

# Nonfarm Income Diversification and Inequality in Eastern Ethiopia: Evidence from Gini Decomposition Analysis

Ashebir Demie<sup>1</sup> Negussie Zeray<sup>2</sup>

1. Department of Agricultural Economics, ATA, Ethiopia

2. Department of Agricultural Economics, Dilla University, P.O.BOX 419, Dilla, Ethiopia

## Abstract

This study attempts to analyze the equity effect of the income earned from non-farm income diversification in rural Ethiopia. The data for this study was obtained from household survey conducted in the rural areas of Harari regional state in June 2011. Gini decomposition technique was used to analyze income inequality effect of RNF activities. Results show that only 21% of the total household income was derived from different nonfarm activities with activity rate of 46%. In disaggregated functional categories, 21% and 24.6% of the total sampled households participated in wage employment and self-employment nonagricultural economic activities respectively. While wage employment contributed 10.3%, self-employment activity accounted for only 11% of total income. The Gini decomposition analysis revealed the income inequality index of the study region is 0.31. Farm income as a whole accounted for 82%, while nonfarm income accounted for 19% of total inequality in the region. The research also showed that while non-farm income was inequality-decreasing, farm income was inequality-increasing in the study area. It is also learned that, despite the fact non-farm income and livestock earnings are distributed more unequally than the other sources of income (as reflected in its higher Gini coefficient), its contribution to overall income inequality is the smallest (17% and 8% respectively). This is probably because non-farm income comprises the smallest share in total rural income among the respondents, and the Gini correlation of non-farm income with total income rankings is lower than that for the other income sources.

**Keywords:** Income diversification; income inequality; Gini coefficient

## 1. INTRODUCTION

Ethiopia is one of the poorest countries in the world. Its GDP per capita is around USD 110, while life expectancy, educational enrolment, and other indicators of well-being are all extremely low. Agriculture continues to dominate the economy contributing 42% of GDP, and accounts for 77% of employment (ATA, 2015).

Households and individuals in rural areas face different constraints on their choice of income-generating activities and because the price and non-price incentives influencing choice are likewise heterogeneous within most populations, observed income diversification patterns can vary markedly between the poor and the rich. This, in turn, determines the likelihood of benefiting from nonfarm employment or activities.

As diversification is not an end by itself, it is essential to connect observed patterns of income back to resulting income distribution and poverty. Not all diversification into nonfarm income earning activities offers the same benefits and not all households have equal access to the more lucrative diversification options (Barret *et al.*, 2004). Despite the general scarcity of literature on rural nonfarm employment, there is no systematic study done in the Ethiopian context. The available studies in this regard are limited in the focus of their geographical coverage.

Furthermore, analysis of the rural labor market and wage determination in Africa is scarce in the literature, especially in Ethiopia. In some cases rural development policies often neglect the role of rural nonfarm activities and their link with agriculture.

Although enormous efforts are being exerted on rural income diversification by governmental and non-governmental organizations in Ethiopia, the result on income distribution is rarely checked.

In Harari Regional State, where this research was conducted, there is no documented empirical study on the nonfarm economic activities. This constrains rural development planners and policymakers in having supportive evidence to make plausible interventions. With a view to bridge this gap, this study tries to answer. The specific objective of this study is to measure and analyze income inequality impact of different sources of agricultural and nonagricultural economic activities in the rural society.

## 2. REVIEW OF LITERATURE

### 2.1 Rural Nonfarm Activities and their Implication for Poverty Alleviation and inequality in Developing Countries

The rural nonfarm economy develops to become a major engine of economic growth not only for the countryside but also for the economy as a whole. Its growth also has important implications for the welfare of women and poor households, sometimes helping to offset inequalities that can arise within the agricultural sector (Barret *et al.*, 2001; Hagblade *et al.* 2002; Hossien, 2004) found nonfarm activity positively correlated with income and wealth and suggested that it may offer a pathway out of poverty. The unequal distribution of nonfarm income indicates, however, that there are substantial entry barriers and steep investment requirements to participation in nonfarm

activities capable of lifting them out of poverty.

