Socioeconomic status connected imbalances in arable land size holding and utilization in smallholder farming in Zimbabwe: Implications for a sustainable rural development

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Socioeconomic status connected imbalances in arable land size holding and utilization in smallholder farming in Zimbabwe: Implications for a sustainable rural development.

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Abstract

Access to land and other natural resources are key means of driving rural people out of abject poverty. Inequalities in access to land and supportive services that ensure full utilization of land are therefore hurting in rural societies. This article enumerates and explain wealth-related imbalances in land size holding and utilization in Zimbabwe's smallholder farming sector. It relies on cross-sectional household level data collected from 601 smallholder farming households randomly sampled from four districts. Disparities in land size holding and utilization are measured using the Erreygers corrected concentration index. A decomposition exploration is performed to determine the contributing factors to enumerated inequalities in land size holding and utilization. Results reveal a pro-poor distribution of inequalities in low and very low arable land size holding and also in low land utilization. Conversely, a pro-rich distribution of inequalities is observed in high land size holding and high land utilization. Wealth-related inequalities are evident in both men and women farmer groups, youth and non-youth farmer groups and in different geographic regions. A decomposition analysis show that observed inequalities in both land size holding and utilization are hugely explained by asset wealth. Other factors including access to extension, age of farmer, fulltime-farming status and geographic location were also found to minimally explain measured inequalities. In conclusion, low land size holding and low land utilization are phenomenon highly concentrated within the poorest segments of society in Zimbabwe whilst high land size holding and utilization are found within the more affluent population. Asset holding chiefly explain the disparities. Results suggest the need for decision makers in land allocation, distribution, re-distribution, and agrarian transformation in general, to deliberately concentrate on the most vulnerable and poorer segments of society. Such will have far reaching implications for rural transformation and development.

Key words: arable land holding; land utilization; socioeconomic disparities, corrected concentration index, smallholder farmer, Zimbabwe

1. Introduction

Land is a critical resource that can significantly transform livelihoods of rural dwellers in developing countries. For instance, land is considered a central economic resource for development in Zimbabwe and that is why it was considered for indigenization and economic empowerment since 1980 (Ruzivo Trust 2013). Further, Zimbabwe as a country is agro based with more than 80% of the populace depending on agriculture for their livelihoods. Agriculture in Zimbabwe is a significant contributor to the economy. Since the year 2010, agriculture has been contributing between 14% and 19.5% to the National Gross Domestic Product (Faostat 2015; Munhande et al. 2013; Mutambara et al. 2013). In addition to significant contribution to GDP the sector in the year 2010, accounted for more than 40% of the value of exports, 60% of raw materials to agro-industries, supported at least 70% of the population in terms of livelihoods and contributed to about 66% to formal employment (both direct and indirectly (CAADP 2010). Statistics show that Zimbabwe has about 39.6 million hectares of land area in total and about 40% (15.8 million ha) of that land area is used in agriculture (FAO 2012; Ruzivo Trust 2013). However, only 11% (4.3 million hectares) of the total land area can be effectively used in agricultural production (arable land) (FAO 2012; Ruzivo Trust 2013).

The significance of agriculture to the economy and livelihoods make land access and utilization key amongst smallholder producers in Zimbabwe. This is why the government have been much concerned with land reform and redistribution programs since independence (1980) (Sithole 1996; Juana and Mabugu 2005). In different parts of the world, land reforms have occurred in circumstances where there were great social, economic, political inequalities in income and power agriculture (Pacione 1984). In Zimbabwe, land reform was meant to address inequitable land distribution, unsustainable plus sub-optimal use of land and insecurity of land tenure (Scoones et al. 2011; Ministry of Lands and Agriculture 1999). As such, about 3.6 million hectares of land were acquired and redistributed between the year 1980 and 2000 (Rugube and Chambati 2001). Further, and with the same motive, the government embarked on a radical land reform in year 2000 often known as the Fast Track Land Reform Program (FTLRP) which acquired agricultural land from large scale white commercial farmers and gave it out to landless and other land-short indigenous black people who were previously marginalized (Moyo 2011; Mujeyi et al. 2015; Sadomba 2011). Statistics show that almost 200 thousand households benefited from the redistribution of more than 10 million hectares of land formerly held by only about 4500 large scale white commercial farmers (Moyo 2011; Moyo and Chambati 2013). Resultantly, the agrarian reforms gave birth to a new crop of mostly family run farms (Moyo and Yeros 2005; Sadomba 2013) which are predominantly resource poor (Makate et al. 2016). At present, almost 70% of farmers in the country are smallholders which make them the majority of food producers. The pool of smallholder farmers in Zimbabwe include both Communal farmers and the so-called A1 schemes (villagized arrangements and or small-self-contained farms)(Scoones et al. 2011).

land reform programs have greatly reduced land holding and utilization inequalities in the country especially across racial lines. According to UNDP (2012) inequalities in landholding significantly declined from about 0.6 Gini index before FTLRP to below 0.5 after the FTLRP. Despite, the noted significant impacts of land redistribution programs in the past (i.e. slight decline in inequalities in land holding and in access to other related resources), little is known pertaining to the existence of wealth or income-related disparities in land access and utilization in the smallholder farming sector (i.e. communal and A1 farming schemes). Socioeconomic status (wealth or income) related disparities in land access and utilization could still exist in the smallholder farming sector. This is plausible given that different factors have influenced implementation of the agrarian reforms for instance, income/resource inequalities, and pressure from political groups influencing the FTLRP (Sadomba 2013). Specifically, literature point to the influence of various grievance groups particularly war veterans of the 1970 liberation struggle to implementation of the FTLRP (Sadomba 2011; Sadomba 2013). Also, Scoones (2011) stated that those with elite connections, resources and benefiting from political patronage had higher odds of benefiting from the FTLR exercise. This may have led to concentration of land holding in the hands of those with access to resources, with elite connections, liberation war veterans or other closely related groups. In addition, corruption in land deals, and other factors could add to the factors contributing to disparities in land holding and access to related resources. According to Mutondoro et al. (2016) corruption in land sector is common in Africa and is largely associated with the rise of large scale land deals. Corruption in land administration and politics also facilitates land grabbing (MacInnes 2012). Given the role of local leadership (i.e. chiefs and or village headman) in land administration in rural Zimbabwe, it may be possible that corruption by the local leaders in land administration could contribute to disparities in landholding.

In terms of utilization, farmers with access to land may fail to fully utilize it because of a number of reasons. For instance, lack of capital, poverty, lack of farming time due to commitment in other off-farm activities (e.g. formal employment), lack of farming knowledge and other necessary farming resources (Jayne et al. 2003; Moyo 2013; Rigg 2006). This again can impact on income/wealth related inequalities in society as it is likely that land under-utilizers may benefit less from the land and also disadvantage potential beneficiaries (of land) along the value chain i.e. lost employment opportunities. This again can further fuel income related inequalities in rural society in general. However, it may not always be the case that land under-utilizers benefit less from land given the rise of informal land rental markets in the Zimbabwe's agrarian sector (Tatsvarei et al. 2018a; Tatsvarei et al. 2018b). Recent studies confirm informal renting out and renting in of land by land reform beneficiaries (Tatsvarei et al. 2018a; Tatsvarei et al. 2018b). In such cases, land owners may get additional income through renting out land to other people.

