

Consumption Based Inequality Analysis in Rural Households of Tigray Regional State: Ethiopia

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Abstract

Study was conducted at Gulomekeda wereda of Tigray National Regional State with the main objectives of analyzing consumption inequality in the study area and analysis the socioeconomic condition of the society from consumption side. In order to attain this aim the study made use of the secondary data collected by Relief Society of Tigray (REST) from 191 sample households from four rural kebeles of the wereda. The data collected were analyzed and discussed applying Gini coefficient ;Lorenz curve and descriptive statistics. As the researcher estimated using DASP software the Gini-coefficient is 0.30. If we express it in percent Gini index is 30%. That is total inequality of the population accounts for 0.30 or 30%. This shows that there is low inequality among population.

Introduction

Incomes are not usually measured in developing-country surveys, and rarely in Ethiopia. Instead, surveys have measured consumption expenditures or counts of household assets because they are less volatile over time, and are said to be more reliably measured. Survey measures of consumption expenditures have their own problems (for example, respondent fatigue) and volatility (marriages, debts, and health crises can create unrepresentative spikes for some households).. By measuring income and its sources, we know not merely the level of a human development in Tigray household's standard of living but also how it achieved that level and, thus, we obtain a better understanding of why it is poor, average, or affluent.

Measuring income along with household expenditures and possessions also reveals aspects of income volatility and provides an additional measure of inequality. However, obtaining precise estimates of household incomes is complicated because few households have regular sources of income. Where incomes are irregular, such as in agriculture or business, considerable effort is required to obtain estimates of revenue and expenditure before net income can be calculated. Measurement errors may be particularly large in agricultural incomes, since seasonal variation in agricultural incomes is much greater than that in other incomes.

This article tries to show the inequality prevailing in rural households of the study area (gulomekeda wereda) from the consumption side due to the above facts.

Consumption Inequality

To know consumption inequality in the study area applying the Lorenz curve analysis is possible which is defined as

$$L(P) = \frac{\int_0^p Q(q) dq}{\int_0^1 Q(q) dq} = \frac{1}{\mu_0} \int_0^p Q(q) dq \dots\dots\dots 1$$

Where $\int_0^p Q(q) dq$ sums the consumption expenditure of the bottom p proportion (the poorest 100p %) of the population

$\int_0^1 Q(q) dq$ sums the consumption expenditure of all the entire sample population in per adult (Araar, 2006).

$L(p)$ indicates the cumulative percentage of total expenditure held by a cumulative proportion p of the population, if a proportion $p = 0$ of the population necessarily holds a proportion of 0% of expenditure (perfect equality among the groups) , and if a proportion $p = 1$ of the population must hold 100% of aggregate

consumption(perfect inequality among the groups) given individuals are ordered in increasing consumption expenditure . The convexity of the Lorenz curve is thus revealing of the density of expenditure to households at various percentiles and this density is thus visibly larger for lower values of p since this is where the slope of the $L(p)$ changes less rapidly as p increases.

If all sampled households have the same expenditure on food and non food, the cumulative percentage of total consumption held by any bottom proportion p of the population in the town would also be p . The Lorenz curve would have be $L(p) = p$: population shares and shares of total consumption expenditure would be identical. Therefore, the distance between zero inequality line and the Lorenz curve becomes, $p - L(p)$. The larger the deficit, the larger the inequality of welfare among the inhabitants of the town will be. By aggregating that deficit between sample population shares and consumption expenditure share across all values of p between 0 and 1, we would get the well-known Gini index of inequality and estimate the magnitude on welfare inequality of the society with the help of Distributive Analysis Stata Package (DASP) poverty analysis soft ware.

$$\frac{\text{Gini index inequality}}{2} = \int_0^1 (P - L(P))dp \dots\dots\dots 2$$

In most economies the top fifth quintiles population accounts for a sizeable share of total expenditure. The existence of inter-quintile consumption differentials can create problems for the disadvantaged group.(Arrar,2006).

Results and Interpretations

Consumption Expenditure of the Households

The result of the survey shows that the overall mean consumption expenditure for the sample households is 2442.78 Birr/AE. The minimum and maximum consumption expenditure per AE for the year was 482.32 and 13010.71 Birr, and the mean consumption expenditure for the poor and non poor groups is 1471.26 and 3445.31 Birr, respectively. The statistical analysis shows that there is a significant difference between the two means at a less than 1% probability level in terms of distribution of consumption expenditure

Table 1: household poverty status and expenditure per adult

Variable	Poor households		Non poor households		Total	
	mean	SD	Mean	SD	mean	SD
Expenditure peradult	1471.26	359.76	3445.31	1846.46	2442.78	1647.22
t-value	10.32*	minimum. 482.32	maximum. 13010.71			

Source: Own computation, 2010 data

* Significant at 1% probability level.

The mean per capita consumption expenditure of the sample households during the study period 2010 is found to be 2082.14 Birr. The study result indicated that the mean per capita consumption of non poor households is 2922.2 and that of the poor households is 1268.04 Birr. While the minimum and maximum consumption expenditure for poor households is 403.225 and 9125.2 Birr per capita, it is 801.95 and 15426.25 Birr per capita, respectively for non poor groups. The mean difference between annual per capita consumption expenditures of the two groups is significantly different at a probability level of less than 1%

Table 2: Distribution of Per Capita Consumption Expenditure Among the Poor & Non Poor Groups

variable	Poor households		Non poor households		Total	
	mean	SD	mean	SD	mean	SD
Percapita expenditure	1268.04	866.79	2922.2	2210.89	2082.14	1860.02
t-value	6.84*	Minimum. 403.22	Maximum. 15426.25			

Source: Own computation, 2010 data

* Significant at 1% probability level.

Measuring inequality focuses on the entire population rather than only on poor households. Out of the possible measurements of inequality the simplest way to measure inequality among individual households is by dividing the whole population from the poorest to the richest and show the percentage of consumption expenditure attributed to each quintile of the population. This answers questions such as how much percent of the total expenditure is made by the poorest 20 %(or the poorest 10%) or the richest 20 %(or the richest 10%)

Table 3: Summary of adult consumption expenditure in each quintile

Quintile group	Mean	% mean expenditure	Frequency
First quintile	4585.758	9.32	39
Second quintile	7519.372	15.28	38
Third quintile	9308.313	18.92	38
Fourth quintile	11864.64	24.11	38
Fifth quintile	15917.05	32.35	38
Total	49195.133	100	191

Source: own computation REST /2010/ data

From table above, one can understand that the poorest quintile (i.e. the poorest 20%) consumes only 9.32% of the mean expenditures per year per adult, while the share of the richest quintile (i.e., the richest 20%) is 32.35%. Furthermore, the mean expenditure of the first two quintiles (i.e. the poorest 40%) is 24.6% still lower than the share of the richest 20% that is 32.35%. This distribution indicates there is a gap in welfare among the population. The most widely used single measure of inequality is the Gini-coefficient. As the researcher estimated using DASP software the Gini-coefficient is 0.30. If we express it in percent Gini index is 30%. That is total inequality of the population accounts for 0.30 or 30%. This shows that there is low inequality among population.

Conclusion

Outcome pertinent to Welfare inequality reveals that there is great variation in consumption expenditure of the households. The poorest 20 % of the population has mean yearly consumption expenditure of Birr 4585.75, where as the mean yearly consumption expenditure of the richest 20% is birr 15917.05.the researcher estimates Gini coefficient and the result is found to be 0.30. That is total inequality of the population accounts for 0.30 or 30%.

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