head kept widening over time. This suggests that despite some improvements in the education level of rural households, the urban dwellers and particularly the richest ones have been more able to access to better job opportunities than their rural counterparts.

Differences in returns to assets and employment are also found to be among the dominant factors contributing to the rural-urban gap in returns to household characteristics. The difference in the returns to assets between urban and rural areas contributes more to inequality between the poor than to inequality between the rich, but it is narrowing over time for the poor while it is widening for the rich. The urban-rural differentials in returns to employment of the household's head have widened over time mainly driven by a more marked increase of returns to wage employment in public and private sector, and to a lesser extent to nonfarm businesses, in the urban areas.

The urban-rural gap in returns to human capital shows a marked increase (particularly at the upper quantiles) in 2007 and started declining since then. Even though urban markets continue to better reward education and experience than rural markets do, the gap seems to have narrowed down particularly for the poorest and richest segments of the population.

Poor households seem to have benefitted from the policies for basic education to catch up with their urban counterparts. However, they continue to suffer from limited access to basic services, large family sizes and large number of dependents. Middle class and well off rural households have slightly reduced their education gap with the urban ones, but have not been able to access better job opportunities nor obtain higher returns for their employments and assets. This points to the possibility that employment and profit opportunities are expanding and diversifying more in urban than in rural areas and to the fact that urban households who were initially better educated and enjoy higher assets than the rural ones have been more able to take advantage of these opportunities to improve their endowments and leverage their returns.

Figure 2: Unconditional Quantile Decomposition of Urban-Rural Inequality of Real Monthly per Capita Consumption



	2001			2007			2011/12		
	Lowest percentile	Middle percentile	Top percentile	Lowest percentile	Middle percentile	Top percentile	Lowest percentile	Middle percentile	Top percentile
Total Gap	0.327 (0.016)	0.390 (0.010)	0.452 (0.020)	0.243 (0.026)	0.385 (0.015)	0.470 (0.025)	0.257 (0.017)	0.427 (0.014)	0.641 (0.025)
Endowments	0.535 (0.021)	0.448 (0.014)	0.379 (0.025)	0.600 (0.033)	0.384 (0.017)	0.393 (0.030)	0.394 (0.025)	0.543 (0.019)	0.545 (0.037)
Returns	-0.208 (0.025)	-0.058 (0.016)	0.073 (0.030)	-0.357 (0.039)	0.001 (0.020)	0.077 (0.037)	-0.138 (0.029)	-0.115 (0.021)	0.096 (0.041)

Source: Household Budget Surveys (HBS) for 2001, 2007 and 2011/12
 Numbers in parentheses are bootstrap standard deviations based on 100 replications.

B. Sources of Inequality between Dar es Salaam and the other regions

Figure 3 displays the results of the decomposition of the consumption gap between metropolitan and nonmetropolitan regions. It shows that inequality between Dar es Salaam and the rest of the regions is increasing because households' endowments are improving faster in the metropolitan city. Improvements in households' endowments in Dar es Salaam outpaced the improvements in the rest of country, driven by widening differences in family structures and access to education and employment opportunities between the two sectors. As revealed by Figure 3, the gap in endowments between households living in Dar es Salaam and those living in the rest of the country is larger and increasing faster than the gap in returns, particularly for households at upper quantiles. In the early of the decade metropolitan households were better off than their nonmetropolitan counterparts because markets in Dar es Salaam pay more for their attributes than markets in other regions would. However, in 2012 the endowments in human capital, employment, and family structure improved considerably in the metropolitan city compared to the other regions, inducing larger interregional inequalities, particularly among better off households.

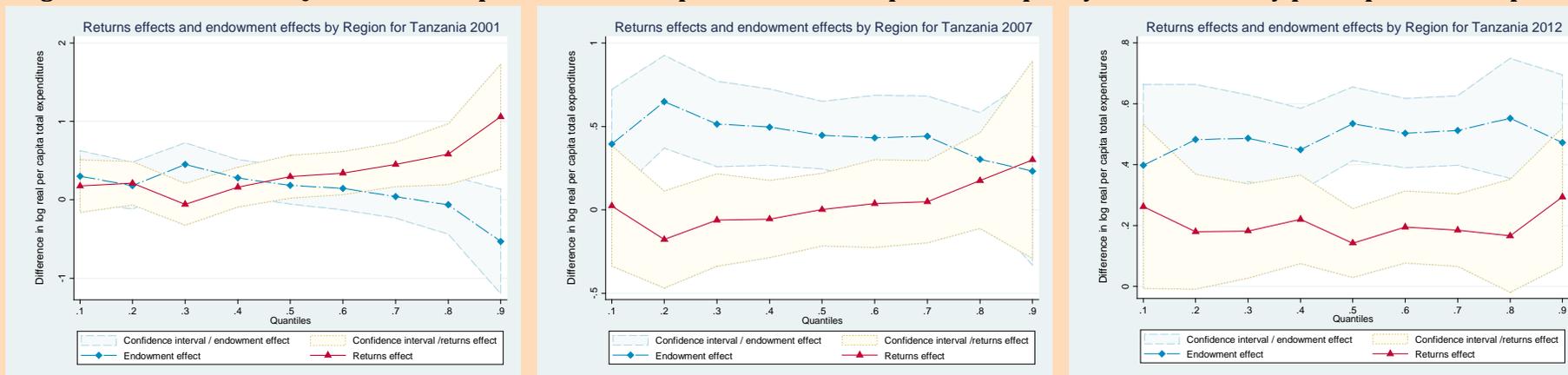
The education and employment opportunities improved for poor households outside Dar es Salaam, but the markets in their areas of residence could not offer them the returns they would have obtained in Metropolitan capital city. Inequality in endowments between Dar es Salaam and the rest of the regions increased proportionately more for middle class and richest households, while inequality in returns increased more for the poor. This is due to the faster increase over time of returns to the endowments of poor households in Dar es Salaam (Table A.2 in Appendix A). It appears, therefore, that even though education and employment opportunities improved for poor households outside Dar es Salaam, they could not be offered returns equivalent to those in the metropolitan city.

The differences in the distribution of household demographic characteristics and human capital endowments between the geographic locations and the unequal access to private assets and productive employments limited the ability of the poor to take up the opportunities generated by economic growth and to improve their living standards. Households in Dar es Salaam and in urban areas who enjoy higher endowments, have been able to benefit more from the important growth in Tanzania and have seen a larger expansion in returns to their attributes. This, combined with the widening differences in characteristics, contributed to increasing interregional inequalities and self-perpetuating poverty in some regions, mainly rural areas.

Efforts to promote education, family planning and access to basic services and assets should be further enhanced to improve the endowments of marketable characteristic for households at the lower end of the income/consumption distribution. These efforts need to be accompanied, on the one

hand by policies targeting rural and nonmetropolitan households at upper quantiles to help them catch up with their urban and metropolitan counterparts, and on the other hand by policies to promote local economies development and dynamism and expand productive activities in order to increase the returns to endowments in the less favored regions.

Figure 3: Unconditional Quantile Decomposition of Metropolitan-Nonmetropolitan Inequality in Real Monthly per Capita Consumption



	2001			2007			2011/12		
	Lowest percentile	Middle percentile	Top percentile	Lowest percentile	Middle percentile	Top percentile	Lowest percentile	Middle percentile	Top percentile
Total Gap	0.478 (0.026)	0.480 (0.026)	0.529 (0.040)	0.420 (0.025)	0.450 (0.016)	0.533 (0.030)	0.661 (0.017)	0.677 (0.015)	0.767 (0.028)
Endowments	0.302 (0.158)	0.185 (0.150)	-0.531 (0.232)	0.396 (0.104)	0.448 (0.062)	0.232 (0.168)	0.398 (0.066)	0.535 (0.053)	0.473 (0.104)
Returns	0.175 (0.160)	0.295 (0.151)	1.06 (0.234)	0.024 (0.105)	0.002 (0.063)	0.301 (0.170)	0.263 (0.067)	0.143 (0.054)	0.294 (0.107)

Source: Household Budget Surveys (HBS) for 2001, 2007 and 2011/12
 Numbers in parentheses are bootstrap standard deviations based on 100 replications.

IV. Inequality of Opportunity

The previous section revealed an increase of inequality between population groups in Tanzania despite the signs of improving welfare distribution at the national level. These inter-group inequalities manifest themselves in unequal outcomes but also opportunities, and to the extent that inequality in opportunities is high it will perpetuate the lack of capabilities and waste of productive potential and will contribute to poverty and inequality persistence. Hence, development policies focusing on poverty alleviation and equity need to address inequality in both income/consumption and opportunity.