Given this background, the study aims to explore the possibility of existence and extent of wealth-related disparities in land size holding and utilization in Zimbabwe's smallholder farming sector. This has been an understudied case as much focus by a few number of studies have dwelled on inequalities in landholding across racial lines in the pre and post-colonial periods (see (Moyo 2013)). Few studies for Zimbabwe have tried to explore wealth-related inequalities in land size holding and utilization and their main contributing factors in smallholder farming which now has most of Zimbabwe's food producers. Literature on this subject and particularly for Zimbabwe is scarce but emerging. For instance, a study by Moyo (2013) examined farmland holding and income inequalities in southern Africa including Zimbabwe. The study relied on the Gini coefficient[1] to compute income related inequalities in agricultural land holding and other key resources in southern African countries including Zimbabwe. The study noted median levels of land concentration in southern African countries such as Lesotho, Zambia and Botswana with Gini values of between 0.4 and 0.50. the rest of southern African countries were reported to have Gini coefficients less than 0.4. For Zimbabwe, the Gini coefficient was very high before the fast track land reform with a Gini index of over 0.6. however, this is said to be now estimated to be below 0.5 following the FTLRP (Moyo 2013; UNDP 2012). As much as the aforementioned study give a picture on income inequalities in land size holding in Southern Africa, it provides results at a very low resolution (larger scale) which may be a challenge for local level policy makers. Further, the study did not touch on income inequalities in land utilization and contributing factors to the income inequalities. Additionally, inequalities in land holding and access to related farming resources have been linked to widening income inequalities in the general populace. This is mainly related to accumulation of greater benefits by landowners and users from profits, and rents (Moyo 2008). This highlights how negative inequalities in land holding and other necessary farming resources can be in worsening the wealth gradient in the society. This motivates undertaking of this study as results can inform policy on the possible channels that can be taken to address socioeconomic status-related inequalities in land access and utilization in smallholder farming for equity and sustainable agrarian transformation.

The study quantify and explain socioeconomic status (wealth)-related inequalities in land size holding and utilization using the Erreygers (2009) corrected concentration index in Zimbabwe's smallholder farming which is an understudied case.

[1] Gini coefficient is a statistical measure of inequality of a statistical distribution ranging from 0 (total equality) to 1 (maximum inequality), used in various disciplines to compare incomes or wealth.

The rest of the article is organized as follows: section two present the methodology followed by this article whilst sections three and four present results and discussions respectively. Section five concludes the paper and give results implications and policy recommendations.

2. Methods

2.1. Measuring disparities in land size holding and utilization

As alluded earlier, the primary objective of this article is to measure and explain socioeconomic status-related inequalities in land size holding and utilization in smallholder farming in selected districts of Zimbabwe. The study adopts the Erreygers (2009) corrected concentration index to measure and explain inequalities in land size holding and utilization which is widely adopted in health research (O'donnell et al. 2008; Wagstaff and van Doorslaer 2000; Makate and Makate 2017). According to Wagstaff and van Doorslaer (2000) the concentration index measures the extent to which an outcome (i.e. health outcome) is associated with inequality in a measure of socioeconomic status usually wealth or income. In the case of this article, the index will measure the extent to which land size holding and utilization at household level is associated with household wealth inequality. The study relies mainly on explaining disparities in land size holding and utilization based on binary indicator variables following other recent applications (Makate and Makate 2017; Ngandu et al. 2017). The article follows recommendations suggested by Erreygers (2009) and apply the corrected version of the concentration index. For more information on the merits of applying the corrected version of the concentration as opposed to the standard concentration index when outcome variables are binary readers can refer to Wagstaff (2005) and Erreygers (2009). Algebraically the corrected concentration index is expressed as follows:

$$E(L) = 8cov(L_i, W_i) \qquad (1)$$

where $E(L)$ is the Erreygers corrected concentration index, L_i is the land size holding or land utilization outcome of interest, W_i is the individual or respondent's relative rank in the household wealth distribution. If statistically significant, the higher the value of $E(L)$, the larger the inequality landholding or utilization. Positive (negative) values of $E(L)$ indicate a pro-rich (pro-poor) distribution in the outcome variable of interest in this case in land size holding and or land utilization.

To deduce significant inferences Wagstaff et al. (2003) suggested a way of decomposing the measured inequalities (i.e. inequalities in land size holding or land utilization) into their specific determining components using the following linear equation:

$$L_i = \beta_0 + \sum_{k=1}^{K} \beta_k x_{ik} + \varepsilon_i \qquad (2)$$

where L_i is the land size holding or land utilization measure, X is a vector of characteristics that are likely determinants of land size holding and or utilization. Equation (2) is estimated using an ordinary least square (OLS) regression model (van Doorslaer and Koolman 2004). From this point, we will refer the corrected concentration index to simply the concentration index for simplicity. Results for the concentration index were run at (i) full sample, (i) at district level, (iii) by gender of farmer and (iv) by farmer youth status. All the analysis is conducted in STATA software version 13.0 (Stata 2013).

2.2. Data used

This study uses cross-sectional household-level data collected during a survey that was done in Zimbabwe and covered four districts (Goromonzi, Guruve, Mudzi and Wedza) between October and December of 2011. The simple random sampling technique was used to select wards from a list of households obtained from the district extension office of each of the four districts. Within the selected wards, the interviewed households were randomly chosen from households' lists provided by resident agricultural extension officers. A total of 601 households; 175 from Goromonzi, 187 from Guruve, 120 from Mudzi and 119 from Wedza were then selected for the survey. Data collection was in the form of face-to-face administration of structured questionnaires. The surveys collected vital information on several household and farm characteristics including land size holding, land utilization, ownership of a number of assets kept by the household, crop and animal production, access to agricultural extension services etc. The data on asset holdings was extensively covered and it gathered information on ownership of livestock, household goods (i.e. television, radio, bicycle etc.), farm implements and other intermediate technologies (e.g. oxcart, planter, wheelbarrow, tractor, plough etc.), household dwelling characteristics (such as floor, roof and wall material) and other common assets (such as mobile phones). The study took advantage of such information in generating a comprehensive wealth index variable for the household using Principal Components Analysis (PCA) (Filmer and Pritchett 2001).

2.3. Outcome variables

2.3.1. Land size holding

Binary variables to characterise land size holding are derived from a continuous variable arable land size holding. The study defines very low and low arable land size holding as binary variables (1= yes; 0=otherwise) indicating whether the smallholder farmer owns less than 0.5 and 1.0 hectares of arable land respectively. More so, the study defines high and very high land size holding as binary variables (1= yes; 0=otherwise) indicating whether a smallholder farmer owns more than 3.0 and more than 5.0 hectares of arable land respectively. Defining low and high arable land size holding at two levels was done to ensure ease of robustness check on the results. More details on variable definition are shown in table (2). Defining the different levels of land size holding are guided by the researcher's knowledge of smallholder farming land holding characteristics, sample arable land size holding averages and literature pointing to average land size holdings in the southern African region and particularly Zimbabwe. According to Moyo (2013) average sizes of family farms in the southern African region are fairly small and ranges between 1 and 3 hectares (Moyo 2013).

