

# Inequality in Consumption Expenditures Prevailing among Displaced and Non-displaced Peri-urban Farm Households in Metropolitan Towns of Amhara National Regional State, Ethiopia

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## Abstract

**Background:** Rapid population growth in urban areas resulted to high demand of urban land in metropolitan towns because of which town administrators spurred to incorporate peri-urban areas in to urban administrations to meet the rising demand. This problem often results in eviction of households originally residing in peri-urban areas from their farmlands, resulting in loss of livelihoods.

**Objective:** The purpose of this study was to examine the inequality in consumption expenditures prevailing among displaced and non-displaced farm households in metropolitan towns of Amhara National Regional State, Ethiopia.

**Material and Methods:** Deciles ratio, Gini coefficient, and Generalized Entropy Inequality Indices used to examine the prevailing inequality in consumption expenditures among displaced and non-displaced farm households' in study areas. About 430 households (183 displaced and 247 non-displaced) sampled through a multi-stage purposive and random sampling procedure.

**Results:** The results of the deciles distribution revealed that large segment of the displaced farm households were concentrated in the poorest deciles while the non-displaced farm households were concentrated in the richest deciles. The highest recorded Gini coefficient was for displaced farm households as compared to the non-displaced farm households. Similarly, the result of General Entropy (GE) inequality decomposition showed that the highest registered consumption expenditure inequality was for displaced farm households at mean log deviation GE (0) as compared to the non-displaced farm households.

**Conclusions:** The overall inequality measures illuminated that urban expansion brought a dramatic increase in the concentration of poverty and inequality in consumption expenditure for displaced farm households compared to non-displaced farm households. Therefore, the government and other stakeholders should design sustainable rehabilitation programs of households evicted from their farmlands with full packages and revise the meager land compensation schemes.

**Keywords:** Consumption Expenditure; Urban expansion, Displaced households

## 1. Introduction

The level of urbanization in Africa is low (37.1%) compared to that of the developed countries like Europe (72.7%) and North America, 79.1% (United Nations, 2014). However, urbanization in the developing world is progressing much faster than the developed countries, which may reach 4% a year (World Bank, 2014). In

support of these, Marshall *et al.* (2013) indicated that the fast rate of urbanization in the developing world is attributed to rural-urban migration, economic growth, technological change, and rapid population growth. The number of urban residents in Africa has been growing since the 1950s, hitting 40% of the continent's total in



2018 and is projected to reach 56% by 2050 (UNDESA, 2018).

Studies conducted in Africa revealed that urbanization is directly or indirectly associated with informal settlements and working environments (Naab *et al.*, 2013; World Bank, 2015). It further relates with limited job creation, weak linkages with rural areas, and low levels of productivity (Tacoli, 2012; Henderson *et al.*, 2013). Even more, studies indicated that recent urban expansions in sub-Saharan Africa lack adequate investments and required degree of industrialization (Henderson *et al.*, 2013; Jedwab *et al.*, 2014). This implies that the bottom poor households may gain little from rising urbanization and hence the latter can increase income inequality in the short to medium term (Kanbur and Zhuang, 2013). These patterns are consistent with the widening income gaps in some of the countries experiencing rapid urban expansion process. For instance, in the context of Ethiopia, the urban income inequality-with a Gini coefficient of 0.38 is higher than the rural income inequality -with a Gini coefficient of 0.28 (CSA, 2019).

The history of urbanization in Ethiopia traces back to thousands of years and include such iconic urban settlements, namely, Aksum, Lalibela, and Gondar. However, the country has low level of urbanization even by African standards, where only 19% of the population lives in the urban area (Addisyihun Abayneh, 2019). However, Ethiopia started to record a relatively high growth rate of urban population (4% annually), double that of rural areas in recent years (UNDP, 2015). Some estimates indicate that Ethiopia's urban population will increase three times in the next 20+ years, achieving an extreme urban growth rate of over 5% per year. Furthermore, the country's urban population is expected to grow on average by 3.98% by 2050, About 42.1% of the total population is expected to be reside urban centers (UN-Habitat, 2017).

In Ethiopia, the growth of the urban population has required an enormous amount of land resources necessary for housing services, and infrastructural development (Achamyeleh Gashu, 2016; Kassahun Tassie, 2018). As a result of population pressure, cities have expanded horizontally towards pre-existing rural villages to satisfy the huge demand for urban land (Addisu Mera, 2015; Gadisa Worku, 2019). On the other hand, the land is a very important and scarce asset to farm households (DFDI, 2013). However, peri-urban farm households loose land forever due to urban-driven

expansion processes (Achamyeleh Gashu, 2014; Abubeker Mohammed, 2018).