Inequality of opportunity is defined as the part of inequality stemming from circumstances, such as gender, family background, and place of birth that are beyond a person's control and is widely recognized to contribute to the persistence of social and economic inequalities and to constrain inclusive development. In the interests of equity, it is thus important to distinguish inequalities due to unequal opportunities from inequalities due to individual choices. Doing so could help identify policy measures and institutional arrangements that favor more egalitarian distribution of opportunities.

The analysis of the impact of household attributes on outcomes (consumption) inequality and of the contribution of these attributes to interregional inequalities indicates that spatial disparities in Tanzania are mainly due to the lack of capacities and endowments of households in the rural and disadvantaged regions. This section takes an intergenerational perspective and explores how the inherited endowments, that are independent of the individual's choices, contribute to inequality in Tanzania.

Drawing on data from the National Panel Surveys (NPS) for 2008, 2010, and 2012, we assess the extent to which unequal opportunity, resulting from the family and circumstances variables, affects the distribution of both consumption and income.

All survey waves include quite rich information at the household and individual levels on consumption and income, parental education, and family circumstances, and comprise a community module that collects detailed information on the characteristics of the commune where the households are located. This information is missing in the Household Budget Surveys which makes them unsuitable for the analysis of inequality of opportunity.

We use the parametric model proposed by Bourguignon, Ferreira, and Menéndez (2007) and estimate inequality of opportunity as the difference between observed total inequality and the inequality that would prevail if there were no differences in circumstances. Two different welfare

indicators are used for the measurement of total inequality: real monthly per capita consumption and real monthly per capita income. The focus on consumption and income is motivated by the desire to investigate the differentiated impact of the circumstances variables on different household welfare dimensions and to get a more comprehensive understanding of inequality of opportunity in Tanzania.

In addition to circumstances, we explore the contribution community characteristics to inequality, in order to assess the relative importance of characteristics such as accessibility to basic services and facilities, employment opportunities etc., compared to family background. This distinction is important from a policy perspective because the latter requires more complex and longer term strategies. The section starts by presenting the empirical model and data used for the analysis and the two following subsections present the estimation results for the consumption and income models respectively.

A. The Empirical Model and Data

The approach to estimate the degree of opportunity inequality associated with the distribution of both consumption and income is based on the framework of Bourguignon *et al.* (2007). The method is based on the separation of the determinants of household's outcome (consumption or income), y_i , into a set of circumstances variables, denoted by the vector C_i ; efforts variables, denoted by the vector E_i and unobserved factors, represented by v_i . The outcomes function can be specified as:

$$y_i = f(C_i, E_i, v_i) \quad i : 1 \dots N \quad (4)$$

The circumstances variables are economically exogenous since they are outside the individual's control but effort factors may be endogenous to circumstances as an individual's actions may be influenced by gender, parental background, etc.

Equality of opportunity occurs, in Roemer's (1998) sense, when outcomes are independently distributed from circumstances. This independence implies that circumstances have no direct causal effect on outcomes and no causal impact on efforts. The degree of opportunity inequality can therefore be determined by the extent to which the conditional distribution of outcomes on circumstances, $F(y/C)$, differs from $F(y)$.

Inequality of opportunity can be estimated as the difference between the observed total inequality in the distribution of consumption or income and inequality that would prevail if there were no differences in circumstances. Let $\tilde{F}(\tilde{y})$ be the counterfactual distribution of outcomes when circumstances are identical for all individuals. The opportunity share of inequality can be defined as:

$$\Theta_p^r = 1 - \frac{I(\tilde{F}(\tilde{y}))}{I(F(y))} \quad (5)$$

The first step for computing Θ_p consists on estimating a specific model of (4), which can be expressed in the following log-linear form:

$$\ln(y_i) = C_i\alpha + E_i\beta + v_i \quad (6)$$

$$E_i = AC_i + \varepsilon_i$$

where α and β are two vectors of coefficients, A is a matrix of coefficients specifying the effects of the circumstance variables on effort and ε_i is an error term. Model (6) can be expressed in reduced form as:

$$\ln(y_i) = C_i\delta + \eta_i \quad (7)$$

where $\delta = \alpha + \beta A$ and $\eta_i = v_i + \varepsilon_i\beta$.

Inequality of opportunity can be measured using equation (5) where the counterfactual distribution is obtained by replacing y_i with its estimated value, from equation (7), and which can be expressed as: $\tilde{y}_i = \exp(\bar{C}\hat{\delta} + \hat{\eta}_i)$. In this decomposition, the variation in \tilde{y}_i can be interpreted as the influence of effort because circumstances are set to be equal for all households, and inequality of opportunity is measured as a residual.

Inequality of opportunity can also be measured directly by eliminating the contribution of effort to outcomes, using the *smoothed* distribution, obtained from the predicted values of outcomes based on circumstances in equation(7) while ignoring the remaining variation in the residuals:

$$\tilde{z}_i = \exp(C_i\hat{\delta}) \quad (8)$$

The share of inequality of opportunity can thus be measured by:

$$\Theta_p^d = \frac{I(\tilde{F}(\tilde{z}))}{I(F(y))} \quad (9)$$

The subscripts d and r , in Θ_p , denote respectively that inequality of opportunity is estimated directly or residually by eliminating the contribution of effort or circumstances to outcomes. The direct and residual methods can yield different figures of opportunity inequality and the only inequality measure for which the two methods give the same results is the mean log deviation (*Theil_L*), which

has a path-independent decomposition when the arithmetic mean is used as the reference income or consumption (Foster and Shneyerov, 2000). By using the mean log deviation inequality index the residual and direct methods give the same opportunity inequality measures.

The parametric approach allows the estimation of the partial effects of one or some circumstance variables on outcomes, while controlling for the others, by simulating distributions such as:

$\tilde{y}_i^j = \exp(\bar{C}^j \hat{\delta}^j + C^{h \neq j} \hat{\delta}^{h \neq j} + \hat{\eta}_i)$, where $\tilde{F}(\tilde{y}^j)$ is the counterfactual outcomes distribution obtained by keeping circumstance C constant.

The inequality share specific to circumstance j can be computed residually by: $\Theta_p^j = 1 - \frac{I(\tilde{F}(\tilde{y}^j))}{I(F(y))}$.

The analysis uses data from the National Panel Surveys (NPS) of 2008, 2010 and 2012. The surveys were conducted on nationally representative samples of households, and methodology and data were selected to ensure comparability. All survey waves include rich information at the household and individual levels on consumption and income, parental education, and family circumstances. They include as well a community module that collects detailed information on the access to basic services and distance to population centers, the presence of local investment projects, infrastructure conditions, and demographic and family characteristics in the communities where the households are located.

Inequality of opportunity is derived from two outcomes: consumption and income. Household's consumption is measured as real monthly per capita consumption of food and non-durables and excludes expenses on housing and durable goods. Household income is measured as real monthly per capita income from all sources including cash and in-kind wages, income from agricultural and nonagricultural household businesses, crop sales, rental of properties, remittances, transfers and pensions.

The circumstances included are gender, age, mother's and father's education, age at which father and/or mother died, and region of birth. Parental education is coded into six categories (none, did not finish primary school, completed primary, did not finish secondary, completed secondary, above secondary). Parents' vital status are captured through dummies indicating whether the father and/or mother live with the household and dummies indicating whether the father and/or mother died before the household head attains the age of 15 years old. The region of birth includes the 26 regions of the survey. It would have been interesting to limit the place of birth to urban and rural sectors, but this information is not available in the survey. In order to check the possibility for biased results due

to the large categories in the place of birth, we estimated opportunity inequality grouping these variables into five main zones and obtained quite close results to those displayed here.

The study explores also the effects of community characteristics on inequality and compares its impact to that of family circumstances. Apart from family circumstances, community characteristics also impact on people's income prospects, and the disparity of infrastructure facilities and basic services across local communities contribute to the disparity of welfare in the country. However, community characteristics cannot be considered as being beyond adult individuals' control, assuming that they can migrate, influence public decisions etc., and therefore cannot be account for in the opportunity inequality share.

Policy actions to address the influence of family background on the distribution of welfare generally differ from actions to address the influence of community characteristics, the first being a longer term mission that is often more complex. Thus, from a policy perspective it is important to understand how family background and community characteristics affect individuals' income/consumption and to compare their effects on the distribution of welfare.