The finding of researches on the impact of non-farm activities with income distribution is divergent. Most results, however, show that non-farm income is more unequally distributed than farm income (Barham and Boucher (1998), Elbers and Lanjouw (2001), Escobal (2001), Khan and Riskin (2001). While improving rural income as a whole, participation in non-farm activities is highly selective and thus tends to increase income disparities, particularly in poorer areas. However, other researchers have shown that non-farm incomes can be inequality-reducing, particularly as the proportion of non-farm income in total income increases (Adams (1994; 1999), Adams, Chinn (1979))

In some cases one sees the poorer/landless getting a higher percentage of their income from nonfarm occupations, suggesting an equalizing influence and poverty alleviating role for Nigeria and Gambia (Lanjouw and Lanjouw, 2001). In a decomposition of income inequality by factor components, Elbers and Lanjouw (2001) finds for Ecuador as a whole that a marginal scaling-up of rural non-agricultural incomes is inequality reducing, although the elasticity is small.

In many less developing countries, policymakers are attracted to the rural nonfarm economy because they hope diversification into rural nonfarm activity will offer poor households a route out of poverty (Barret *et al.*, 2001., Lanjouw and Lanjouw 2000., Elise 1998). However, benefiting from rural nonfarm diversification require dynamic engines of regional growth, a buoyant economic base in agriculture, tourism or mining which, if sparked, will generate opportunities in the rural nonfarm economy, for rich and poor alike, particularly when initial income increments are distributed broadly enough to yield wide spending increases on local goods and services. As regional wage rates rise, the composition of the rural nonfarm economy will change and returns to labor will increase enabling the poor as well as the rich to benefit from regional growth via nonfarm diversification (Barret *et al.*, 2001).

Lanjouw and Lanjouw (1995) outlined several distributional reasons to focus on the nonfarm sector. Firstly, to the extent that rural industry produces lower quality goods which are more heavily consumed by the poor, good health of this sector has indirect distributional benefits via lowering prices to the poor. Second, the sector fulfills two other functions - it is a residual source of employment to the poor who, because they are small landholders or are landless, cannot find sustenance in agriculture. Through diversification it also supplies a way of smoothing income over years and seasons to people who have limited access to other risk coping mechanisms

Likewise, Hagblade *et al.* (2002) share the opinion that within the rapidly changing rural economies of the developing world, economic opportunities for poor households emerge sectorally in agriculture and nonfarm activities and locationally in rural areas, rural towns and urban centers.

Given strong sectoral complementarities and interactions, an understanding of these linkages becomes central to identifying effective poverty reduction strategies. While initial public policies and investments will trigger first-round gains in particular economic activities, they likewise initiate second rounds of economic growth through linkages with other sectors. These second-round effects can potentially make substantial contributions to both income gains and poverty reduction (Hagblade *et al.*, 2002).

Moreover, landless households depend on nonfarm income to supplement their agricultural wage earnings. Even primarily agricultural households deploy capital and labor between farm and nonfarm activities, enabling them to diversify incomes in a year and reduce seasonal and inter-annual consumption risks (Ellis, 1998; Hossain, 2004). In many locations, specialized nonfarm households have emerged to exploit full-time business opportunities in the nonfarm economy. Given low capital requirements and the small scale of many rural nonfarm enterprises, poor households dominate many of the largest rural nonfarm employers. For this reason, policymakers view the rural nonfarm (RNF) economy as a potentially important contributor to poverty reduction (Ellis, 1998)