2.3.2. Land utilization

Land utilization is measured in two farming seasons 2009 and 2010. Binary variables for low and high land utilization in two seasons are specified. Low (high) land utilization is defined as a binary variable with a value of (1) if the smallholder farmer cultivated less (more) than 0.5 (2.0) hectares of land in a given season, and (0) otherwise. See table (2) on detailed descriptions of variable definitions on land utilization. Definition of land utilization levels is mainly guided by average land use values in the studied areas and the researcher's knowledge of the smallholder farming sector and their problems i.e. lack of access to credit, farming inputs and other necessary intermediate farming technologies which may limit effective land utilization.

2.4. Explanatory variables used

The study relied on a number of variables mainly used in explaining dynamics in resource access and use at farmer household level including Age gender marital status and education of household head, availability of labour (proxied by household size), main occupation of farmer, access to extension services and wealth. The chosen explanatory variables could possibly explain observed inequalities in land size holding and utilization in smallholder farming. For instance, age of the farmer can proxy farming experience which is an important factor that influence farming decisions (Fischer and Qaim 2012; Makate et al. 2018b) including land use. Gender is another important demographic characteristic than can influence farming decisions. Women farmers for instance may not have the same influence and resources to make crucial decisions relating to changing agricultural practices (Murray et al. 2016; Quisumbing and Pandolfelli 2010) or land use patterns. Marital status reflects on the strength of the family system and can have knock-on effects on farming decisions including technology adoption, productivity, land use (Makate et al. 2018a). Also, educated farmers are expected to relate better farming decisions (e.g. effective land use, improved technology adoption) to betterment of their farming enterprise competitiveness and are more likely to be quick in making such decisions. For instance, Upadhyay et al. (2003) reiterated that educated farmers relate technology adoption with improvement of their farming activities and hence are more likely to take a shorter time to adopt technologies (Makate et al. 2018a; Upadhyay et al. 2003). Availability of labour is also an important determinant of farming decisions and land use. Households with more labour available may have higher affinity for owning or using larger land sizes unlike those with shortage of labour.

However, a negative influence of labour on land size holding and utilization can be expected in cases where family with many members engage in off-farm activities in order to gain extra income to ease consumption pressures exerted by a larger family (Deressa et al. 2008). Also engaging in full-time farming by the household head may influence land holding and use decisions. Farmers into full-time farming are expected to use larger tracts of land than part-time farmers who may not find time to fully utilize larger tracts of the land. Access to agriculture extension is an important determinant of farming decisions including land use (Anderson and Feder 2007). Also wealth itself can determine access to complementary resources by the farmer(Cunguara et al. 2011; Makate et al. 2018b) which again can influence land holding and use decisions.

2.5. Measuring the household socioeconomic status using the wealth index

Studies in developing countries are increasingly using asset-based indices as measures of the socioeconomic status of the family given the difficulty associated with acquiring data on household income or consumption (O'donnell et al. 2008). The study shadow this burgeoning literature and compute the asset/wealth index as a proxy for household wealth using PCA (Filmer and Pritchett 2001). Several studies focusing on explaining disparities in health outcomes in low-income countries have used the asset index as a measure of socioeconomic status (Gwatkin et al. 2007; Hajizadeh et al. 2014; Makate and Makate 2017; Ngandu et al. 2017). This asset index is computed based on the household's ownership of several household property, animals, and household dwelling characteristics and is summarized in Table 1. For brevity, other output from PCA is omitted and only the mean of the variables considered are shown (see Table 1).

Table 1: Principal components and summary statistics for the variables used to compute the smallholder farmer wealth index

	Statistics		
Variables	Mean	SD	Component score
Number of cattle	2.411	3.417	0.238
Owns draft cattle	0.496	0.500	0.219
Owns draft donkey	0.025	0.156	0.057
Owns sheep	0.188	1.053	0.068
Number of goats	2.651	3.503	0.190
Number of pigs	0.316	1.404	0.030
Number of chickens	11.819	19.730	0.162
Number of hoes	5.408	3.504	0.215
Owns a plough	0.589	0.492	0.215
Owns a tractor	0.012	0.107	0.041
Number of wheelbarrows	0.544	0.596	0.243
Owns a sprayer	0.308	0.462	0.177
Owns a planter	0.020	0.140	0.037
Owns an oxcart	0.378	0.485	0.237
Owns a hand cart	0.005	0.071	0.051
Owns a bicycle	0.378	0.485	0.172
Owns a car	0.028	0.166	0.080
Owns a truck	0.010	0.099	0.043
Owns a bike	0.008	0.091	0.032
Owns a cellphone	0.784	0.412	0.167
Owns a radio	0.594	0.491	0.159
Owns a television	0.290	0.454	0.191
Floor material type			
Mud	0.296	0.457	-0.271
Cement	0.686	0.465	0.275
Tiles	0.017	0.128	-0.025
Wall material type			
Mud	0.085	0.279	-0.077
Cement bricks	0.494	0.500	0.297
Mud bricks	0.421	0.494	-0.257
Roof material type			
Grass	0.344	0.476	-0.271

Iron sheets	0.143	0.350	-0.010
Asbestos	0.506	0.500	0.260
Observations	601		

Notes: SD = Standard deviation; Component score is the overall contribution of the variable to the overall principal components score.

3. Results

3.1. Descriptive statistics

3.1.1. Outcome variables

Presented in table 2 are means and standard deviations of all the outcome and explanatory variables used in the analysis stratified by district.

a) Land size holding

Average land size owned by the household is reported to be 1.42, 2.73, 2.98 and 2.46 hectares in Goromonzi, Guruve, Mudzi and Wedza districts respectively. For a clearer view on the distribution of land size holding see figure 1. Results from the analysed sample show that low and very low land size holding was most prevalent in Goromonzi district with 42.9% of the farmers owning less than one hectare of arable land and about 13.1% of farmers owning less than 0.5 hectares of arable land. On the other extreme, Mudzi district was reported to have the lowest average proportions of farmers with low (5.8%) and very low (0.8%) land size holding. Guruve and Wedza lie in between with almost similar average proportions. Guruve and Wedza had about 1.6 and 3.4% of farmers with very low land size holding respectively. Additionally, 8.6% and 11.8% of farmers in Guruve and Wedza were in the low land size holding category respectively.

On the contrary, farmers in Guruve and Mudzi were reported to have high average proportions of representation in the high and very high land size holding categories. Results show about 6.4% and 10.8% proportions of farmers in Guruve and Mudzi are in the very high land size holding category respectively. Goromonzi and Wedza had only 1.1% and 3.4% representation in the same category. Similarly, in the high land size holding category, a similar trend is observed with Guruve and Mudzi district dominating representation in the category with about 33.2% and 29.2% of farmers respectively.