Studies conducted on urbanization expansion in Ethiopia showed that urban expansion results in displacement, eviction, and segregation of urban neighbors in general and neighboring farmers in particular that result in social makeup disorder (UNPFA, 2007; Leulseged Kassa *et al.*, 2011; Muluwork Zebu, 2014; Tsega Gebrekristose, 2014; Addisu Mera, 2015; Teketel Fekadu, 2015; Idris Mohammed *et al.*, 2020). Moreover, rapid urban growth and building new urban houses each year puts continued pressure on the livelihoods of original peri-urban farming dwellers. The above researchers used income as a parameter to show the impacts of urban expansion on the livelihoods of peri-urban farming dwellers, which is only one indicator and is not comprehensive. Measuring income also requires formal recording or recalling long-term data. At the same time, evicted farmers are wary of giving real data on income and they decrease their income when reporting hoping that they would be eligible to receive foreign aid such as USAID. Hence, consumption-based inequality measurements are relatively more reliable than income-based measurements. Moreover, there is little information about the extent of expenditure inequality incidence among peri-urban farm households as a result of urban induces displacement.

Unprecedented growth of the urban population in metropolitan towns of the Amhara National Regional State of the country have resulted in high demands of urban land for residential housing, service provision, and infrastructure development. For instance, the population of Bahir Dar increased from 54,800 in 1984 to 96,140 in 1994 with an average growth rate of 5.6%. In 2007, the population of the town increased to 155,428 with an average growth rate of 3.7% and it reached 226,713 in 2014 and 350,000 in 2017. Likewise, the population of Gondar town increased from 80,886 in the year 1984 to 112,249 in 1994 with an average growth rate of 3.3%; and it reached 207,044 in 2007 with an average growth rate of 4.7% the population of Gondar town reached 315,856 in 2018. The other metropolitan town, Dessie, has also experienced a fast-growing urban population. For example, in the year 1984, the town's population was 68,848 and in 1994, it turned out to be 97,314 with an average growth rate of 3.5%. In 2007, the population of the town reached 120,095 with an average growth rate of 1.6 the population of the town reached 219,726 in 2018 (BoFED, 2014; MUDHCo and ECSU, 2015; CSA, 2018).

Hence, these population pressures caused horizontal expansion of towns.

To satisfy the huge demand for urban land, metropolitan towns of the region have been incorporating the pre-existing rural villages into urban areas. As a result, the local inhabitants of the farmlands lying near the towns often dispossessed from their farmlands with meager compensations. According to Amhara National Regional State Urban Development, Housing and Construction Bureau (2017), about 3,053.12 hectares of agricultural land expropriated from above 1500 peri-urban farmers and transferred to 129,594 urban residents through the lease system.

In Ethiopia, land acquisition and delivery for urban expansion and development purposes are completely state-controlled (FDRE, 1995). Farmers affected by urban expansion processes have the right to receive compensation (FDRE, 2008). However, rehabilitation mechanisms used by the towns' administrations constituting mainly arrangements of cash payments as compensation found to be inadequate to replace the resource bases lost by the displaced farm households, which is mainly land (Idris Mohammed *et al.*, 2020). Displaced farm households may not be able to buy another plot of land to continue their farming activities because of the country's land policy. Hence, they start to look for alternative employment opportunities other than crop and livestock production.

Therefore, the objective of this study was to investigate the inequality in consumption expenditures prevailing among displaced and non-displaced farm households in selected towns of Amhara National Regional State, Ethiopia. In this perspective, a question posed in this study as to whether urban expansion brings significant consumption expenditure inequality among displaced and non-displaced farm households in the peri-urban areas.

The study on urban expansion in less developed countries like Ethiopia are issues that look for a solution from scholars for making the government and policy makers aware about the adverse consequences of urban expansion and forward a set of priorities and alternative policies that can protect the original peri-urban farm households as a result of urban expansion-induced displacement.

## 2. Methodology of the Study

### 2.1. Description of the Study Area

The study was conducted in the Metropolitan towns of the Amhara National Regional State (Gondar, Bahir Dar, and Dessie). Bahir Dar town, which is located on the southern shore of Lake Tana, the source of the Blue Nile (Abay) river, has a long history dating back to at least the sixteenth or seventeenth century. It is currently the capital of the Amhara National Regional State, which is located in the northwestern part of Ethiopia (BoFED, 2014). The town is located at 11°36' north latitude and 37°23' east longitudes. It has an average elevation of 1,801 meters above sea level (Ethiopian Mapping Agency, 1981). On the other hand, Dessie town is located on the Addis Ababa-Mekelle highway, at a distance of about 401 km from Addis Ababa, in the northern part of the country in the South Wollo administrative Zone of the Amhara National Region state. This town is located at 11°8' north latitude and 39°38' east longitude and at an average elevation of 2470 meters above sea level (Ethiopian Mapping Agency, 1981). The other metropolitan town, Gondar, which is the capital of the Central Gondar Zone, is located at the distance of about 738 km from Addis Ababa and 182 km from Bahir Dar in the north or northwesterly direction. It is located at 12°30' north and 37°20' east and an average elevation of 2133 meters above sea level (Ethiopian Mapping Agency, 1981).