The roles of traditional sector rural nonfarm activities in the development of agricultural sector via backward, forward and consumption linkages (Delgado, 1997) are also well recognized. Linkages can also run from the traditional sector rural nonfarm activities to agricultural production (Delgado, 1997; Reardon, 2000). This includes demand, supply, motivational, and liquidity related linkages. Expansion of rural based manufacturing stimulates the development of markets for agricultural production, and as these markets expand, it allows agricultural producers to diversify into non-food agricultural production (*demand linkage*) (Tassew, 2000 and Craig *et al.*, 2001) also holds the opinion that production of manufacturing goods in the traditional sector will provide the supply of inputs necessary to increase agricultural production (*supply linkage*). If farmers are engaged in rural-based nonfarm activities (such as manufacturing and trading), they are likely to intensify production efforts and increase agricultural productivity to provide the resources necessary for investment in the rural-based non-agricultural activities.

### 3. METHODOLOGY

#### 3.1 Data Source, sampling and Collection

Both primary and secondary data were used in this study. The primary data pertaining to the year 2008/9 were collected from sample respondents through interviewing in September 2009 using a structured questionnaire. The

questionnaire was designed to generate data on some institutional and economic variables and input output data. Rationales like reputation to related duties, social acceptance, and knowledge of the selected PA, educational background and communication with local language were used to recruit four enumerators who were assigned one PA each. They were trained thoroughly about the objectives and the contents of the questionnaire and how to administer it.

Contents of the questionnaires were refined and verified based on a pretesting prior to embarking into the formal survey. Continuous supervision was also made by the researcher himself to reduce error during data collection and to make corrections right on the spot.

The sample size for this study is entirely constrained by availability of time, finance and accessibility. For this reason, it is limited to one hundred thirty households. A two stage sampling technique was applied to choose the representative samples from the total population. In the first stage, random selection of 4 PAs from the total 17 Pas is conducted after clustering each PA based on traditional agro-ecology characteristics, namely *Kolla* and *Woynadega*, which resulted in categorizing 9(nine) PAs into midland and 8 into lowland. In view of agroecological representation, two PAs were randomly chosen from each agro ecologies were selected.

In the second stage, with the help of the list of household heads that are found in each selected Pas' Agricultural development agents (DA) office, proportion of the total household heads in the each selected peasant associations PAs is calculated. The size of sample household heads was assigned for the 4 (PA). Then by giving equal chance; respondent household heads were selected randomly. Finally, from the total of one hundred thirty sample household heads 77 (59 %) were the middle- landers (*Woinadega*) and 53 (41 %) were the lowlanders (*Kolla*).

### 3.2 Data Analysis

The study employed descriptive statistics, Gini decomposition technique and econometric models to analyze the data. SPSS and statistical software were used for data analysis. The following section discusses the detail methodological issues.

#### Descriptive Statistics

Descriptive statistics is applied to describe, compare and contrast different categories of sample units with respect to the desired characteristics. In this study, descriptive statistics, such as mean, standard deviation, percentages, frequency of occurrence, and t- and chi-square tests are used.

##### 3.2.1 Gini Decomposition Technique

Several different inequality measures have been proposed in the literatures. These measures include Theil's entropy index T, Theil's second measure L, the coefficient of variation, and the Gini coefficient (Chakravarty, 2001). Which one of these measures should be chosen for decomposition depends on five basic properties. According to Foster (1985), cited in Adams (1996), the chosen measure should have: (1) Pigou-Dalton transfer sensitivity, (2) symmetry, (3) mean independence, (4) population homogeneity, and (5) decomposability.

The two Theil measures, however, are not decomposable when sources of income are overlapping and not disjoint, while the need for non-overlapping groups is not restrictive when inequality is decomposed over different sources (Adams, 1996: Xu, 2004). This restriction rules out using the two Theil measures in this study because many of the survey households receive income from various sources. Since the objective is concerned with establishing a relationship between the level of the nonfarm income and income distribution, and whether or not diversification into nonfarm employment widens income inequality, these was analyzed by decomposing total household income and study the distribution of each income source and its contribution to total income inequality. This study is therefore applies Gini Decomposition technique as analytical tool.