The community characteristics include distance to: head regional or district headquarters, government and private primary schools, government and private secondary schools, health centers, and markets, all recoded into four categories (within the village, outside at less than 5 km, outside between 5 and 10 km, and outside more than 10 km). The community characteristics include also variables on the presence of investment projects for construction and maintenance of schools, water irrigation provision and infrastructure development (including roads, health centers, markets etc.) all recoded into four categories (no projects, projects of less than 1M T Sh, projects between 1M and 10 M T Sh, and projects over 10 M T Sh). They also include the number of household that permanently migrated out of the village during the last 12 months to capture some of the family issues inside the village, the main sources of drinking water in the village, the main source of lighting as well as the type of toilet facilities.¹⁵

As with most samples, NPS surveys include missing observations that need to be treated with caution. The variables reporting on family background include quite a few missing values by individuals who sometimes cannot recall their parent's education correctly. While the percentage of missing observations barely exceeds 11 percent in each wave, dropping all households with missing data on these variables would disregard information available on the other variables, and would likely introduce bias because missing values are not completely random.

¹⁵ We also estimate the model including information on the education and occupation of the head of the village but the variables were not significant.

Dealing with missing values generated by nonresponse is a well-known problem in survey-based research (Dardanoni and Peracchi, 2011), more so in the biomedical literature than in economics. We follow the procedure suggested by Royston and White (2011) known as Multiple Imputations Chained Equations (implemented in STATA with the ICE command), in which multiple imputations of missing data are generated as new data sets, stacked, and then used in estimation.

This method is built on the so-called “missing at random” assumption, which means that “any systematic difference between the missing values and the observed values can be explained by differences in observed data”. This is a less stringent assumption than complete randomness, which is unlikely to fit the NPS data. For example, missing values of parental education are more likely to occur for less well-off and less educated households, which is non-random and explainable by observed values. Clearly, why an observation has missing values matters for how it is “filled in”, and the bias from a particular method may be worse than using the complete case data. The literature does not offer clear guidance on how to judge the size of this bias. Fortunately, the size of the estimates of inequality of opportunity change little when imputed values are added (compared to complete case estimates) and the main conclusions are consistent to the different methods of treating missing values.

Computing the opportunity share of earnings inequality for the entire country is important to the design of equal-opportunity policies, but it fails to capture the differential intensity of opportunity inequality across areas and population groups. Because heterogeneity in population composition across the urban and rural areas may distort the aggregate picture of inequality of opportunity, opportunity inequality indices are also computed for urban and rural subgroups.

Table B.1 in Appendix B presents descriptive statistics for selected circumstance variables used in the analysis. Consumption and income are higher in urban areas and are expanding over time, except a slight drop in income observed in the last survey. Father’s and mother’s education are significantly higher in urban areas. While the number of households with parents having completed primary education is expanding more in the rural areas, those with secondary school (or higher) graduates parents are expanding more in urban sectors.

The community characteristics variables indicate successful strategy for the promotion of primary education and to a lesser extent secondary education, apparent through the expansion of access to government and even private schools particularly in the rural zones. However, the efforts to facilitate access to health, water and electricity seem to be still slow. There seem also to be important initiatives to improve the infrastructure and facilitate access to schools, health centers and markets particularly in rural sectors. While the big investment projects (of over 10M) for building the

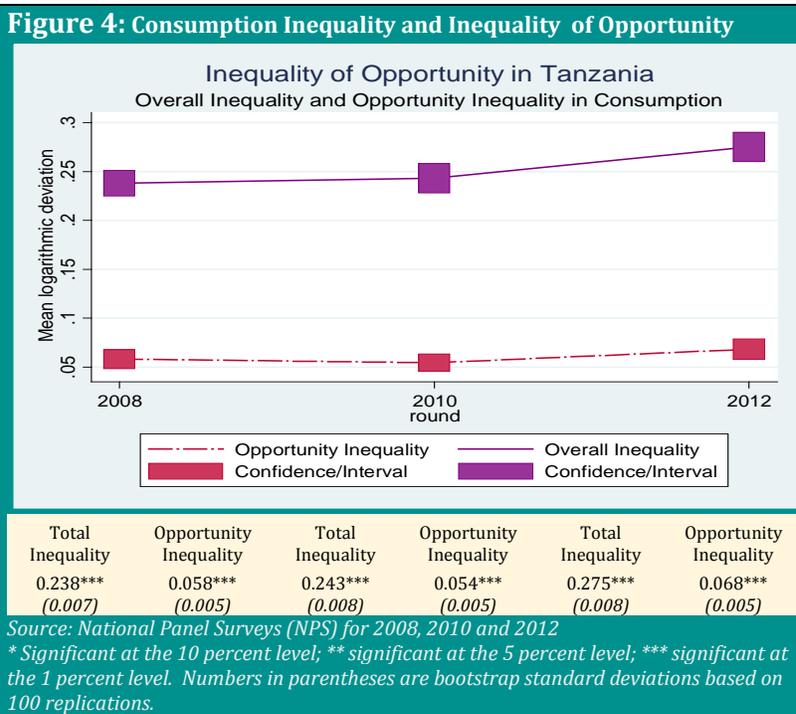
infrastructure are expanding over time, those for schools construction and maintenance seem to be declining.

B. Inequality of Opportunity of Household Consumption

Figure 4 reports the estimates of overall consumption inequality and of the degree of inequality of opportunity for household consumption, using the mean log deviation, Theil_L, index. The results show that inequality of opportunity levels range between 0.05 and 0.07 during 2008-12. This level is relatively high by international standards as it is two times higher than in Egypt and greater than inequality of opportunity levels in many Latin American countries.¹⁶

The degree of inequality of opportunity estimated here should be considered as a lower-bound estimate of the true level

of inequality of opportunity. Despite the relative richness of the circumstance variables in the datasets, many relevant circumstances, such as parental employment and occupation status, family wealth, quality of parents' education etc. remain unobserved. Adding more circumstance variables would increase the magnitude of inequality of opportunity.

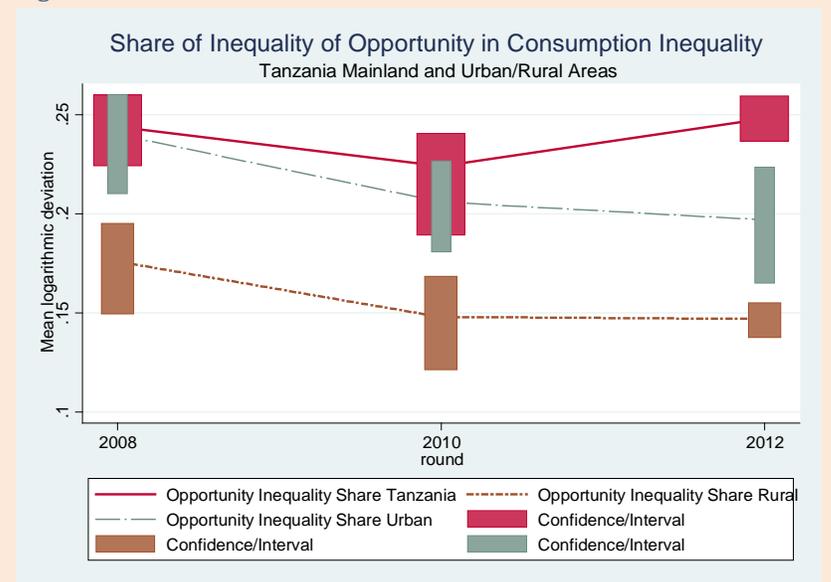


¹⁶ See Barros *et al.* (2009) for inequality of opportunity estimates, based on labor earnings and household consumption and income, for several Latin American countries, and Belhaj Hassine (2011) for inequality of opportunity in labor earnings in Egypt.

The trend in inequality of opportunity levels appears to be similar to that of overall inequality and the variations, over time, in inequality of opportunity are even more pronounced than those in overall inequality. Unlike HBS data, NPS show a slight increase in overall consumption inequality from 0.24 in 2008 to 0.28 in 2012 (and from 0.38 to 0.40 using Gini index). Inequality of opportunity followed roughly the same pattern but increased more steeply. In general, the patterns of inequality of opportunity are relatively stable due to the little variations in the circumstances variable over short periods of times, but the results here show quite sizeable changes in inequality of opportunity levels over the last four years.¹⁷

Figure 5 shows that around 25 percent of consumption inequality can be attributed to unequal opportunities associated with only the observed part of Tanzanian households' circumstances. This is a quite sizeable share by SSA standards, where inequality of opportunity share is estimated at

Figure 5: Share of Inequality of Opportunity in Tanzania Mainland and by Region



2008			2010			2012		
Tanzania	Urban	Rural	Tanzania	Urban	Rural	Tanzania	Urban	Rural
0.244***	0.240***	0.176***	0.224***	0.206***	0.148***	0.248***	0.197***	0.147***
(0.018)	(0.031)	(0.017)	(0.016)	(0.021)	(0.019)	(0.016)	(0.028)	(0.013)

Source: National Panel Surveys (NPS) for 2008, 2010 and 2012

* Significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. Numbers in parentheses are bootstrap standard deviations based on 100 replications.