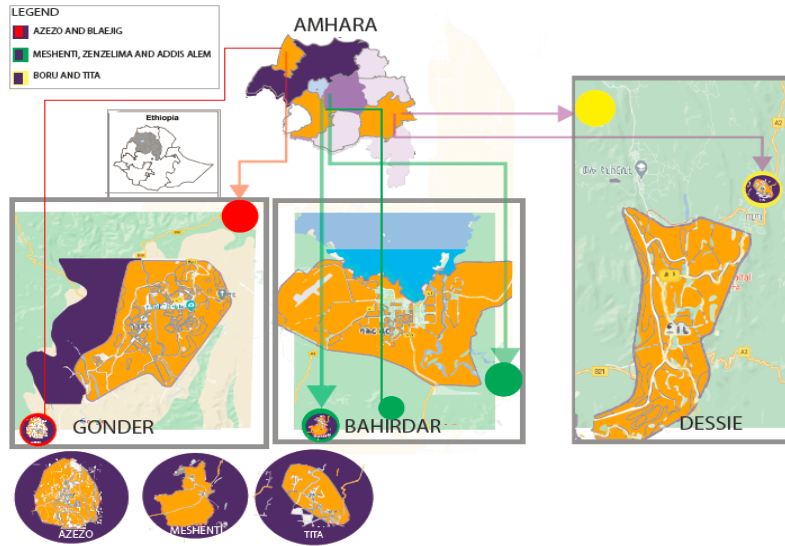


Figure 1. Map of the study areas

**2.2. Sampling Technique and Sample Size**

A multistage sampling procedure was employed to draw representative sample households for the study. In the first stage, three towns in the Amhara National Regional State (Bahir Dar, Dessie, and Gondar) were purposively selected. The towns represent the major urban expansion features and are the capitals of Zones in the Amhara National Regional State. In the second stage, peri-urban *Kebeles* (the lowest administrative unit in Ethiopia) were identified from the respective towns' administration. There are 14, 6, and 11 peri-urban *kebeles* in Bahir Dar, Dessie, and Gondar towns, respectively. Therefore, seven pre-urban *kebeles* (3, 2, and 2 from Bahir Dar, Dessie, and Gondar towns) were selected based on the mean value of the number of displaced farmers in all metropolitan cities. Those *Kebeles*, which have high displacement above the mean values, were selected purposively. This is because to consider peri-urban *Kebeles* with the high number of displacements. In the third stage, households' lists in the

selected *Kebeles* obtained from each *Kebele's* administration. The list was stratified into displaced and non-displaced farmers. The final sampling procedure was to select displaced and non-displaced farm households' heads. From seven peri-urban *Kebeles*, 430 (183 displaced and 247 non-displaced) farm households were selected randomly based on the proportions in the population. The total required sample size was determined using Kothari (2004) formula:

$$n = \frac{z^2 \times p \times q \times N}{z^2 \times p \times q + (N - 1) \times e^2} \quad \text{---(1)}$$

Where, *n* is the desired sample size; *Z* is the standard cumulative distribution (*z* = 1.96 for 95% confidence level); *e* is the desired level of precision (*e* = 5% or 0.05); *p* proportion of target population to the total population of *kebeles*; *q* = 1-*p*; and *N* is the total number of households from which the sample is drawn.

Table 1. Number of sample households from each peri-urban *kebeles*.

| City      | Peri-urban <i>Kebeles</i> | Population | Displaced | Sampled households |               | Total |
|-----------|---------------------------|------------|-----------|--------------------|---------------|-------|
|           |                           |            |           | Displaced          | Non-displaced |       |
| Bahir Dar | Zenzelima                 | 9,282      | 1338      | 27                 | 34            | 61    |
|           | Meshenti                  | 8,219      | 1193      | 24                 | 30            | 54    |
|           | Adisalem                  | 7,510      | 1047      | 21                 | 28            | 49    |
| Dessie    | Boru                      | 3,319      | 512       | 10                 | 12            | 22    |
|           | Tita                      | 4,727      | 680       | 14                 | 17            | 31    |
| Gondar    | Blajig                    | 7,909      | 945       | 19                 | 33            | 52    |
|           | Azezo T/haymanot          | 24,419     | 3345      | 68                 | 93            | 161   |
| Total     |                           | 65,385     | 9060      | 183                | 247           | 430   |