Income can be obtained from different sources, each of which can have its own contribution to the level of inequality. The aggregate inequality can be expressed as the sum of each income factor contribution. Following the decomposition technique used by Adams (1999) and Tassew (2000), the Gini coefficient for total income, G can be denoted as: the source decomposition of Gini coefficient can be developed as:

$$G = \sum R_k G_k S_k \quad (3.1)$$

Where G is gini index for the total income,  $S_k$  is the share of source K of income in total income.  $G_k$  is the Gini-coefficient measuring the inequality in the distribution of income source  $k$ , and  $R_k$  is the Gini -correlation of income source  $k$  with total income. According to the method applied Babatunde (2009) following Adams (1999) and Huang et al. (2005), the gini correlation of income source  $k$  with total income *i.e.*  $R_k$  can be found by the following equation.

$$R_k = cov(yk, F(yo)) / cov(yk, F(yo)) \quad (3.2)$$

Where  $F(yo)$  and  $F(yk)$  represent the cumulative distributions of the total income and the income from source  $k$ , respectively. The contribution of income source  $K$  to total income inequality is given as

$$S_k G_k R_k / G \quad (3.3)$$

Following Adams (1999) we can detect whether an income source decreases or increases the overall income inequality based on the share of that income source:

$$g_k = G_k R_k / G \quad (3.4)$$

Using this decomposition it is possible to identify how much of overall income inequality is due to a particular income source. Assuming that additional increments of an income source are distributed in the same manner as the original units, it is possible to use this decomposition to inquire whether an income source is inequality increasing or inequality decreasing on the basis of whether or not an enlarged share of that income source leads to an increase or decrease in overall income inequality.

Following Lerman and Yitzhaki (1985) and applied by Feldman (2006). We can estimate the effect of small changes in a specific income source on inequality. It can be shown that the partial derivative of the Gini coefficient with respect to a percent change  $e$  in source  $K$  is equal to

$$\frac{\partial G}{\partial e} = S_k (G_k R_k - G) \quad (3.5)$$

Where,  $G$  is the Gini coefficient of total income inequality prior to the income change. The percent change in inequality resulting from a small percent change in income from source  $k$  equals the original contribution of source  $k$  to income inequality minus source  $k$ 's share of total income:

$$\frac{\partial G / \partial G}{G} = \frac{S_k G_k R_k}{G} - S_k \quad (3.6)$$

## 4. FINDING AND DISCUSSION

### 4.1 The Economic Status of the Sample Households

Rural households differ in their wealth or economic status. The decision of farmers' to diversify income is influenced among other factors by their wealth status. Households with a better economic status are more likely tend to take risks to invest on business, have more access to credit.

The perceived economic status of the respondents is reported that out of the total samples (with 2 missed), 23 respondents reported their economic position as rich which, however, holds only 17.6% of the total sample. Among these rich households 48% did not participate in nonfarm activities, while the rest portion (52%) were engaged in one or another nonfarm jobs. The large part (75%) of the households in the survey area perceive their economic status as compared to others as medium level. the distribution of the households with in this economic category is almost equally shared between participant and non-participant in RNF.

Only 30 respondents are reported their perceived economic status as poor, of this only 3% of the respondents are engaged in self-employment activities and 30% are found to involve in nonagricultural wage jobs which could imply that poor households are more probably tend to be pushed to low wage activities for survival *ex ante*.

### 4.2 Income Characteristics of the Sample Households

Data on the income of the households in the study area come from a cross sectional survey of households. For the purpose of this study, total net income for each household was divided into five sources, namely, (1) Nonfarm wage income: which includes wage earnings from nonfarm labor; (2) Public and private sector employment; (3) Nonfarm self-employment income: income gained from nonfarm enterprises and activities; (4) Crop income: Includes net income from all crop production, including imputed values from home production and crop by-products; (5) Livestock includes net returns from traded livestock (cattle, poultry) and livestock products (milk, eggs, hides) plus imputed values of home-consumed livestock and livestock products.