12 percent in Ghana, 15 percent in Cote d'Ivoire and 21 percent in Madagascar.¹⁸ It is almost on par with the levels in Latin American countries.¹⁹ The results reveal an increase of the contribution of inequality of opportunity to total inequality over time at the national level, due to the sharper increase in inequality of opportunity levels compared to overall inequality.

The analysis by urban-rural location reveals a lower incidence of inequality of opportunity in rural than in urban areas. Opportunity shares of inequality are almost 1.5 times higher in urban than in rural areas. This reflects two facts. First, family background variables have greater influence on

¹⁷ Studies by Lefranc *et al.* (2008), Barros *et al.* (2009) on several Latin American countries and Belhaj Hassine (2011) on Egypt show quite stable patterns in inequality of opportunity levels over time.

¹⁸ Forthcoming in the poverty flagship report for Africa.

¹⁹ In a study by Ferreira and Gignoux (2011), the opportunity shares of consumption inequality were found to range between 24 percent in Colombia and 39 percent in Panama.

households and individuals with higher levels of education and engaged in more diversified occupations and jobs as is the case in urban sectors. Second, to the extent that some unobserved circumstances (such as family composition, parents' financial and asset situation, etc.) shape the opportunity sets for rural Tanzanians, the estimates of inequality of opportunity excluding these circumstances are significantly biased downward.

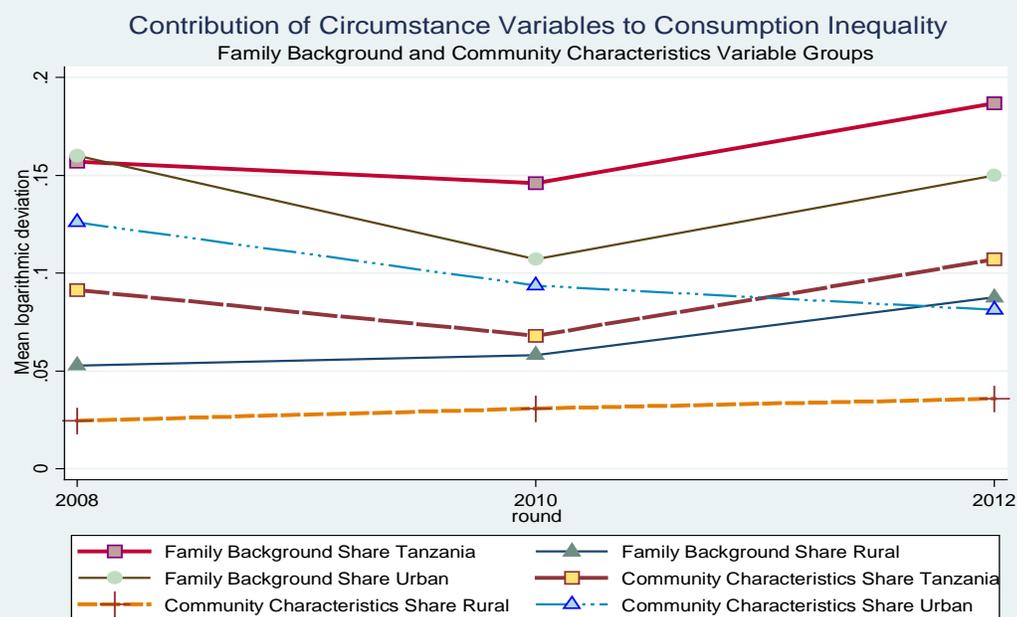
The contribution of unequal opportunities to the consumption disparity seems to be declining over time in the rural and urban sectors. Overall and opportunity inequalities declined in the urban areas between 2008 and 2012 and as opportunity inequality declined more steeply this induced a reduction of the opportunity share. However, in rural areas both overall and opportunity inequality increased during 2008-12, but overall inequality increased faster which involved a decline of the opportunity share. The factors contributing to the variation of inequality of opportunity in the urban and rural sectors are explored more in details below.

In order to compare the effect of family background on welfare acquisition to the impact of community characteristics, we examine in the following the share of consumption inequality arising from these variable groups in Tanzania mainland as well as in urban and rural areas separately.

The results in Figure 6 show that family background variables explain a greater share of inequality than community characteristics. Although the contribution of family background is underestimated due to the absence of information on parental occupation and employment status, their financial situation and asset ownership etc., it appears to be associated with the largest shares of overall inequality. Inequality due to family background varies between 15 and 19 percent across the three waves of the survey, while the contribution of community characteristics barely exceeded 10 percent. At the urban and rural levels, the contribution of family background to inequality is higher than that of community characteristics and is almost double of this latter in rural areas.

Family background and Community characteristics appear to have both increased, in 2012, at the national level and in rural areas. Family background is also increasing slightly in urban areas while the contribution of community characteristics is declining suggesting a possible convergence in infrastructure and service provision between the urban communities.

Figure 6: Contributions of Family Background and Community Characteristics to Inequality



	2008			2010			2012		
	Tanzania	Urban	Rural	Tanzania	Urban	Rural	Tanzania	Urban	Rural
Family Background	0.157*** (0.016)	0.160*** (0.030)	0.0528*** (0.013)	0.146*** (0.015)	0.107*** (0.024)	0.0581*** (0.013)	0.187*** (0.016)	0.150*** (0.027)	0.0876*** (0.013)
Community Characteristics	0.0914*** (0.006)	0.126*** (0.010)	0.0246** (0.008)	0.107*** (0.006)	0.0937*** (0.011)	0.0308*** (0.006)	0.107*** (0.006)	0.0812*** (0.007)	0.0358*** (0.005)

Source: National Panel Surveys (NPS) for 2008, 2010 and 2012

* Significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. Numbers in parentheses are bootstrap standard deviations based on 100 replications.

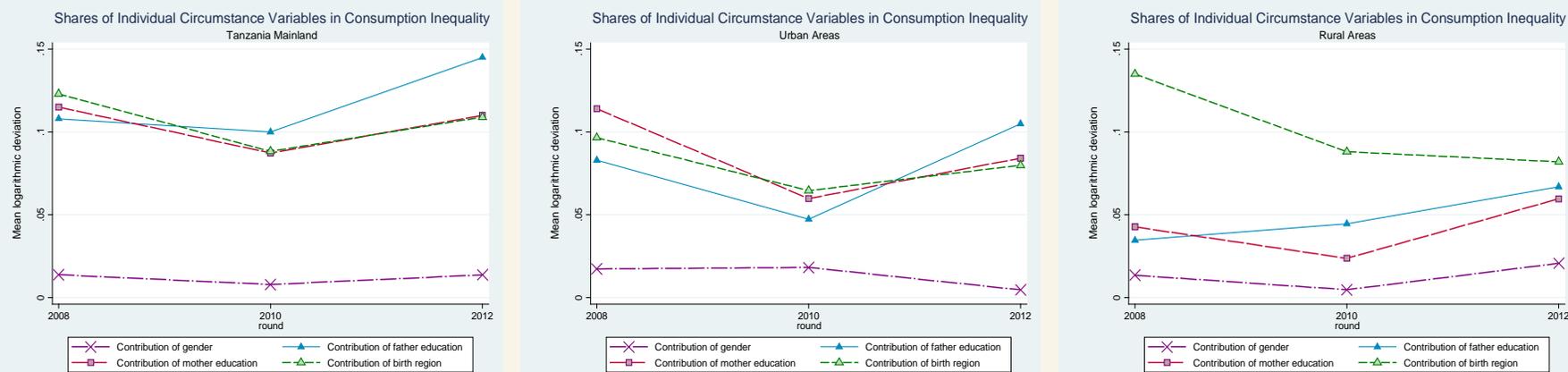
Next we turn to the partial contributions of individual circumstances, and groups of circumstances, to inequality. Being able to distinguish between these sources of inequality of opportunity is important for formulating policies that reduce it. The parametric approach allows the estimation of the partial effects of individual circumstances on outcomes, by fixing one or a group of circumstances at their mean values while allowing others to vary.

The analysis of the contribution of individual circumstances, reported in Figure 7, shows that in Tanzania mainland father's education is associated with the largest shares of consumption inequality, increasing from 11 percent in 2008 to 15 percent in 2012. Inequality of opportunity resulting from region of birth, which had the largest share in 2008, slightly declined from 12 percent to 9 percent during 2008-10 and then increased again to 11 percent in 2012. Mother's education also plays an important role in determining inequality at the national level, accounting for nearly 10 percent of total inequality for the entire population. It declined slightly in 2010 but regained importance according to the latest survey. Gender makes a limited contribution to inequality but seems to have

gained importance during the last year of the survey, reflecting the appearance of a possible form of discrimination against women in welfare distribution.