**2.3. Methods of Data Analysis**

Measurement of inequality was made based on the level of real consumption expenditure per adult equivalent of the household to capture consumption differences by age and economies of scale. Consumption expenditure data were preferred for the reason that it was more reliable and simple to compute than income (Deaton, 1997; Dercon, 2005; Duclos and Araar, 2006). Thus, consumption expenditure was taken as a proxy variable for income or to measure inequality. Hence, deciles ratio, Gini coefficient, and Generalized Entropy inequality indices were employed to measure consumption inequality among displaced and non-displaced farm households.

**I. Deciles ratio**

Deciles ratio divides the population into successive deciles according to ascending consumption expenditure levels and then determines the proportion of net expenditure received by each group. The deciles dispersion ratio presents the ratio of the average expenditure or income of the richest 10% of the population divided by the average expenditure of the bottom 10%. This ratio is readily interpretable by expressing the expenditure of the rich as multiples of that of the poor.

**II. Gini coefficient**

Gini coefficient is the most common indicator for measuring inequality in household consumption. It computes the average distance between the cumulated population shares and cumulated consumption shares. In other words, it is the ratio of the area between the Lorenz curve and the diagonal equality line to the total area of the triangle (World Bank, 2005; Fekadu Gelaw, 2009).

The standard Gini index is thus given by:

$$Gini = 2cov(Y, F) / \bar{Y} \quad (2)$$

Where, Y is the consumption of the individual or household; F is the rank; and  $\bar{Y}$  is the mean consumption.

**III. Generalized entropy class (GE)**

One of the most frequently used inequality measures for decomposition purpose is the General Entropy class of measures introduced by Cowell (1980) which is defined as:

$$GE(\alpha) = \frac{1}{\alpha(\alpha-1)} \left[ \frac{1}{n} \sum_{i=1}^n \left( \frac{y_i}{\bar{y}} \right)^\alpha - 1 \right] \quad \alpha = 0, 1, \dots \quad (3)$$

$$GE(\alpha) = \left[ \frac{1}{n} \sum_{i=1}^n \log \left( \frac{\bar{y}}{y_i} \right) \right] \quad \alpha = 0$$

$$GE(\alpha) = \left[ \frac{1}{n} \sum_{i=1}^n \frac{y_i}{\bar{y}} \log \left( \frac{y_i}{\bar{y}} \right) \right] \quad \alpha = 1$$

$$GE(\alpha) = \left[ \frac{1}{n\bar{y}^2} \sum_{i=1}^n (y_i - \bar{y})^2 \right] \quad \alpha = 2$$

Where,  $y_i$  is the expenditure of the  $i^{th}$  household;  $\bar{y}$  is the mean expenditure; and  $\alpha$  is the distributional parameter. As the value of  $\alpha$  approaches to zero, the GE class is more sensitive to changes at the lower end of the distribution and equally sensitive to changes across the distribution for  $\alpha$  equal to one (which is the Thiel index) and sensitive to changes at the higher end of the distribution for higher values (Foster, 1984).

The GE class has important advantages: First, GE can be decomposed into within- and between-group inequality over space and time. The within-group inequality shows how much of the overall inequality attributed due to the change in consumption distribution within the group taking the group as a population. The between-group inequality index helps to examine how much of the overall inequality is due to changes in the mean consumption of each group by assuming all members in the group consume the average amount equally. Second, different entropy class of measures is sensitive to different parts of the distribution (World Bank, 2005).

The total inequality obtained above can be decomposed into a component of inequality between the population groups  $I_b$  and the remaining within group inequality  $I_w$ . The decomposition by population group at a point in time of the GE class is defined as follows:

$$I = I_b + I_w = \sum_j^k V_j^\alpha f_j^{1-\alpha} GE(\alpha)_j + \frac{1}{\alpha^2 - \alpha} \left[ \sum_j^k f_j \left( \frac{y_j}{\bar{y}} \right)^\alpha - 1 \right] \quad (4)$$

Where,  $f_j$  is the population share of group  $j$  ( $j = 1, 2, \dots, k$ );  $V_j$  is the consumption share of group  $j$ ; and  $y_j$  is the average income in groups  $j$ .