Unearned income -Includes transfer payments (like pensions, internal and international remittances, and religious donations. Profit analysis of livestock and crop in subsistence agriculture and peasant societies is a difficult task because of problems related to valuation of resources (Elise, 1993). In subsistence agricultural system where the integration of capital market is nonexistent or imperfect, to avoid an uncertainty of pricing, imputed land rent can be excluded in calculating costs (Adams, 1996, Elise, 1993).

The value of family labor on a farm can be priced by the opportunity cost of the prevailing wage in the given area though it is also problem in peasant societies where labor market is imperfect and inexistent (Elise, 1993). However, in developing countries, market wage rates differ dramatically for men, women and children. Even if it were possible to assign market wage rates for different types of laborers, these "full wage costs" would have to be adjusted according to whether or not a particular household member was actually employed outside of the home. Such "adjusted" wage rates adjusted for length and status of outside employment are very difficult to accurately calculate (Adams, 1996). Hence, because of this fact labor is not included in the calculation of costs for livestock production but included in crop production. Free range backyard type of livestock rearing also makes cost consideration of feeding for livestock difficult and uncertain. So to be more practical, feeding cost is considered only for purchased feeds.

Following this approach, the average crop income of the typical rural households in the study area, after costs of labor (including the family labor priced by the opportunity cost of the prevailing wage at the period of

study i.e. 20 birr<sup>1</sup> per labor man day) and inputs (fertilizer, seed and other incurred costs) is deducted reported to be around birr 14,102 per year. The mean crop income for RNF participants and non-participants is 11707.9 and 12,027.1 Birr respectively.

The net income earned from the sales of livestock and livestock products within the range of 12 months before the survey is calculated after deducting purchased feeds, veterinary and other costs of production and marketing. Accordingly, a net profit of 3309 birr of average annual income is reported in the study. The same estimation for non-participants and participants is 3467.65 birr and 3129.15 birr per year per household respectively. The average aggregated farm income for the total household is reported to be 15,209 birr of annual income. The mean total farm income for pure farm households is 15364.6 birr per year which exceeds the RNF participant households by birr 527.

Table 1 shows how much different income sources contribute to total household income in the sample. The analysis provides background information on the amount and sources of income earned by an average rural farm household, which would later form the basis of the income inequality analysis.

The results indicate that all households derive income from farming which accounts for 78.2% total income on average. The other portion 21.4% was derived from different nonfarm activities which is different from Jayne *et al.*'s (2003) who reported 8.1% for Ethiopia and 40% for Kenya. Crop farming was by far the most important single source of income for the rural households, providing about 68% of total income with a participation rate of 100%. More than 60% of the sample households derived income from livestock enterprises, but income from this source was only 11.6% of total income. This suggests that the type of livestock activities is small-scale, mostly free range backyard type.

In the study area 46 percent of the sample households are found to participate in RNFE.

Clear picture can be captured when we disaggregate the participation into functional categories which reveals that 21% and 24.6% of the total sampled households are participated in wage employment and own business respectively. Again of those who participated in RNFE, 46.6% are wage employed and 53.4% are self-employed. However, income from each activity accounts for only 11.3% and 13% of total income, which implies that most rural households participating in the nonfarm activities are engaged in a low return business operation. The smaller contribution of non-agricultural wage income to total income could be because of the little educational and professional qualification of the rural farmers, which probably could reduce their earning from available non-agricultural activities.

Self-employed income is mainly derived from trade (own mini shop-keeping, t'chat, vegetable retailing, etc.) 34%, cooperative business (9%), food processing, brokering, milling and water pump renting (6%), extraction and selling stone (6%), food, tea & coffee preparation and selling, fire wood and charcoal selling, groundnut processing, soil brick manufacturing etc.