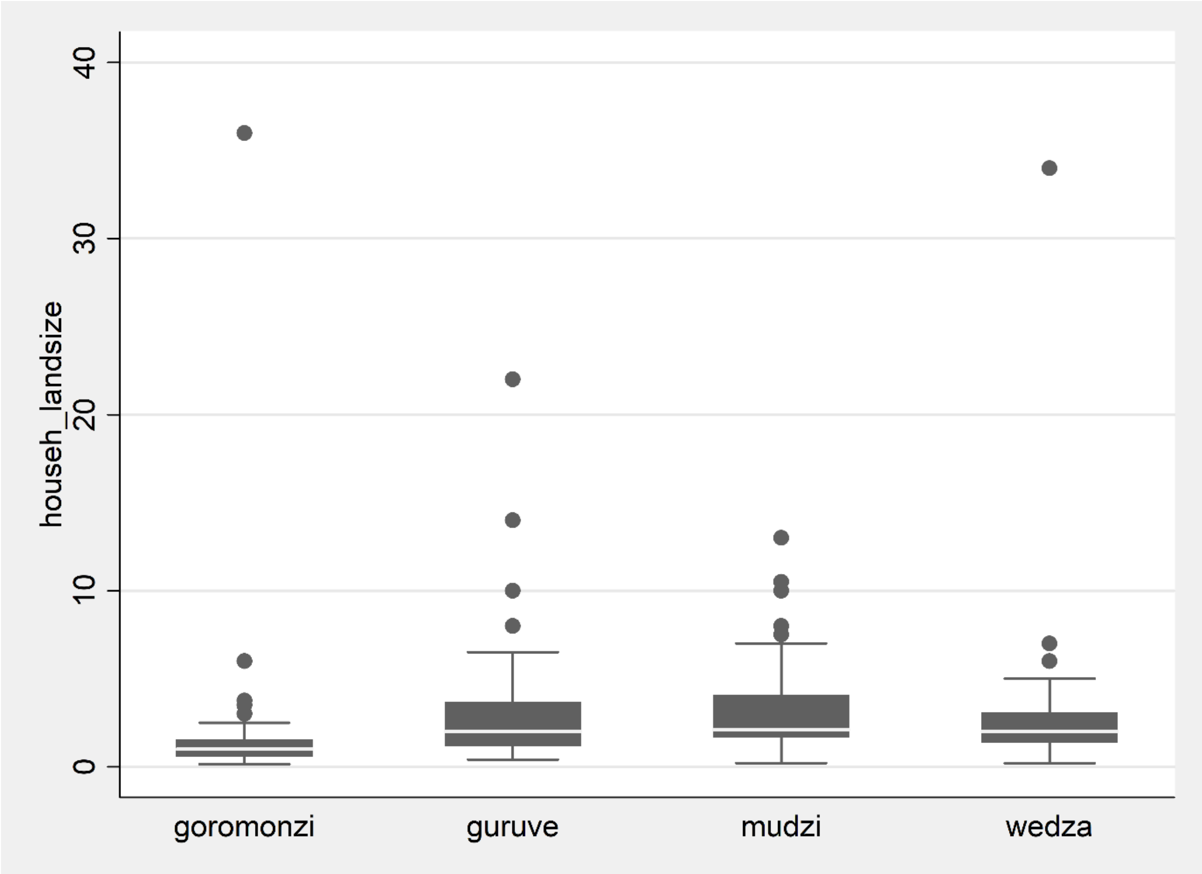

Figure 1: Box plot on household land size holding distribution by district. Land size is measured in hectares.

b) Land utilization

Results show that in 2009, more farmers from Guruve (18.2%) and Mudzi (17.5%) ploughed less than 0.5 hectares of their arable land. Proportions of farmers in the same category in Goromonzi and Wedza were slightly lower 12 and 10.1% respectively. On the other hand, almost similar proportions of farmers in the high land utilization category (more than 2 ha ploughed) are reported in Goromonzi (18.9%), Guruve (20.3%) and Mudzi (20%) in the same year 2009. Only in Wedza district where the average proportion is slightly different and lower (14.3%).

In 2010, almost a similar trend is observed in terms of land utilization. More farmers in Guruve (20.9%) and Mudzi (18.3%) ploughed less than 0.5 hectares of their arable land. Proportions of farmers in the same category are lower in Goromonzi (13.1%) and Wedza (9.2%). In terms of average proportion in the high land utilization category (farmers who ploughed more than 2 hectares of land) all the four districts had almost similar representation ranging from 17.1% in Goromonzi to 20.0% in Mudzi district.

Average total land utilization in Goromonzi, Guruve, Mudzi and Wedza in 2009 are reported to be 1.51, 1.49, 1.53 and 1.44 hectares respectively. In the 2010 season average land utilization figures remained almost the same as they are reported to be 1.42, 1.40, 1.47 and 1.44 hectares in Goromonzi, Guruve, Mudzi and Wedza respectively. Figure 2 compare the average household land size holding and the average land utilization levels in the two farming seasons 2009 and 2010 by district.

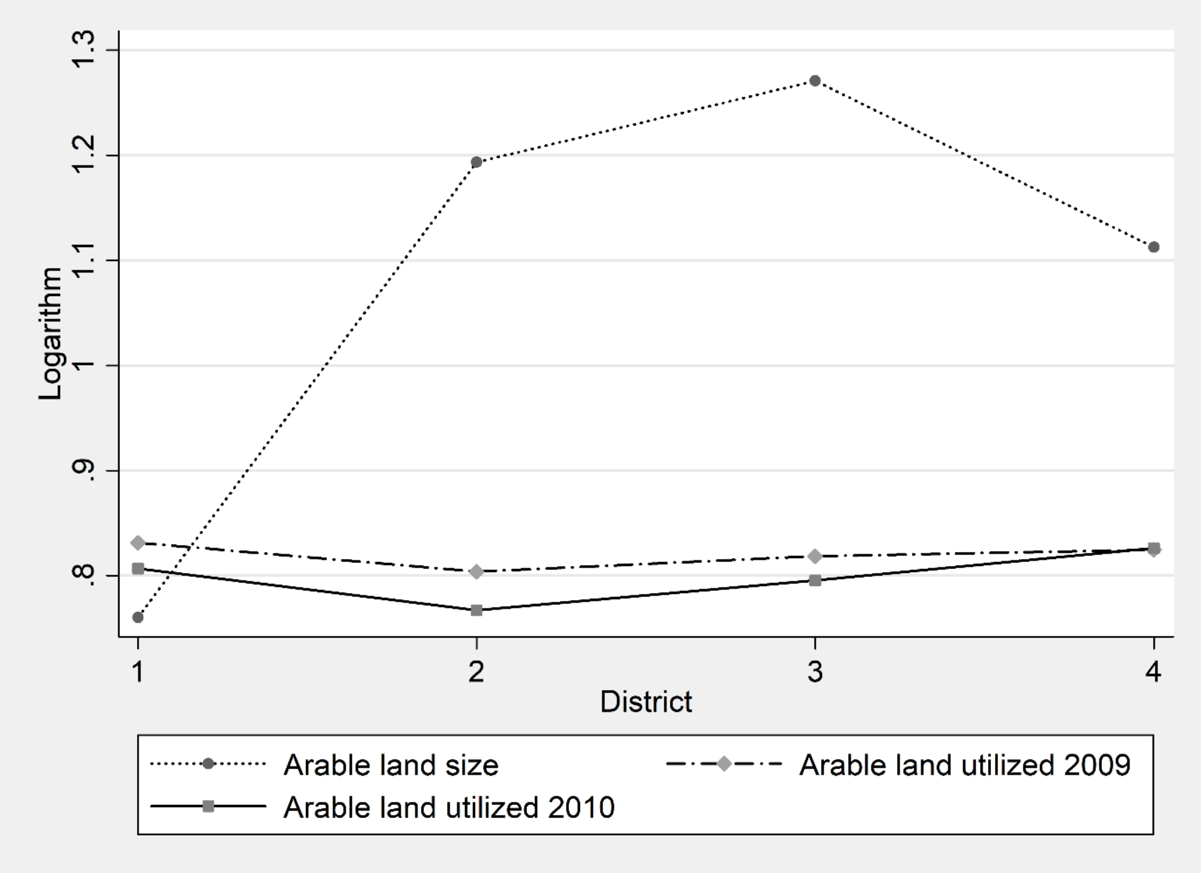

Figure 2: Arable land size owned, land utilized by the household in 2009 and 2010 shown by district. 1=Goromonzi, 2=Guruve, 3=Mudzi and 4=Wedza district.