**3. Results and Discussion**

**3.1. Demographic and Socioeconomic Characteristics of Sample Households**

The average ages of displaced and non-displaced farm households were 47.2 and 47.38 years, respectively. The youngest and oldest respondents were respectively, 32 and 78 years old. The survey result also indicated the average education levels of displaced and non-displaced

farmers were 3.40 and 3.60 years, respectively. The test statistics showed that there were no significant differences among the displaced and non-displaced farm households in terms of age and education level (Table 2). The average dependency ratios for displaced and non-displaced farm households were about 1.18 and 0.5 respectively. The survey result showed that there was a statistically significant mean difference between the displaced and non-displaced groups in terms of dependency ratio at a 1% probability level (Table 2). The mean landholding sizes for the non-displaced and displaced sample households were found to be 0.83 and 0.22 hectares per head respectively. The statistical analysis showed that there was a significant difference at a 1% probability level in the mean landholding size between displaced and non-displaced farm households. This

indicates that displaced farm households' landholding size significantly reduced as compared to that of the non-displaced farm households because of the urban-induced expansion.

Similarly, the mean livestock holding of non-displaced and displaced farm households in the study area were 4.85 and 1.24 tropical livestock units (TLU) respectively. The survey result demonstrated that the mean significant differences between livestock holding among non-displaced and displaced farmers were statistically significant at a 1% level of probability (Table 2). The implication is that displaced farm household's livestock holding reduced as compared to non-displaced farm households. This is because the grazing land of the area decreased because of urban-induced displacement.

Table 2. Demographic and Socioeconomic characteristic of the households.

| Variable         | Displaced (N = 183) |          | Non-displaced (N = 247) |          | t-value  | Total (N = 430) |          |      |      |
|------------------|---------------------|----------|-------------------------|----------|----------|-----------------|----------|------|------|
|                  | Mean                | St. dev. | Mean                    | St. dev. |          | Mean            | St. dev. | Min. | Max. |
| Age              | 47.20               | 10.04    | 47.38                   | 10.45    | 0.178    | 47.3            | 10.27    | 32   | 78   |
| Education        | 3.40                | 3.085    | 3.60                    | 3.19     | 0.652    | 3.51            | 3.14     | 0    | 12   |
| Dependency ratio | 1.18                | 0.55     | 0.50                    | 0.51     | -13.1*** | 0.79            | 0.63     | 0    | 2    |
| Land size(ha)    | 0.22                | 0.14     | 0.83                    | 0.29     | 26.37*** | 0.57            | 0.38     | 0    | 1.75 |
| Livestock(TLU)   | 1.24                | 1.28     | 4.85                    | 1.98     | 21.47*** | 3.31            | 2.48     | 0    | 13   |

Note: *St. dev.* = Standard deviation; *Min.* = Minimum; and *Max.* = Maximum. \*\*\* refers to statistical significance at 1% probability level.

The survey results in Table 3 shows that out of the total 183 samples displaced farm households, 133(72.68%) critically criticized the amount of compensation given from the respective city administrations. The rationale behind their criticism is that the amount of compensation did not match with the current value of land for the fact that the lease prices of the same plot of land in the city administration are much higher than their respective compensation rate. The households believed that the

amounts of compensation were decided subjectively. Similarly, the survey results showed that 69.4% of displaced farm households used land compensation for consumption purpose only while only 30.6% of displaced farm households utilized the compensation for further asset generating activities.

Table 3. Descriptive statistics on displaced farm households land compensation.

| Variable                                      | Displaced farm households (N = 183) |        |       |
|---|-------------------------------------|--------|-------|
|   |                                     | Number | %     |
| Utilization compensation                      | Production                          | 56     | 30.60 |
|   | Consumption                         | 127    | 69.40 |
| Un-Fair and In-adequate Monetary Compensation | No                                  | 50     | 27.32 |
|   | Yes                                 | 133    | 72.68 |

### 3.2. Descriptive Statistics on Consumption Expenditure by Displacement Status

Household consumption expenditure consists of expenses on all food and non-food items. The aggregate of these components provided a measure of total annual household consumption expenditure during the past 12 months. Quantities consumed and their prices were critical information for this research. The average current market prices for each item in the basket based on local

prices data in 2019/2020 used to convert annual household expenditure to ETB. Hence, expenditure/per adult/annum is calculated by summing up all the expenditure components and dividing by the total adult equivalent of the household. The mean values of consumption expenditures per adult equivalent by displacement status were given in Table 4 below.