At the urban-rural level, mother's education appears among the most important factors shaping opportunity in urban areas. It accounts for around 9 percent of urban inequality; however, its effect is declining over time while the effect of father's education is increasing quite importantly. In rural areas, inequality is shaped mainly by the region of birth, but its contribution is declining over time while the influence of father's and mother's education is increasing. This indicates that the wide disparity in welfare between people who were born in other regions and moved and the natives is shrinking over time. As there seems to be an increase in employment opportunities outside agriculture in the rural areas, the influence of parents' education on efforts and welfare became more apparent. Although the effect of parents education remains weak compared to urban regions, as more than 80 percent of household heads have parents with an education level of two years or less, it's catching quickly with the levels in the urban areas. The contribution of mother's and father's education to opportunity inequality increased to over 6 percent in 2012, getting closer to the levels observed in the urban areas. This effect can be expected to increase as the share of rural households with more educated parents is expanding over time. The contribution of gender is also increasing over time indicating that the disadvantage of being a women is more apparent in the recent years.

Figure 7: The Contribution of Individual Circumstances to Inequality of Opportunity



	Tanzania Mainland			Urban			Rural		
	2008	2010	2012	2008	2010	2012	2008	2010	2012
Gender	0.014*** (0.001)	0.008*** (0.002)	0.014*** (0.001)	0.017** (0.006)	0.018* (0.009)	0.005 (0.003)	0.014*** (0.002)	0.005* (0.002)	0.021*** (0.003)
Mother Education	0.115*** (0.016)	0.087*** (0.016)	0.110*** (0.015)	0.114*** (0.023)	0.060* (0.026)	0.084** (0.031)	0.043*** (0.010)	0.024* (0.012)	0.060*** (0.011)
Father Education	0.108*** (0.017)	0.100*** (0.014)	0.145*** (0.015)	0.083** (0.026)	0.047** (0.025)	0.105*** (0.027)	0.035** (0.011)	0.045*** (0.011)	0.067*** (0.011)
Region of Birth	0.123*** (0.014)	0.088*** (0.013)	0.109*** (0.011)	0.083** (0.026)	0.065** (0.023)	0.080*** (0.020)	0.135*** (0.017)	0.088*** (0.016)	0.082*** (0.012)

Source: National Panel Surveys (NPS) for 2008, 2010 and 2012

* Significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. Numbers in parentheses are bootstrap standard deviations based on 100 replications.

C. Inequality of Opportunity of Household Income

Overall inequality and inequality of opportunity levels for household incomes are higher than for inequality for household consumptions. Total income inequality is considerably higher than consumption inequality, supporting the view that consumption expenditures are more accurately measured and considered to be more reliable than income data. Moreover, current incomes tend to be more volatile and more sensitive to macroeconomic fluctuations than consumption and expenditures, which are likely to be closer to permanent income.²⁰ The levels of income-based inequality of opportunity are higher than the levels of consumption-based inequality of opportunity, but the gap between the measures is much lower than the gap between overall income and consumption inequality measures.

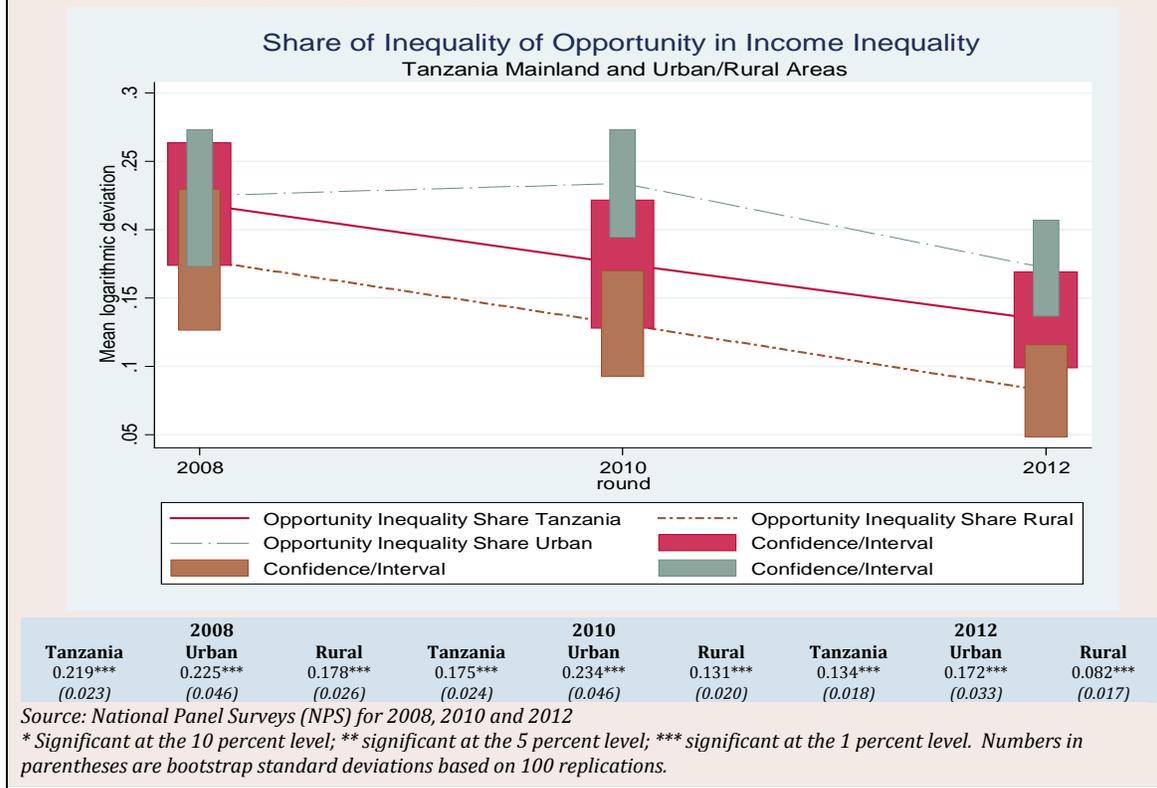
While the levels of inequality of opportunity are higher for households' incomes than for consumptions, the opposite is true for estimates of opportunity shares. As revealed by Figure 8, the income opportunity share varies from the high of 22 percent in 2008 to the low of 13 percent in 2012 compared to a consumption opportunity share of around 24 percent. This is due to the higher volatility of current incomes and to measurement error and idiosyncratic shocks to certain components of income. Some components of the income aggregates are transitory and cannot be explained by circumstances, their variance can be misleadingly confounded with the part of income inequality due to effort (Barros *et al.*, 2009; Aaberge, Mogstad, and Peragine, 2011).

Unlike consumption, total income inequality and opportunity inequality levels are both declining over time, but opportunity inequality is declining more sharply. This led to a reduction of the share of income opportunity inequality. Also, the higher volatility of income compared to consumption induced a higher volatility over time in the estimates of income opportunity shares.

The analysis of urban-rural income opportunity inequality shares show that, similar to the consumption-based analysis, the income opportunity shares are much higher in urban areas than in rural sectors. Inequality of opportunity share seems to have increased slightly in the urban areas between 2008 and 2010 and then to have declined, while it kept declining over time in the rural zones.

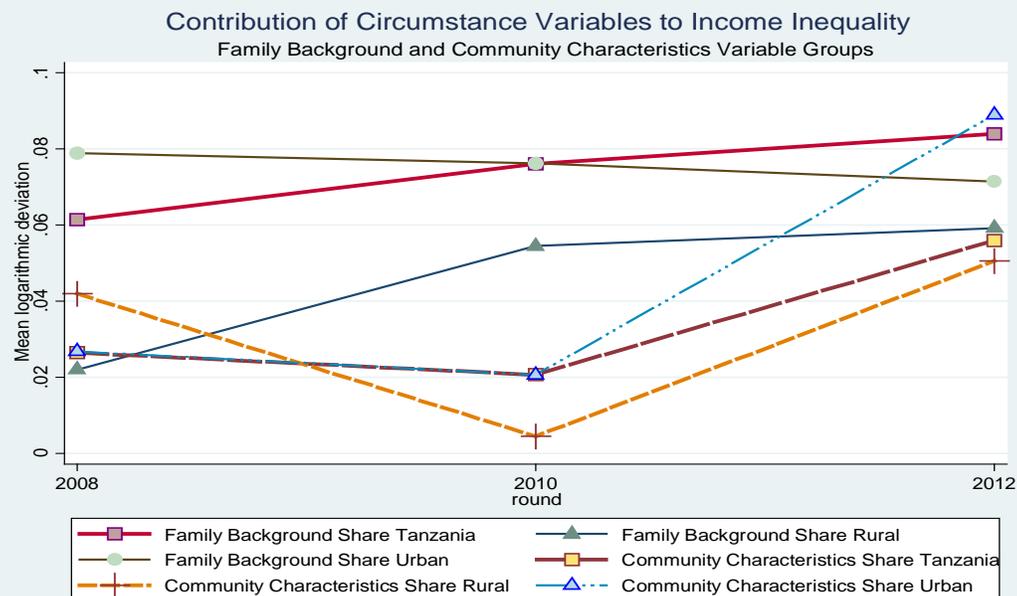
²⁰ See Barros *et al.* (2009).