3.1.2. Explanatory variables

A number of explanatory variables were included in this study. Descriptive statistics report an almost uniform average age of farmers across the four districts. Mean age of farmer was 51.3, 48.5, 52.2 and 55.5 years in Goromonzi, Guruve, Mudzi and Wedza respectively. More so, Goromonzi, Mudzi and Wedza had youth representation rates at 13, 24, 14 & 12% respectively. Male representation was almost similar across the four districts. Mean percent of male representation ranged between 71.4% in Wedza and 78.6% in Guruve. Goromonzi and Mudzi had about 74.3 and 77.5% mean male representation proportions respectively. The majority of the household heads in Mudzi (77.5%), Guruve (75.9%) and Goromonzi (75.4%) were married as at survey date. Slightly lower marriage rate of household heads is reported in Wedza (67.2%). In terms of education, household heads in Guruve, Goromonzi, Mudzi and Wedza had respective mean proportions of having attained at least secondary education as at survey date at 50.3, 48.0, 45.8 and 45.4%..Mean number of workers per household members (family size) was about 5 (members) across all districts.

Most surveyed farmers in all the districts indicated that their main trade was farming. The proportions reported ranged between 79.4% in Goromonzi and 96.7% in Mudzi. Minimum percent of recorded contact with agriculture extension workers was 53.7% in Guruve and the maximum recorded was 71.4% in Wedza district. Guruve and Mudzi reported almost similar mean proportions 62.6 and 60.0% respectively.

Table 2: Summary statistics of variables used in analysis by district

Variable	Description and measurement	Goromonzi	Guruve	Mudzi	Wedza	Full Sample

		mean	mean	mean	mean	mean
Very_low_holding	Binary variable =1 if farmer owns less than 0.5 hectares of arable land; 0 otherwise	0.131	0.016	0.008	0.034	0.052
Low_holding	Binary variable =1 if farmer owns less than 1 ha of land; 0 otherwise	0.429	0.086	0.058	0.118	0.186
High_holding	Binary variable =1 if farmer owns land more than 3 hectares of arable land; 0 otherwise	0.023	0.332	0.292	0.168	0.201
Very_high_holding	Binary variable =1 if farmer owns more than 5 hectares of arable land; 0 otherwise	0.011	0.064	0.108	0.034	0.052
Low_utilization_09	Binary variable=1 if farmer used less than 0.5 hectares of arable land in 2009; 0 otherwise	0.120	0.182	0.175	0.101	0.146
High_utilization_09	Binary variable=1 if farmer used more than 2 hectares of arable land in 2009; 0 otherwise	0.189	0.203	0.200	0.143	0.186
Low_utilization_10	Binary variable=1 if farmer used less than 0.5 hectares of arable land in 2010; 0 otherwise	0.131	0.209	0.183	0.092	0.158
High_utilization_10	Binary variable=1 if farmer used more than 2 hectares of arable land in 2010; 0 otherwise	0.171	0.182	0.200	0.185	0.183
househ_landsize	Arable land size owned by the household	1.419	2.727	2.978	2.464	2.344
Land_use_09	Arable Land area used by the household in 2009 season	1.507	1.488	1.529	1.438	1.492
Land_use_10	Arable land area used by the household in 2010 season	1.424	1.395	1.472	1.440	1.428
househ_age	Age of household head in years as at survey date	51.309	48.503	52.183	55.454	51.431
Youth	Proportion of youths (Farmers age 35 and below)	0.131	0.241	0.142	0.118	0.165
househ_male	Binary variable =1 if gender of household head is male; 0 otherwise	0.743	0.786	0.775	0.714	0.757
househ_married	Binary variable =1 if household head is married; 0 otherwise	0.754	0.759	0.775	0.672	0.744
Household_size	Household Size	5.274	5.225	5.908	5.277	5.386
educ_secondary	Binary variable =1 if household head reached	0.480	0.503	0.458	0.454	0.478

	at least secondary school; 0 otherwise					
emp_farmer	Binary variable =1 if household's main occupation is farming; 0 otherwise	0.794	0.898	0.967	0.832	0.869
agric_extension	Binary variable =1 if farmer has had contact with agricultural extension workers; 0 otherwise	0.537	0.626	0.600	0.714	0.612
asset_quintile1	Binary variable =1 if farmer is in asset quintile 1 (poorest); 0 otherwise	0.131	0.299	0.217	0.134	0.201
asset_quintile2	Binary variable =1 if farmer is in asset quintile 2; 0 otherwise	0.200	0.246	0.142	0.185	0.200
asset_quintile3	Binary variable =1 if farmer is in asset quintile 3; 0 otherwise	0.234	0.182	0.125	0.252	0.200
asset_quintile4	Binary variable =1 if farmer is in asset quintile 4; 0 otherwise	0.194	0.144	0.283	0.210	0.200
asset_quintile5	Binary variable =1 if farmer is in asset quintile 5 (richest); 0 otherwise	0.240	0.128	0.233	0.218	0.200
N		175	187	120	119	601

Data Source: Data for this study comes from a survey of smallholder farming households in four selected districts

Guruve and Mudzi had more than 20% each of their farmers represented in the poorest wealth category (asset quintile 1). Goromonzi and Mudzi had however, lower proportions slightly above 13%. On the other hand, Goromonzi was highly represented in the highest wealth category (asset quintile 5) with 24% representation. Guruve and Wedza were also highly represented with 23.3 and 21.8% respectively. Only Mudzi was lowly represented in the high wealth category with about 12.8% representation.

3.2. Wealth-related disparities in land size holding and land utilization in selected smallholder farming areas of Zimbabwe.

3.2.1. Full farmer sample results

Reported estimates in table 3 are concentration indices based on the Erreygers (2009) corrected concentration index. Precisely, reported in the table are the indices and their respective standard errors given in parenthesis. Results show that wealth related inequalities in low land size holding (-0.133) and very low (-0.053) land size holding exist and are statistically significant at 1 and 10% levels respectively and are mostly pro-poor. Precisely stated, observed inequalities in low and very low land size holding exist and highly concentrated in the poorer smallholder farmers. On the other hand, results also show that the concentration index for high land size holding is positive and highly significant at 1% implying that inequalities in high land size holding are highly concentrated within the affluent groups of smallholder farmers.

Table 3: Wealth-related inequalities in Land size holding and land utilization level in Zimbabwe's smallholder farming

	(Very low holding)	(Low holding)	(High holding)	(Very high

							holding)	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Concentration index	-0.053*	(0.020)	-0.133***	(0.033)	0.127***	(0.038)	0.018	(0.021)
Number of observations	601		601		601		601	
	(Low utilization_09)		(High Utilization_09)		(Low utilization_10)		(High utilization 10)	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Concentration index	-0.190***	(0.033)	0.144***	(0.034)	-0.232***	(0.035)	0.168***	(0.033)
Number of observations	601		601		601		601	

Notes: ***Significant at 1% level; **significant at 5% level; *significant at 10% level.