Table 4. Descriptive statistics on consumption expenditure by displacement status.

| Variables            | Displaced<br>(N = 183) |          | Non-displaced<br>(N = 247) |          | t-value | Difference<br>(N = 430) |           |
|----------------------|------------------------|----------|----------------------------|----------|---------|-------------------------|-----------|
|                      | Mean                   | St. dev. | Mean                       | St. dev. |         | Mean                    | Std. err. |
| Food expenditure     | 4497.75                | 3012.61  | 6930.91                    | 2490.35  | 9.2***  | 2433.16                 | 265.75    |
| Non-food expenditure | 1439.17                | 1472.37  | 5735.06                    | 2541.39  | 20.5*** | 4295.89                 | 209.96    |
| Total expenditure    | 5936.92                | 4250.28  | 12665.96                   | 5021.88  | 14.7*** | 6729.04                 | 459.32    |

Note: \*\*\* refers to statistical significance at 1% probability level.

Survey result in Table 4 above indicated on average, the annual food expenditure per adult equivalent for displaced and non-displaced households had been ETB 4497.75 and 6930.91, respectively. On the other side, annual non-food consumption expenditure per adult equivalent of displaced and non-displaced households were 1439.17 and 5735.06 Ethiopian Birr respectively with a mean difference significant at a 1% probability level. Moreover, the average total consumption expenditure per adult equivalent for displaced farm households was 5936.92 ETB. It was lower than the average total consumption expenditure per adult equivalent of non-displaced farm households ETB 12665.96 with a mean difference significant at 1% probability level (Table 4). This indicates that various asset bases of displaced farm households that were important for their livelihood diminished drastically over time, which implied that their consumption expenditure also reduced.

### 3.3. Consumption Expenditure Distribution among Peri-Urban Farm Household

The total consumption expenditure per adult equivalent distribution differentiated among displaced and non-displaced farm households (Table 5). The results confirm the presence of extreme expenditure inequality among

peri-urban farm households in the metropolitan towns of Amhara National Regional State by showing that 2.7% of displaced farm households consumption expenditure per adult equivalent accrues to those in the top deciles (3 displaced farm households). The bottom 10% (42) displaced farm households comprised just 35 percent of the total consumption expenditure per adult equivalent.

The results further show that displaced farm households' total sum of consumption expenditure per adult equivalent in the first deciles is about 515051.88 ETB. About 0.7% of non-displaced farm households' consumption expenditure share exists in the bottom deciles (1 non-displaced farm households). Similarly, non-displaced farm households' total sum of consumption expenditure per adult equivalent in the top deciles is about 575151.11 ETB. On the other hand, about 21% of non-displaced farm households' consumption expenditure share exists in the top deciles. It is evident from Table 5 that a large segment of the displaced farm households appears to be concentrated in the bottom deciles while the non-displaced farm household's population is concentrated in the top deciles. Hence, urban expansion induced displacement is widening consumption expenditure gaps among displaced and non-displaced farm households in the study area.

Table 5. Consumption expenditure distribution by displacement status.

| Expenditure deciles |        | Non-displaced<br>(N = 247)    | Displaced<br>(N = 183)        | Total<br>(N = 430)            |
|---------------------|--------|-------------------------------|-------------------------------|-------------------------------|
|                     |        | Consumption<br>expenditure/AE | Consumption<br>expenditure/AE | Consumption<br>expenditure/AE |
| First               | Number | 1                             | 42                            | 43                            |
|                     | Sum    | 17932.03                      | 515051.88                     | 532983.91                     |
|                     | Share  | 0.7%                          | 35%                           | 12.6%                         |
| Second              | Number | 5                             | 38                            | 43                            |
|                     | Sum    | 71246.06                      | 105102.49                     | 176348.55                     |
|                     | Share  | 2.6%                          | 7.1%                          | 4.2%                          |
| Third               | Number | 11                            | 32                            | 43                            |
|                     | Sum    | 21564.32                      | 63828.81                      | 85393.13                      |
|                     | Share  | 0.8%                          | 4.3%                          | 2.0%                          |
| Fourth              | Number | 25                            | 18                            | 43                            |
|                     | Sum    | 291412.51                     | 173956.40                     | 465368.91                     |
|                     | Share  | 10.6%                         | 11.8%                         | 11.0%                         |
| Fifth               | Number | 28                            | 15                            | 43                            |
|                     | Sum    | 248844.95                     | 137117.63                     | 385962.59                     |
|                     | Share  | 9.1%                          | 9.3%                          | 9.2%                          |
| Sixth               | Number | 32                            | 11                            | 43                            |
|                     | Sum    | 276562.82                     | 86446.46                      | 363009.28                     |
|                     | Share  | 10.1%                         | 5.9%                          | 8.6%                          |
| Seventh             | Number | 33                            | 11                            | 44                            |
|                     | Sum    | 262121.18                     | 168647.23                     | 430768.41                     |
|                     | Share  | 9.6%                          | 11.5%                         | 10.2%                         |
| Eighth              | Number | 34                            | 8                             | 42                            |
|                     | Sum    | 504063.40                     | 112588.48                     | 616651.88                     |
|                     | Share  | 18.4%                         | 7.6%                          | 14.6%                         |
| Ninth               | Number | 38                            | 5                             | 43                            |
|                     | Sum    | 473681.49                     | 69415.55                      | 543097.04                     |
|                     | Share  | 17.3%                         | 4.7%                          | 12.9%                         |
| Tenth               | Number | 40                            | 3                             | 43                            |
|                     | Sum    | 575151.11                     | 40213.68                      | 615364.79                     |
|                     | Share  | 21%                           | 2.7%                          | 14.6%                         |