The non-agricultural wage employment includes jobs in construction, manufacturing, civil service, PSNP<sup>2</sup> and public works (22) Agricultural processing (*chat* and ground nut) (7%) and other unskilled daily laborer (*kuli*) in construction area (15%), soldiers, police and teachers each contribute only 4% of the nonagricultural wage participation

Table 1: Distribution of the respondents by the average and share of income (in birr)

Source of income	Mean income	Share in total Income	Participati on rate	Average income of non-participant HH	Average income of participant HH (birr)
Total farm income	15,209	0.78	100%	15364.6	14837
Crop income	14,102	0.68	100%	12027.1	11707.9
Livestock income	3,309	0.11	61%	3467.65	3129.15
Nonfarm income	3,978	0.214	46		3841.94
Non-agri.wage income	1504.62	0.101	21.50%		1844.8
Self-employed income	2457.41	0.113	24.60%		2,113.79
Other income	296.86	0.036	9%	165.5	192
Total household income	19380.26	0.78		20819.45	13,087.92

#### 4.3 Gini Decomposition and Measurement of Income Inequality in the Study Area

The overall total income inequality of 0.31 in the sample is lower than Gini coefficient of 0.65 reported by Kumbi

<sup>1</sup> National currency of Ethiopia. At the study period 18 birr equals to 1USD

<sup>2</sup> Productive safety net program

et al (2006) for other parts of Ethiopia. Among the disaggregated income sources, crop income is the most correlated with total household income with a correlation coefficient of 0.89 This is followed by livestock income 0.47 and self-employment income (0.31). Compared to farm income, income from nonfarm employment sources is found to be distributed unequally with Gini coefficient of 0.63 which is greater than 0.49 of the former. However, the situation is different when the source of income is more disaggregated. Income from self-employment is among the most unequally distributed income with Gini coefficient of 0.79 followed by earnings from nonagricultural wage jobs and livestock income with a Gini coefficient of 0.76, 0.73 respectively. Unearned income was indeed the most inequitably distributed income source, though the focus of this study was on income gained from employment.

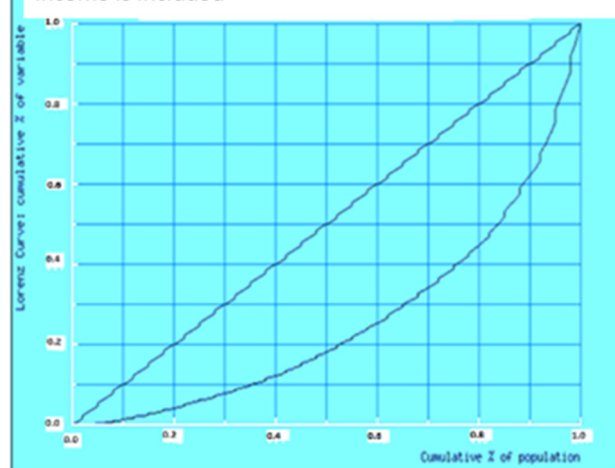
Apart from other income, the most unequally distributed income sources are income from other sources and nonagricultural incomes with Gini coefficients of 0.85 and 0.79, respectively.

The result of decomposing the overall income inequality into farm and nonfarm income also showed that farm income as a whole accounts for 82%, while nonfarm income accounts for 19% of total inequality. This is in consistent to finding of Kumbi (2006), who reported farm income contributes more than non-farm income to inequality in Ethiopia. Table 2 shows relative concentration coefficients of 1.11 for farm and 0.83 for nonfarm. This implies that while nonfarm income is inequality-decreasing, farm income is inequality-increasing in the context of rural Harari which is consistent with the finding of Fredu (2007) in of northern Ethiopia. a further disaggregating of the income sources reveal that, crop income, and self-employment are inequality aggravating activities while nonagricultural wage employment and income from other sources are contributing in reducing income inequality. On the other hand, Gini correlation between farm income and total income is high (0.72), indicating that farm income favors the rich more than any other income source. The research also revealed the fact that a relatively high source Gini (0.76) does not imply that an income source has an unequalizing effect on distribution total-income. An income source may be unequally distributed yet favor the poor, as is the case for non-agricultural wage income.