Figure 8: Inequality of Opportunity in Income



Also, similar to the consumption-based analysis, family background is found to play a more important role in shaping income inequality than community characteristics. In a country where private businesses and household enterprises are important sources of livelihoods, one would expect income disparities to be more affected by community characteristics than parental ones, but the results displayed in Figure 9 show that the share of inequality associated with family circumstances is higher than the share associated with community features. Nevertheless, the contribution of community characteristics is increasing over time and almost doubled between 2008 and 2012 at the national level and in urban areas. Family background effect increased also over time but less sharply.

Figure 9: Contributions of Family Background and Community Characteristics to Income Inequality



	2008			2010			2012		
	Tanzania	Urban	Rural	Tanzania	Urban	Rural	Tanzania	Urban	Rural
Family Background	0.062*** (0.016)	0.079* (0.039)	0.022 (0.018)	0.076*** (0.015)	0.076** (0.027)	0.055** (0.020)	0.084*** (0.013)	0.072** (0.025)	0.059*** (0.010)
Community Characteristics	0.027 (0.020)	0.027 (0.023)	0.042*** (0.009)	0.038 (0.023)	0.021** (0.007)	0.005 (0.026)	0.056*** (0.013)	0.065* (0.029)	0.051*** (0.014)

Source: National Panel Surveys (NPS) for 2008, 2010 and 2012

* Significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. Numbers in parentheses are bootstrap standard deviations based on 100 replications.

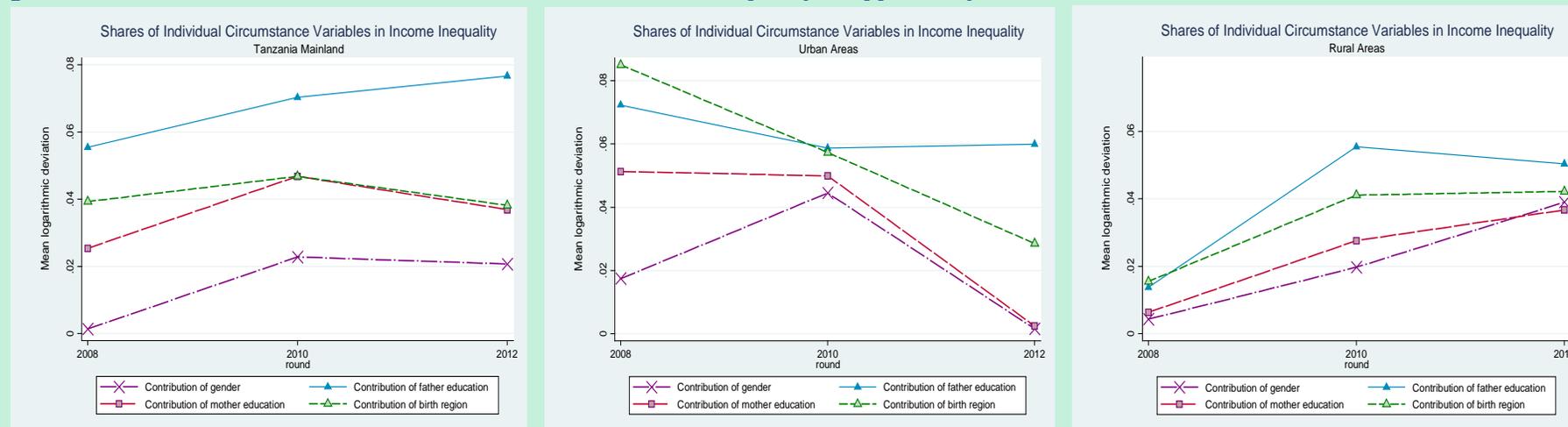
The analysis of the contribution of individual circumstances to income inequality indicates that, once again, father’s education is associated with the largest share of opportunity inequality. Figure 10 displays a pretty similar ranking of the contribution of each circumstance variable to income inequality as that observed for consumption, at the exceptions that father’s education plays the largest role in shaping opportunities in all areas and that the region of birth seems less important.

Mother’s education and gender appear also to make a non-negligible contribution to inequality and their impact is increasing over time at the national level and in rural sectors. Female headed households seem to have significantly lower incomes than male headed ones, indicating the engagement of Tanzanian women in low productivity and low remuneration jobs and businesses. This situation does not seem to be improving over time despite some policy measures for empowering women.

The effect of parental education and family background on economic (consumption and income) outcomes indicates significant problems of intergenerational transmission of inequality and poverty. Father’s and mother’s education to a large extent shape opportunities for their children and affect

their chances to move up in the economic ladder. Without additional policy actions, there are little chances for the next generations to spring out of the poverty and inequality lived by their parents, engendering poverty and inequality traps in the country.

Figure 10: The Contribution of Individual Circumstances to Income Inequality of Opportunity



	Tanzania Mainland			Urban			Rural		
	2008	2010	2012	2008	2010	2012	2008	2010	2012
Gender	0.001 (0.005)	0.023*** (0.004)	0.021*** (0.004)	0.017 (0.021)	0.045*** (0.012)	0.016 (0.011)	0.004 (0.006)	0.020*** (0.005)	0.039*** (0.005)
Mother Education	0.025 (0.014)	0.047*** (0.012)	0.037*** (0.010)	0.051** (0.019)	0.050* (0.021)	0.002 (0.018)	0.006 (0.011)	0.028** (0.010)	0.037*** (0.007)
Father Education	0.055*** (0.013)	0.070*** (0.013)	0.077*** (0.011)	0.072** (0.023)	0.059** (0.022)	0.060* (0.024)	0.014 (0.014)	0.055*** (0.016)	0.050*** (0.008)
Region of Birth	0.039* (0.017)	0.047** (0.015)	0.038** (0.012)	0.085 (0.062)	0.057 (0.031)	0.029 (0.024)	0.016 (0.023)	0.041 (0.025)	0.042** (0.014)

Source: National Panel Surveys (NPS) for 2008, 2010 and 2012

* Significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. Numbers in parentheses are bootstrap standard deviations based on 100 replications.

V. Concluding Remarks

This paper assesses the extent and evolution of inequality of outcomes and inequality of opportunity in Tanzania. The analysis of inequality of outcomes reveals a decline of consumption inequality over time, attaining levels that compare favorably with Sub-Saharan Africa and less developed countries. The improvements in the distribution of living standards seem to be favoring the poorest segments of the population, raising hopes that the country is starting its road toward more pro-poor growth.

However, the nature and composition of economic growth in the country appear to have induced an uneven increase of welfare at the regional level. This resulted in widening inequality between urban and rural households, with inequality widening more between richer households than between poorer ones. Poor households experienced improvements in their education levels and possession of assets, with the improvements being more marked for poor rural households. This helped less well-off rural dwellers to catch up with their urban counterparts. However, these improvements have been partly offset by, on one hand, increasing differences in access to basic services and employment opportunities, and, on the other hand, widening gaps in family structure and size. The increasing proportion of children in rural households is constraining their wellbeing and contributing to the persistence of urban-rural inequality.

The gap in education and assets ownership declined between better-off urban and rural households, albeit to a lesser extent than between the poor, but well-off rural households have not been able to access better job opportunities nor obtain higher returns to their employment and assets. This, combined with the widening differences in family structure and access to services, resulted in increasing inequalities between better-off urban and rural households.

The increase in inequality was more prominent between households in Dar es Salaam and their counterparts in the rest of the country. The former who are much better endowed have been more able to take advantage of the opportunities generated by Tanzania's economic growth.

The disparities in living standards and endowments seem, to a large extent, the results of intergenerational transmission of family background. Father's and mother's education are found to significantly contribute to income and consumption inequality in the country. Less parental education shapes opportunities for the children and generates intergenerational poverty and inequality traps. Without additional policy actions, there are few chances for the next generations to spring out of the poverty and inequality lived by their parents.

Besides the family effects, the level of infrastructure in the household's community is found to exert an important impact on the distribution of welfare.