### 3.4. Inequality Indices

The Gini coefficient calculated based on farm households' consumption expenditure per adult equivalent for all the sampled farm households was 0.4858. The Gini index of consumption expenditure per adult equivalent inequality value suggests that expenditure inequality of peri-urban farm households was higher in metropolitan cities of Amhara National Regional State. The values for the deciles dispersion ratio, which presents the ratio of the average consumption of expenditure per adult equivalent of the richest 10% of the population divided by the average consumption expenditure per adult equivalent of the bottom 10%. Therefore, one can easily infer that the richest 10% of households consume

1.155 times more than the poorest 10% of households (Table 6). This distribution indicates there was a huge gap in consumption expenditure per adult equivalent among the peri-urban farm households.

The survey results revealed that the general entropy measures of consumption expenditure per adult equivalent inequality were very high at the bottom of the distribution GE (0), with a score of 0.6734 followed by medium ranges of expenditures GE (1) of 0.4138 and expenditures in the upper part of the distribution GE (2) of .3803 (Table 6). This implies that expenditure inequality was very high for the bottom poor household groups and gains little from urban-induced expansion.



Table 6. Summary of overall inequality indices.

| Inequality measures |                          | Estimates    |
|---------------------|--------------------------|--------------|
| Expenditure deciles | First(poorest)           | 12394.97 ETB |
|                     | Tenth(richest)           | 14310.81 ETB |
|                     | Deciles dispersion ratio | 1.155        |
| Gini coefficient    | GC                       | 0.4858       |
|                     | GE(0)                    | 0.6734       |
| General Entropy     | GE(1)                    | 0.4138       |
|                     | GE(2)                    | 0.3803       |

### 3.5. Expenditure Inequality Decomposition by Displacement Status

The results revealed that inequality decomposition among displaced and non-displaced farm households. The highest Gini coefficient is registered in displaced farm households (0.3959), followed by non-displaced farm households (0.2204) (Table 7). This indicates that expenditure inequality difference was significantly high among displaced and non-displaced farm households since urban expansion results in reducing the displaced farm households' income as well as private asset holdings such as land and livestock holdings. Moreover, total inequality was decomposed into between and within peri-urban farm household groups. The result in Table7 provides that, between-group inequality component only explains a large share of total inequality as compared to within group. Hence, the values of the Gini coefficient within and between groups were 0.1295 and 0.3576, respectively.

On the other hand, the result of General Entropy (GE) inequality decomposition was high for displaced farm

household heads at the bottom of expenditure distribution (0.3011). The level of consumption expenditure also showed almost similar values at GE (1) and GE (2) expenditures distribution (Table7). On the other hand, the highest inequality registered was in the between group as compared to within the group. The Entropy index result of the between group is high at the bottom of expenditure distribution (0.4944), followed by medium expenditure distribution (0.3230). By contrast, real expenditure inequality decomposition was low as well as no change for non-displaced farm households at the bottom, medium, and top ranges of expenditure with values of 0.0886, 0.0787, and 0.0783 respectively. This implies that urban induced expansion in the peri-urban area results in widening consumption expenditure gaps of displaced farm households as compared to their counterfactuals (non-displaced) farm households since they were dispossessed from their farmland as well as properties.

Table 7. Expenditure inequality decomposition displaced and non-displaced group.

| Group         | Gini index | Population share | Absolute contribution | GE(0)  | GE(1)  | GE(2)  |
|---------------|------------|------------------|-----------------------|--------|--------|--------|
| Non-displaced | 0.2204     | 0.5744           | 0.1178                | 0.0886 | 0.0787 | 0.0783 |
| Displaced     | 0.3959     | 0.4256           | 0.0117                | 0.3011 | 0.2524 | 0.2549 |
| Within-group  |            |                  | 0.1295                | 0.1790 | 0.0907 | 0.1209 |
| Between-group |            |                  | 0.3576                | 0.4944 | 0.3230 | 0.2612 |
| Population    | 0.4858     |                  | 0.4858                | 0.6734 | 0.4138 | 0.3803 |

The Lorenz curve of displaced and non-displaced farm households portrayed that there is a significant disparity of consumption expenditure between the two groups. The Lorenz curve depicted below (Figure 2) indicates that the consumption expenditure of displaced farm households lies far below the perfect equality line relative

to non-displaced farm households. This implies that urban induced displacement results to depletion of useful assets such as livestock holding and farmland, which as a result reduces farm households' income. This ultimately widens consumption expenditure inequality among the displaced and non-displaced farm households.