Also, results in table 3 report pro-poor inequalities in low land utilization levels both in the years 2009 (-0.190) and 2010 (-0.232). The concentration indices are all negative and highly significant at 1%. Conversely, results report existence of a pro-rich distribution of inequalities in high land utilization levels both in 2009 (0.144) and 2010 (0.168). The concentration indices are both positive and highly significant at 1% level.

3.2.2. Heterogeneities of results by district of farmer residence

Table 4 show study results on wealth-related disparities in land size holding and utilization in smallholder farming by district of farmer. Only concentration indices for low land utilization, high land utilization, low land utilization in 2010 and high land utilization in 2010 are reported in table 4. Results show pro-poor distribution of inequalities low land size holding in Goromonzi district (CI= -0.385) significant at 1%. Concentration indices for the other three districts (Guruve, Wedza and Mudzi) are shown not to be significant. Furthermore, results show that low land utilization is pro-poor in Goromonzi, Guruve and Mudzi districts with concentration indices at -0.159 (significant at 5%); -0.324 (significant at 1%), and -0.286 (significant at 1%) respectively. Also, results communicate a pro-rich distribution of inequalities in high land size holding in Guruve (CI= 0.281) and Mudzi (CI=0.319) both significant at 1%.

Table 4: Wealth-related inequalities in land holding and utilization in selected districts of Zimbabwe

		Low holding		High holding		Low utilization_10		High utilization 10	
District	Counts	CI	Std.err	CI	Std.err	CI	Std.err	CI	Std.err
Goromonzi	175	-0.385***	(0.075)	0.059	(0.030)	-0.159**	(0.060)	0.098	(0.057)
Guruve	187	-0.081	(0.046)	0.281***	(0.076)	-0.324***	(0.064)	0.212***	(0.060)
Mudzi	120	-0.075	(0.051)	0.319***	(0.087)	-0.286***	(0.083)	0.206*	(0.081)
Wedza	119	-0.130	(0.070)	0.013	(0.087)	-0.065	(0.061)	0.185*	(0.072)

Notes: ***Significant at 1% level; **significant at 5% level; *significant at 10% level. Presented are the Erreygers (2009) corrected concentration indices with robust standard errors in parenthesis. CI=Concentration Index; Std.err=Standard Error.

Likewise, results report pro-rich distribution of inequalities in high land utilization in 2010 in Guruve (CI=0.212), Mudzi (0.206) and Wedza (0.185). Results for Guruve, Mudzi and Wedza are significant at 1, 10 and 10% levels respectively. Overall results confirm existence of wealth-related inequalities in land size holding and utilization in smallholder farming in Zimbabwe which are slightly differentiated by geographic region.

3.2.3. Heterogeneities by Gender of Farmer

Further scrutinizing upshots by gender of farmer reveal that inequalities in land size holding and utilization are evident in both male and male farmer groups (Table 5). Precisely, results report pro-poor inequalities in low land size holding in both male (CI= -0.109) and female (CI= -0.181) farmer groups significant at 5%. Further, results show significant pro-poor distribution of inequalities in low land utilization in both male (CI= -0.243) and female (CI= -0.202) farmer groups.

Table 5: Wealth-related inequalities in land holding and utilization in Zimbabwe by gender

		Low holding		High holding		Low utilization_10		High utilization 10	
Gender	Counts	CI	Std.err	CI	Std.err	CI	Std.err	CI	Std.err
Male	455	-0.109**	(0.037)	0.120**	(0.046)	-0.243***	(0.039)	0.158***	(0.038)
Female	146	-0.181**	(0.068)	0.088	(0.068)	-0.202*	(0.079)	0.169*	(0.067)

Notes: ***Significant at 1% level; **significant at 5% level; *significant at 10% level. Presented are the Erreygers (2009) corrected concentration indices with robust standard errors in parenthesis. CI=Concentration Index; Std.err=Standard Error.

Conversely, results show pro-rich distribution of inequalities in land size holding significant only in the male sub-sample (CI= 0.120). Also, results report pro-rich distribution of inequalities in high land utilization significant in both male (CI=0.158) and female (CI=0.169) sub-samples. Overall, results confirm existence of significant inequalities in land holding and utilization in smallholder farming in Zimbabwe in both male and female farming households.

3.2.4. Heterogeneities by farmer youth status

Table 6 show results on distribution of wealth-related inequalities in land size holding and utilization by farmer youth status. Results report significant pro-poor distribution of inequalities in low land size holding amongst non-youthful farmers (older farmers) (CI=-0.146) significant at 1%. Also, significant pro-poor inequalities in low land utilization in both youth (CI= -0.419) and non-youth (CI= -0.184) farmer groups are reported. Consistently, results by farmer youth-status show existence of significant pro-rich distribution of inequalities in high land holding in the non-youth farmer group (CI=0.125) and high land utilization in both youth (CI=0.317) and non-youths (CI=0.139).

Table 6: Wealth-related inequalities in land holding and utilization in Zimbabwe by youth status

Youth Status		Low holding		High holding		Low utilization_10		High utilization 10	
Gender	Counts	CI	Std.err	CI	Std.err	CI	Std.err	CI	Std.err
Youth	99	-0.100	(0.090)	0.153	(0.081)	-0.419***	(0.096)	0.317***	(0.080)
Non-Youth	502	-0.146***	(0.035)	0.125**	(0.043)	-0.184***	(0.036)	0.139***	(0.037)

Notes: ***Significant at 1% level; **significant at 5% level; *significant at 10% level. Presented are the Erreygers (2009) corrected concentration indices with robust standard errors in parenthesis. CI=Concentration Index; Std.err=Standard Error.

Overall, results confirm existence of socioeconomic status related inequalities in land size holding and utilization in both youth and non-youth farmer groups.

3.3. Breakdown of wealth-related imbalances in land size holding and land utilization levels

A decomposition analysis of the measured socioeconomic disparities in land size holding and utilization level in smallholder farming was done and the results are shown in table 8. The decomposition exercise allows us to measure the contribution of each explanatory variable to the measured inequalities in land holding and utilization. For brevity, only presented in this article are decomposition results for low land size holding, high land size holding, low land utilization in 2010 and high land utilization in 2010. The coefficient estimates from the OLS models estimated using equation (2) are shown in table 7. A positive (negative) x% contribution of variable X is to be interpreted as follows: wealth-related land size holding or utilization inequality would, be x% lower (higher) if variable X were equally distributed across the wealth range (population), or if variable X had a zero-land size holding or utilization level elasticity.