Increasing opportunities of the more disadvantaged Tanzanian population groups would obviously help to promote shared prosperity. Two sets of policy actions are required: the first focusing on the improvement of households' endowments of education and employment opportunities, the control of family size and fertility, and the development of infrastructure and access to basic services. There have been commendable efforts to promote basic education in the country, but these efforts need to spread more widely to less favored regions and need to be oriented towards the provision of secondary and higher education as well as towards the improvement of the quality of education. Policy actions focusing on family planning and development of infrastructure in the rural areas and less favored regions will have a stronger impact on poverty and inequality in the medium term, while the promotion of education will have a stronger impact on breaking the cycle of intergenerational persistence of poverty.

The second set of policies might be oriented towards improving the returns to education, employment opportunities, and assets through promoting the development and dynamism of local economies and through expanding productive non-agricultural activities. Even though the policy actions need to focus on developing endowments, both inherited from the parents and resulting from the choices of the rural and disadvantaged populations, these actions need to be accompanied by interventions to enable people to find the appropriate returns to their improved attributes in the local markets.

Appendix A: Regression results of Unconditional Quantile Model

Tables A.1 and A.2 below, present the decomposition results of equations (2) and (3).

Table A.1: Quantile Decomposition of Urban-Rural Real Monthly per capita Consumption

	2001			2007			2012		
	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile
Observed Gap	0.327 (0.016)	0.390 (0.010)	0.452 (0.020)	0.243 (0.026)	0.385 (0.015)	0.470 (0.025)	0.257 (0.017)	0.427 (0.014)	0.641 (0.025)
<i>Endowment effects attributable to</i>									
HH characteristics	0.074 (0.006)	0.104 (0.005)	0.135 (0.008)	0.103 (0.012)	0.105 (0.007)	0.164 (0.012)	0.191 (0.015)	0.158 (0.011)	0.193 (0.021)
Head educ. & exp.	0.055 (0.007)	0.047 (0.005)	0.058 (0.009)	0.089 (0.014)	0.054 (0.007)	0.115 (0.013)	0.017 (0.011)	0.041 (0.008)	0.073 (0.016)
Head other characteristics	0.063 (0.015)	0.125 (0.010)	0.119 (0.018)	0.118 (0.025)	0.062 (0.013)	0.068 (0.023)	0.002 (0.016)	0.051 (0.012)	0.151 (0.024)
Asset Ownership	0.189 (0.021)	0.104 (0.013)	-0.031 (0.025)	0.162 (0.033)	0.094 (0.017)	0.065 (0.030)	0.000 (0.024)	0.081 (0.018)	0.003 (0.036)
Source of Income	0.041 (0.015)	0.002 (0.009)	0.012 (0.018)	0.032 (0.025)	0.006 (0.013)	-0.083 (0.023)	0.027 (0.016)	0.020 (0.012)	0.003 (0.023)
Access to basic services	0.072 (0.009)	0.075 (0.005)	0.107 (0.010)	0.032 (0.013)	0.050 (0.007)	0.079 (0.012)	0.124 (0.014)	0.116 (0.010)	0.098 (0.020)
Geographic region	0.042 (0.006)	-0.010 (0.004)	-0.021 (0.007)	0.064 (0.010)	0.015 (0.005)	-0.014 (0.008)	0.034 (0.011)	0.075 (0.008)	0.025 (0.014)
Total endowment	0.535 (0.021)	0.448 (0.014)	0.379 (0.025)	0.600 (0.033)	0.384 (0.017)	0.393 (0.030)	0.394 (0.025)	0.543 (0.019)	0.545 (0.037)
<i>Returns effects attributable to</i>									
HH characteristics	0.088 (0.071)	-0.184 (0.044)	-0.065 (0.089)	0.101 (0.110)	-0.033 (0.061)	-0.247 (0.107)	-0.187 (0.071)	-0.142 (0.054)	-0.166 (0.102)
Head educ. & exp.	0.095 (0.027)	0.035 (0.016)	-0.034 (0.034)	0.081 (0.129)	0.038 (0.070)	0.340 (0.120)	-0.135 (0.083)	0.013 (0.064)	0.090 (0.119)
Head other characteristics	0.010 (0.016)	0.015 (0.010)	-0.021 (0.020)	-0.009 (0.028)	0.004 (0.015)	0.034 (0.027)	0.033 (0.019)	0.019 (0.015)	0.031 (0.028)
Asset Ownership	0.131 (0.030)	0.090 (0.019)	0.027 (0.037)	0.153 (0.056)	-0.101 (0.030)	-0.158 (0.054)	0.131 (0.049)	0.083 (0.037)	0.094 (0.071)
Source of Income	0.015 (0.014)	-0.003 (0.009)	0.001 (0.018)	-0.045 (0.051)	0.033 (0.028)	0.153 (0.050)	-0.045 (0.046)	-0.082 (0.036)	-0.005 (0.066)
Access to basic services	-0.049 (0.007)	-0.003 (0.004)	0.007 (0.008)	-0.019 (0.009)	0.017 (0.005)	0.014 (0.008)	0.044 (0.015)	0.010 (0.011)	0.020 (0.021)
Geographic region	0.036 (0.020)	0.055 (0.013)	0.038 (0.026)	-0.045 (0.051)	0.121 (0.028)	0.047 (0.050)	-0.127 (0.036)	-0.150 (0.028)	-0.026 (0.050)
Constant	-0.534 (0.093)	-0.064 (0.058)	0.121 (0.117)	-0.472 (0.182)	-0.078 (0.100)	-0.106 (0.176)	0.148 (0.131)	0.136 (0.100)	0.058 (0.187)
Total returns	-0.208 (0.025)	-0.058 (0.016)	0.073 (0.030)	-0.357 (0.039)	0.001 (0.020)	0.077 (0.037)	-0.138 (0.029)	-0.115 (0.021)	0.096 (0.041)

Source: Household Budget Surveys (HBS) for 2001, 2007 and 2011/12. Numbers in parentheses are Standard deviations.

Table A.2: Quantile Decomposition of Metropolitan-Nonmetropolitan Real Monthly p.c Consumption

	2001			2007			2012		
	10 th pctl	50 th pctl	90 th pctl	10 th pctl	50 th pctl	90 th pctl	10 th pctl	50 th pctl	90 th pctl
Observed Gap	0.478 (0.026)	0.480 (0.026)	0.529 (0.040)	0.420 (0.025)	0.450 (0.016)	0.533 (0.030)	0.661 (0.017)	0.677 (0.015)	0.767 (0.028)
<i>Endowment effects attributable to</i>									
HH characteristics	0.058 (0.017)	0.118 (0.018)	0.198 (0.026)	0.211 (0.019)	0.197 (0.012)	0.286 (0.022)	0.199 (0.027)	0.211 (0.022)	0.248 (0.041)
Head educ. & exp.	0.061 (0.024)	0.094 (0.023)	0.077 (0.036)	0.093 (0.019)	0.070 (0.011)	0.197 (0.023)	0.051 (0.015)	0.092 (0.012)	0.122 (0.024)
Head other characteristics	0.228 (0.085)	0.230 (0.080)	0.014 (0.125)	-0.040 (0.048)	0.118 (0.029)	0.030 (0.058)	-0.052 (0.028)	0.044 (0.022)	0.127 (0.044)
Asset Ownership	-0.138 (0.129)	-0.204 (0.122)	-0.877 (0.190)	0.001 (0.099)	0.002 (0.059)	-0.329 (0.164)	-0.020 (0.058)	-0.027 (0.047)	-0.226 (0.092)
Source of Income	0.095 (0.092)	-0.104 (0.087)	0.020 (0.135)	0.013 (0.057)	-0.031 (0.034)	-0.002 (0.069)	0.078 (0.043)	0.100 (0.035)	0.129 (0.069)
Access to basic services	-0.002 (0.029)	0.049 (0.027)	0.038 (0.042)	0.118 (0.021)	0.092 (0.012)	0.050 (0.025)	0.143 (0.020)	0.116 (0.016)	0.073 (0.031)
Geographic region									
Total endowment	0.302 (0.158)	0.185 (0.150)	-0.531 (0.232)	0.396 (0.104)	0.448 (0.062)	0.232 (0.168)	0.398 (0.066)	0.535 (0.053)	0.473 (0.104)
<i>Returns effects attributable to</i>									
HH characteristics	0.199 (0.130)	-0.219 (0.121)	-0.188 (0.190)	-0.125 (0.106)	-0.190 (0.063)	-0.392 (0.125)	-0.175 (0.077)	-0.253 (0.061)	0.038 (0.120)
Head educ. & exp.	0.072 (0.045)	0.101 (0.041)	-0.007 (0.064)	0.377 (0.121)	0.192 (0.072)	0.873 (0.143)	0.297 (0.091)	0.057 (0.072)	0.143 (0.140)
Head other characteristics	0.085 (0.042)	0.064 (0.039)	0.008 (0.061)	-0.079 (0.036)	0.057 (0.021)	-0.024 (0.042)	-0.095 (0.023)	0.031 (0.018)	0.010 (0.035)
Asset Ownership	-0.108 (0.115)	-0.140 (0.109)	-0.133 (0.169)	-0.015 (0.118)	-0.100 (0.070)	0.377 (0.181)	0.180 (0.097)	0.002 (0.078)	0.540 (0.153)
Source of Income	0.085 (0.070)	-0.081 (0.066)	0.021 (0.103)	0.088 (0.068)	0.041 (0.041)	0.052 (0.082)	-0.173 (0.058)	-0.157 (0.046)	-0.136 (0.090)
Access to basic services	-0.054 (0.011)	-0.011 (0.011)	-0.027 (0.017)	0.009 (0.010)	0.005 (0.006)	-0.061 (0.011)	0.054 (0.018)	0.025 (0.014)	-0.040 (0.028)
Geographic region	-0.075 (0.009)	0.041 (0.006)	0.085 (0.012)	0.152 (0.029)	0.150 (0.017)	-0.044 (0.032)	0.055 (0.021)	0.092 (0.016)	0.071 (0.031)
Constant	-0.031 (0.292)	0.537 (0.273)	1.290 (0.426)	-0.383 (0.195)	-0.153 (0.116)	-0.481 (0.232)	0.119 (0.176)	0.345 (0.141)	-0.334 (0.276)
Total returns	0.175 (0.160)	0.295 (0.151)	1.060 (0.234)	0.024 (0.105)	0.002 (0.063)	0.301 (0.170)	0.263 (0.067)	0.143 (0.054)	0.294 (0.107)