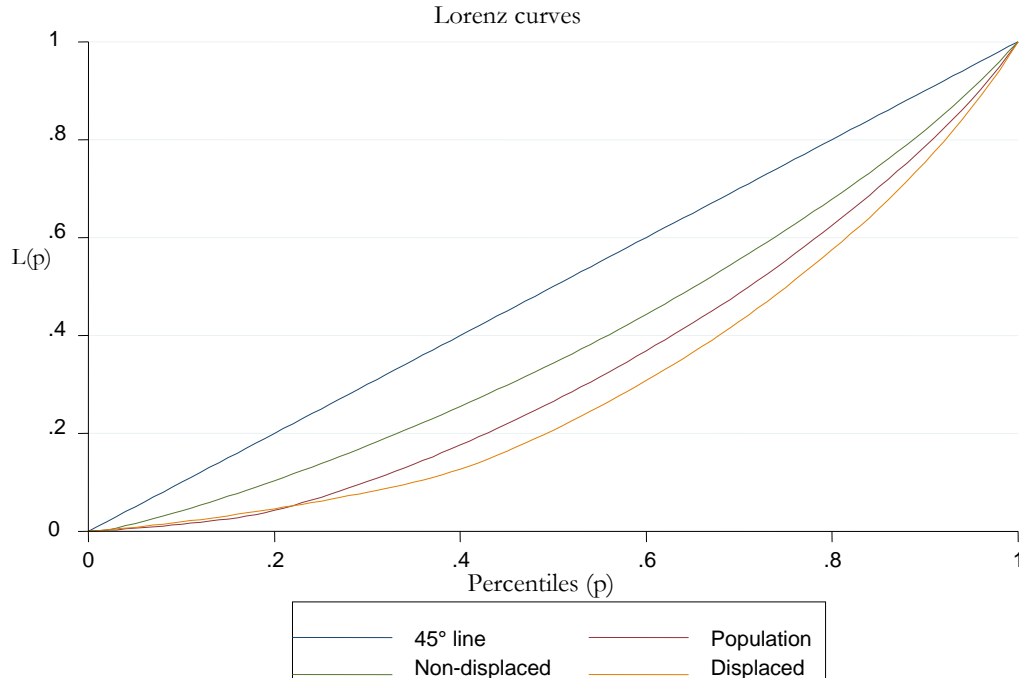


Figure 2. Lorenz curve of displaced and non-displaced farm households.

#### 4. Conclusions and Policy Implications

Deciles ratio, Gini coefficient and Generalized Entropy Inequality Indices were employed to examine the inequality in consumption expenditures prevailing among displaced and non-displaced farm households. The result of deciles distribution has demonstrated that a large segment of the displaced farm households' appeared to be concentrated in the poorest deciles while the non-displaced farm households were concentrated in the top or richest deciles. Similarly, the Gini coefficient result revealed that the consumption expenditure inequality in the displaced farm households exceeded the non-displaced farm households. Correspondingly, the outcome of General Entropy (GE) inequality decomposition depicted that urban expansion brought a dramatic increase in inequality of consumption expenditure for displaced farm households at all ranges of expenditure distribution relative to non-displaced farm households. Thus, the overall result of the inequality indices manifested that horizontal expansion of cities towards preexisting rural villages resulted in displaced farm households gaining little from rising urbanization as a result caused high gap in consumption expenditure among displaced and non-displaced farm households. Therefore, the government and other stakeholders should reconsider the land policy in relation with rural land and

urban expansion. To address problems pertaining to urban expansion and consumption inequality of displaced farm households, the government should secure the farmers the right to own land so that they can negotiate and sell their land at market prices as they do for their other assets. In addition, the government should avoid the nominal compensation and have a policy of sufficiently compensating evicted farmers from their land because of urban expansion. The compensation should be comparable with current value of urban land and the government should monitor the genuine implementation of compensation. Moreover, towns' administrations should devise methods in the short run to subsidize displaced farm households on food and basic non-food items that could help them lower their living costs and reduce consumption inequality until they fully rehabilitate. Finally, other interested researchers may focus on intra-households consumption inequality, risk management behavior, regional comparative analysis and psychological impact of urban expansion induced displacement.

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