Table 7: Coefficient estimates used for the decomposition analysis

	Low_holding		High_holding		Low_utilization_10		High_utilization_10	
househ_age	0.0026**	(0.0009)	0.0002	(0.0009)	0.0007	(0.0009)	-0.0009	(0.0009)
househ_male	0.0613	(0.0606)	0.0127	(0.0520)	0.0919	(0.0638)	0.0397	(0.0532)
househ_married	-0.0645	(0.0616)	0.0649	(0.0526)	-0.0449	(0.0626)	0.0064	(0.0527)
Household_size	-0.0052	(0.0068)	0.0157	(0.0097)	0.0083	(0.0082)	0.0063	(0.0075)
educ_secondary	0.0407	(0.0298)	-0.0112	(0.0325)	-0.0135	(0.0300)	0.0069	(0.0342)
emp_farmer	-0.0271	(0.0443)	0.0616	(0.0364)	0.1056*	(0.0413)	0.0377	(0.0424)
agric_extension	-0.0217	(0.0292)	0.0653*	(0.0302)	0.0616*	(0.0314)	-0.0086	(0.0304)
asset_quintile2	0.0209	(0.0482)	0.0419	(0.0450)	-0.0275	(0.0549)	0.0532	(0.0341)
asset_quintile3	0.0167	(0.0481)	0.0768	(0.0465)	-0.1890***	(0.0478)	0.2506***	(0.0458)
asset_quintile4	-0.0658	(0.0456)	0.0892	(0.0497)	-0.1579**	(0.0508)	0.2398***	(0.0467)
asset_quintile5	-0.1995***	(0.0440)	0.1776***	(0.0533)	-0.2109***	(0.0490)	0.1746***	(0.0442)
geo_goromonzi	0.3817***	(0.0419)	-0.2590***	(0.0390)	0.0547	(0.0404)	-0.0230	(0.0424)
geo_guruve	0.0234	(0.0299)	0.0591	(0.0486)	0.0714	(0.0438)	0.0201	(0.0418)
geo_wedza	0.0517	(0.0387)	-0.1228*	(0.0517)	-0.0044	(0.0449)	-0.0157	(0.0471)
N	601		601		601		601	
Mean of the dependent variable	0.1853		0.2003		0.1586		0.1803	

Notes: ***Significant at 1% level; **significant at 5% level; *significant at 10% level. Reported are the marginal probability effects and robust standard errors shown in parentheses. The reference categories are as follows: Household wealth = 1 (poorest); and District = 1 (Mudzi). Coefficient is the linear regression coefficients for the models examining the factors associated with land size holding and utilization in selected districts of Zimbabwe.

Results show that measured inequalities in low land size holding, high land size holding, low and high land utilization in 2010 are explained largely by asset wealth. Precisely, results reveal that measured disparities in low land size holding, high land size holding, low land utilization in 2010 and high land utilization in 2010 would have been 94.8, 82.9, 74.71 and 92.47% lower if wealth was equally distributed across the wealth range (smallholder farming population) respectively. More so, a number of other explanatory variables are found to minimally explain the measured wealth-related disparities in the outcome variables.

For low land size holding, in addition to household wealth, household age (-6.14%), and Goromonzi district (-25.39) contributed minimally but significantly to measured inequalities. Precisely, results reveal that if the variable age had zero low land size holding elasticity, measured inequalities would have been worse by 6.14 %. Also, results reveal that if Goromonzi district (geographic location) had zero low land size holding elasticity wealth related low land size holding inequalities would have been 25.39% higher.

For high land size holding, results show that in addition to household wealth, access to agriculture extension services and geographic location significantly explains observed wealth-related inequalities in high land size holding. Precisely, results show that if access to extension was equally distributed across the wealth range (smallholder farming population), measured pro-rich inequalities in high land size holding would have been lower by 13.65%. Also, if geographic location had zero high land size holding elasticity, measured inequalities would have been higher by 28.49%.

Table 8: contributions of explanatory variables to overall concentration indices for land size holding and land utilization

	Low land size holding			High land size holding			Low land utilization 2010			High land utilization 2010		
Variables	Contribution	%	summed	Contribution	%	Summed	Contribution	%	Summed	Contribution	%	summed
househ_age	0.0095	-6.14	-6.14	0.0008	1.49	1.49	0.0027	-0.27	-0.27	-0.0033	-2.76	-2.76
househ_male	0.0071	-4.30	-4.30	0.0015	2.16	2.16	0.0106	-3.26	-3.26	0.0046	1.72	1.72
househ_married	-0.0098	9.25	9.25	0.0099	6.56	6.56	-0.0068	1.93	1.93	0.0010	0.47	0.47
Household_size	-0.0034	10.53	10.53	0.0100	8.66	8.66	0.0053	-3.08	-3.08	0.0040	1.25	1.25
educ_secondary	0.0059	-3.33	-3.33	-0.0017	-2.30	-2.30	-0.0020	1.85	1.85	0.0010	0.45	0.45
emp_farmer	0.0019	-0.24	-0.24	-0.0043	-2.37	-2.37	-0.0073	4.16	4.16	-0.0026	-2.76	-2.76
agric_extension	-0.0046	15.42	15.42	0.0138	13.65	13.65	0.0130	-4.22	-4.22	-0.0018	-1.89	-1.89
asset_quintile2	-0.0065	2.81		-0.0135	-10.60		0.0088	-3.56		-0.0169	-11.16	
asset_quintile3	0.0000	-10.02		0.0001	1.10		-0.0003	1.23		0.0004	0.13	
asset_quintile4	-0.0210	7.77		0.0288	12.89		-0.0506	19.80		0.0771	41.39	
asset_quintile5	-0.1279	94.19	94.75	0.1137	79.51	82.9	-0.1349	57.24	74.71	0.1116	62.11	92.47
geo_goromonzi	0.0378	-25.39		-0.0257	-12.21		0.0054	-3.34		-0.0023	-2.37	
geo_guruve	-0.0054	4.07		-0.0136	-10.63		-0.0165	9.10		-0.0046	-3.16	
geo_wedza	0.0036	-2.71	-24.03	-0.0086	-5.65	-28.49	-0.0003	1.14	6.90	-0.0011	-1.65	-7.18
CI	-0.133***			0.127***			-0.232***			0.168***		
Residual			8.09			17.74			21.2			18.23
Total			91.91			82.26			78.72			81.77

Notes: ***Significant at 1% level; **significant at 5% level; *significant at 10% level The reference categories are as follows: Household wealth = 1 (poorest); and District = 1 (Mudzi). Contribution = the absolute contributions of explanatory variables to the concentration index; CI=Concentration index.

Further, in addition to household wealth, being a fulltime farmer and access to extension services significantly explains observed pro-poor inequalities in low land utilization in year 2010. Precisely, results reveal that, if all farmers were into full time farming observed pro-poor inequalities in low land utilization would have been lower by 4.16%. Also, if extension access was equally distributed amongst the smallholder farming population, observed pro-poor inequalities in low land utilization would have been higher by 4.22%.

4. Discussions

This article measured and explained wealth-related inequalities in arable land size holding (very low, low, high and very high land holding), and arable land utilization in two agricultural farming seasons 2009 & 2010 (low and high) using the corrected concentration index as suggested by Erreygers (2009). Further, it attempted to ascertain factors explaining the measured inequalities in arable land size holding and utilization levels was performed. Cross-sectional data collected from smallholder farming households from four selected districts in Zimbabwe was analysed. Results reveal a pro-poor distribution of inequalities in low land size holding and low land utilization in smallholder farming. Wealth-related inequalities are evident in both men and women farmer groups, youth and non-youth farmer groups and in different geographic regions. This implies that low arable land size holding and low arable land utilization is highly concentrated within the poorest segments of the smallholder farming population. A pro-poor distribution of inequalities in low land size holding could be reflecting on the biases in land distribution at village level and that of it favouring the more affluent population. It is a common practice in Zimbabwe for villagers/farmers acquiring land through local leadership Chiefs and or village headman, the affluent could be having huge advantages in accessing more arable land unlike the less resourced. This is supported partly by findings from a study by Mutondoro et al. (2016) who concludes that corruption in land administration and politics is a common practice in Africa and it facilitates land grabbing (MacInnes 2012). Local leadership can assist the elite population in corrupt deals to access land at the expense of the poor which widens inequalities in land holding. More so, given the benefits associated with land access and use (Moyo 2013) this can widen general income inequalities in society.