Source: Household Budget Surveys (HBS) for 2001, 2007 and 2011/12. Numbers in parentheses are Standard deviations.

Appendix B: Inequality of Opportunity Decomposition

Table B.1 Descriptive Statistics for Selected Variables

	2008			2010			2012		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Mean Monthly per capita Consumption (T Sh)	32441.32 (21692.13)	67535.60 (56158.32)	40234.73 (35760.44)	37093.01 (27126.53)	73478.12 (59192.25)	46534.07 (41327.21)	49009.12 (38044.27)	105132.30 (86516.96)	63848.41 (60462.32)
Mean Monthly per capita Income (T Sh)	35242.65 (80406.97)	93205.14 (155219.10)	48114.42 (104674.40)	52930.64 (125887.90)	112552.00 (159763.80)	68407.42 (137978.50)	45461.34 (89862.78)	92789.33 (161241.40)	58184.85 (114870.90)
<i>Father Education (%)</i>									
Did not go to School	66.79	39.47	61.07	61.71	35.59	55.01	61.18	32.16	53.72
Did not finish Primary School	18.49	21.06	19.03	20.71	25.74	22.00	18.67	20.59	19.10
Finished Primary School	13.15	27.83	16.23	15.07	29.60	18.79	18.14	34.42	22.29
Did not finish Secondary School	0.70	2.72	1.12	0.66	1.99	1.00	0.29	1.97	0.71
Finished Secondary School	0.70	5.26	1.65	1.44	4.99	2.35	1.20	6.31	2.64
Higher than Secondary School	0.17	3.67	0.90	0.42	2.09	0.85	0.52	4.55	1.54
<i>Mother Education (%)</i>									
Did not go to School	82.72	58.42	77.45	79.46	52.50	72.68	77.78	51.81	70.82
Did not finish Primary School	8.09	13.47	9.26	9.18	16.29	10.97	9.14	12.10	9.89
Finished Primary School	8.94	23.39	12.07	10.65	26.29	14.58	12.27	31.04	17.27
Did not finish Secondary School	0.13	1.49	0.42	0.17	1.37	0.47	0.24	0.88	0.40
Finished Secondary School	0.12	2.28	0.59	0.48	3.18	1.16	0.44	3.10	1.24
Higher than Secondary School	0.00	0.94	0.20	0.05	0.37	0.13	0.13	1.08	0.38
<i>Main Drinking water source (%)</i>									
Piped water	1.04	15.86	4.33	1.39	7.93	3.09	2.20	15.76	5.81
Standpipe/tap & vendor	21.00	55.94	28.76	22.76	63.13	33.24	24.14	58.48	33.16
Well water	35.45	19.77	31.97	39.06	20.02	34.11	37.76	19.52	33.00
River & rainwater & other	42.51	8.43	34.94	36.79	8.92	29.56	35.90	6.23	28.03
<i>Electricity (%)</i>									
No access to Electricity	97.13	56.39	88.08	94.23	56.02	84.31	91.23	48.08	79.71
Public, Solar & other	2.87	43.61	11.92	5.77	43.98	15.69	8.77	51.92	20.29
<i>Government primary schools (%)</i>									
No facility	0.83	5.03	1.74	4.37	5.61	4.67	0.00	1.25	0.31
Within the village	94.78	66.47	88.65	91.90	65.00	85.41	96.97	74.12	91.26
Outside village less 5km	2.94	27.39	8.24	3.61	28.20	9.53	2.60	24.63	8.11
Out. village btw 5 & 10km	0.32	1.12	0.50	0.03	1.02	0.27	0.00	0.00	0.00
Out. village more 10km	1.12	0.00	0.88	0.09	0.17	0.11	0.44	0.00	0.32
<i>Private primary schools (%)</i>									
No facility	28.86	18.44	26.58	15.15	16.25	15.41	2.83	7.39	3.95
Within the village	62.44	62.60	62.48	81.31	64.94	77.36	91.69	77.70	88.21
Outside village less 5km	3.44	18.96	6.83	2.56	17.62	6.19	1.72	14.41	4.90
Out. village btw 5 & 10km	0.42	0.00	0.32	0.85	1.19	0.93	1.04	0.00	0.78
Out. village more 10km	4.84	0.00	3.78	0.14	0.00	0.10	2.72	0.50	2.16

<i>Government secondary schools (%)</i>									
No facility	4.10	20.37	7.62	4.78	9.99	6.03	0.20	4.44	1.26
Within the village	39.24	25.33	36.23	64.68	51.21	61.43	66.15	51.97	62.64
Outside village less 5km	18.35	43.72	23.84	10.57	35.81	16.65	9.76	39.48	17.15
Out. village btw 5 & 10km	23.81	8.95	20.59	11.55	2.92	9.47	13.73	3.43	11.20
Out. village more 10km	14.49	1.64	11.71	8.42	0.07	6.41	10.15	0.67	7.76
<i>Private secondary schools (%)</i>									
No facility	55.43	40.87	7.62	51.27	23.54	44.59	21.75	30.13	23.93
Within the village	4.32	17.40	36.23	8.01	19.25	10.72	6.35	21.79	10.18
Outside village less 5km	3.66	26.80	23.84	5.48	30.88	11.60	7.39	28.58	12.66
Out. village btw 5 & 10km	11.23	9.22	20.59	8.67	8.74	8.69	8.92	10.30	9.22
Out. village more 10km	25.35	5.71	11.71	26.57	17.60	24.41	55.60	9.20	44.00
<i>Health Centers (%)</i>									
No facility	2.09	7.34	3.23	4.32	6.21	4.78	1.18	0.63	1.04
Within the village	53.60	54.55	53.81	59.69	45.58	56.29	60.73	61.38	61.03
Outside village less 5km	16.03	34.67	20.06	14.17	44.99	21.60	15.94	31.62	19.81
Out. village btw 5 & 10km	19.45	2.06	15.69	17.52	3.15	14.06	15.01	4.94	12.44
Out. village more 10km	8.83	1.37	7.22	4.30	0.07	3.28	7.14	1.42	5.68
<i>Investment for schools construction & renovation (%)</i>									
No inv project	14.42	41.49	20.42	24.45	46.03	29.65	36.53	69.50	44.69
inv project less than 1M	7.00	14.55	8.67	9.94	6.21	9.04	8.00	6.75	7.74
inv project btw 1 & 10M	34.00	16.28	30.07	29.73	17.15	26.70	25.31	12.51	22.13
inv project more 10M	44.58	27.68	40.83	35.88	30.61	34.61	30.17	11.23	25.43
<i>Investment for infrastructure building (%)</i>									
No inv project	43.55	70.72	49.58	49.74	72.70	55.27	48.81	75.96	55.58
inv project less than 1M	12.63	13.02	12.71	9.56	10.89	9.88	9.11	6.39	8.53
inv project btw 1 & 10M	19.93	5.12	16.64	9.25	5.52	8.35	11.48	9.62	10.97
inv project more 10M	23.89	11.15	21.06	31.45	10.89	26.50	30.59	8.04	24.93

Source: NPS surveys for 2008, 2010 and 2012. Numbers in parentheses are standard deviations. Results are weighted by appropriate sampling weights to reflect the characteristics of the Tanzanian population.

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