More so, a pro poor distribution in low land size utilization in smallholder farming can be explained by the fact that, more affluent farmers are the ones with higher propensities to access the much needed farming inputs and technologies and hence they can afford to use a larger proportion of the arable land unlike the poorer farmers ceteris paribus. This is supported by literature that have found wealth and or access to resources as important determinants of agricultural technologies adoption and resource use in agriculture (Feder et al. 1985; Feder and Umali 1993; Filmer and Pritchett 2001; Mahapatra and Mitchell 2001; Makate et al. 2017; Mazvimavi and Twomlow 2009). Precisely, unavailability of farming resources has been directly linked with putting low land area under cultivation. Related, the harsh macroeconomic environment in the country for the past two decades could have contributed to impoverishment of the general populace particularly the rural dwellers which then reduced their odds of affording the much needed farming inputs to plough much of their arable land.

A pro-rich distribution of inequalities in high land size holding confirms the influence of wealth as an important determinant for access to relatively large arable land size holding in smallholder farming. The richer farming population have an upper hand in accessing larger arable land size holdings through purchase or renting in from other farmers willing to sell or rent out part of their land in order to get additional income. This is a worrying development since such a move can widen socioeconomic disparities in the smallholder farming population (making the rich richer and the poor poorer). Land size holding is in itself a very critical resource, a major determinant of technologies adoption on the farm (Feder et al. 1985; Feder and Umali 1993; Nkonya et al. 1997), a determinant of credit access (Doss 2006) and hence an important determinant for income and wealth accumulation. Farmers who owns and use relatively larger land sizes at a particular point in time are therefore more likely to reap more income benefits from it and hence improve on their wealth. According to Moyo (2008) the unequal distribution of agricultural land ownership is potentially one of the key sources of income inequality in southern Africa as the shares of agricultural income realised by large land holders from profits and rents can be expected to be higher than the shares realised by workers (Moyo 2013). Also, a pro-rich distribution of inequalities in land utilization observed in this study confirms the importance of farmer’s wealth in determining the area of arable land he/she can cultivate in a given season. Richer farmers have higher odds of putting more land under cultivation as compared to their less affluent counterparts. With relatively more wealth they can access and buy much needed farming inputs and can put much of their land to productive use. Several studies have linked asset wealth to access of innovative farming resources on a farm (Cunguara et al. 2011; Onu 2006; Makate et al. 2018b).

Decomposition analysis performed confirmed wealth as a chief contributor to measured disparities in land size holding and utilization level in smallholder farming. This imply that distribution of wealth hugely explains land holding and use patterns in smallholder farming. However, other factors were found to minimally contribute to the measured socioeconomic inequalities. For instance, age of farmer, access to extension services, full-time farming and geographical location were found to meaningfully contribute to measured wealth related disparities in land size holding and utilization. Results point to the importance of age, full-time farming, access to extension services and geographic location in explaining socioeconomic disparities in land size holding and utilization. Farmers from different age groups are expected to have different conditions confronting them hence influencing their wealth endowments differently. Access to extension services also influences several farming decisions including land use (Anderson and Feder 2007) which explains why access to extensions significantly explain in high land size holding and low land utilization. More so, access to extension services can positively influence land area put under cultivation and hence profits from it through its role as a very reliable information source (Makate et al. 2018b). Further, full time farming determines commitment to the economic activity(farming) which can explain arable land size utilization inequality. Also, geographic location reflects on differences in a number of other factors (e.g. climate, infrastructure) which explains its significant contribution to explaining inequalities in land size holding and utilization.

Overall, the study results point to the existence of socioeconomic disparities in arable land size holding and land utilization in smallholder farming areas of Zimbabwe which are hugely explained by asset wealth. The study findings are in line with other studies that have analysed land concentration and wealth-related inequalities. For instance, a study by Suu (2004) analysed disparities in land access, land use rights and utilization in the Red River Delta and concluded that huge disparities exist. However, the aforementioned study took a more qualitative than quantitative approach. In another related study, Moyo (2013) analysed farm land, asset holdings and income inequalities in a number of southern African countries and found different patterns and levels of land concentration in studied countries. It is important to note that the approaches used in the noted studies are very different from the present analysis which is mainly focused on measuring and explaining wealth related inequalities in land size holding and utilization in smallholder farming in Zimbabwe. Further, this study gives further scrutiny of inequalities by gender farmer youth status, and geographic location which is a unique contribution to literature.

5. Conclusion, implication & recommendations for a sustainable rural development

5.1. Conclusion

In conclusion, the study points to the existence of pro-rich inequalities in high land size holding and high land utilization and pro-poor inequalities in low land size holding and utilization in smallholder farming in Zimbabwe. In other words, low land size holding and utilization is highly concentrated within the poorest segments of society whilst high land size holding and utilization is a phenomenon of the more affluent population. More so, household asset wealth was the most important factor to explain disparities in land size holding and utilization. In addition, other household socioeconomic variables such as age, full-time farming, access to extension, and geographic variables also explained measured disparities. Results do not point to a conducive environment for a sustainable rural development. This is mainly because, inequalities in access to assets particularly land are known to have negative implications for the rural population as their livelihoods are mainly land-based. What then are the implications for a sustainable small-holder farmer led rural development in Zimbabwe?

5.2. Implications and recommendations for a sustainable rural development

Results of this study suggest the need for decision makers in land allocation, distribution, re-distribution and utilization, to deliberately concentrate on the most vulnerable and poorer segments of society. Also, deliberate policies targeting bringing underutilized land into full production and reducing inequalities in landholdings will have far reaching implications for sustainable rural development and transformation. Ensuring equitable land distribution in smallholder farming areas will go a long way in improving agro-based livelihoods and in effectively reducing poverty. More so, supporting programs for land holders to access inputs and other relevant technologies will also be key in ensuring that more land is utilized and also in improving productivity, incomes and hence food security.

Moreover, the supporting policies should be pro-poor and should ensure a conducive environment prevails for the poor to build their asset wealth. Also, infrastructure for transport, communications, markets and supportive services such as extension, and other necessary training are also vital. This will effect agricultural growth and reduce socioeconomic disparities in land utilization and overall income inequalities in society. This is highly possible since the odds of bettering rural land-based livelihoods are high if rural people gain access to land and effective supportive policies.

Overall, the fact that wealth and other household socioeconomic variables such as age, full-time farming status access to extension and geographic location variables are found to be the main factors explaining disparities in land holding and utilization in smallholder farming calls for the need of a multi-sectoral approach to addressing these inequalities.

The study is however, without shortfalls. Analysis relied on cross-sectional household survey data which in itself, is associated with shortfalls. Related, it may be plausible that due to the cross-sectional nature of the data it may not clearly and precisely reveal the dynamics of land size holding and utilization in the studied regions. However, despite the noted concerns, the study provides invaluable and insightful findings on socioeconomic status-related imbalances in land holding and utilization, in Zimbabwe which is an understudied case in the empirical literature.

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