The source elasticity suggest that a 1% increase in farm income would increase the overall Gini coefficient by 9%, while a 1% increase in non-farm income would lead to a decrease in the overall Gini coefficient by 7%.

Using the Lorenz Curve has the advantages that it provides a visual representation of the information we wish to consider, in this case the inequality of income of different sources. In a situation where the inequality is severe the further the curve will deviate away from the line of absolute equality of 45 degree. The fact that the area under the curve in Figure 1 is wider than that of Figure 2 suggests that the distribution of income before nonfarm income is aggregated in total household earnings is relatively unequal compared to the scenario after nonfarm income is included.

Lorenz curve of household income before nonfarm income is included



Lorenz curve of household income after nonfarm income is included

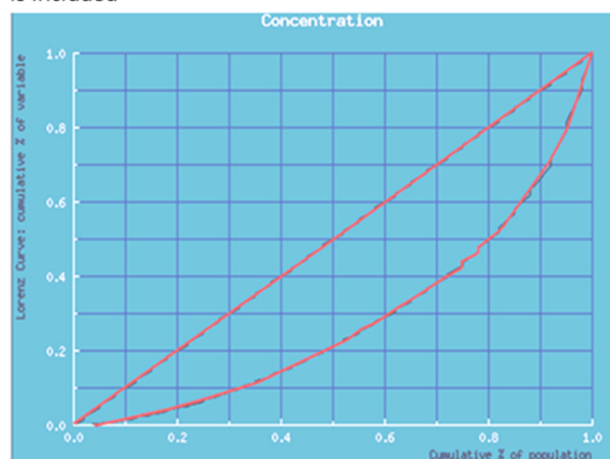


Table 2. : Gini Decomposition Inequality by Sources

Income source	Income share ( $S_k$ )	Gini $G_k$	Correlation coefficient ( $R_k$ )	% share in total inequality ( $S_k G_k R_k / G$ )	Relative conc. of income source $G_k R_k / G$	Source elasticity of inequality ( $S_k G_k R_k / G$ )- $S_k$
Total farm income	0.782	0.48	0.72	0.825	1.11	0.09
Crop income	0.681	0.55	0.64	0.717	1.14	0.03
Livestock income	0.11	0.73	0.3	0.098	0.71	-0.05
Total nonfarm	0.21	0.63	0.41	0.191	0.83	-0.07
Non-agricultural wage income	0.1	0.76	0.17	0.056	0.42	-0.07
Self-employed income	0.11	0.79	0.4	0.139	1.04	0.02
Other income	0.006	0.85	0.21	0.001	0.58	0
Total income		0.31				

## 5. CONCLUSION AND RECOMMENDATION

### 5.1 Conclusions

This study has scrutinized the equity effect of diversification of income to the nonfarm earning in Eastern Ethiopia. The descriptive analysis revealed that only 21% of the total household income was derived from different nonfarm activities with participation rate of 46%. Crop farming provided about 68% of total income with a participation rate of 100%. More than 60% of the sample households derive income from livestock enterprises, but income from this source was only 11.6% of total income. This suggests that the type of livestock activities is small-scale, mostly free-range backyard type which lacks modern livestock husbandry practice that could result in high productivity and yield. When disaggregated the participation into functional categories, it revealed that 21% and 24.6% of the total sample households participated in wage employment and self-employment, respectively. However, income from each activity accounts for only 11.3% and 13% of total income, which implies that most rural households participating in the nonfarm activities are engaged in a low return.

Compared to farm income, income from nonfarm employment sources was found to be distributed unequally. However, the situation was different when the source of income was more disaggregated. Income from self-employment was among the most unequally distributed income, (Gini coefficient of 0.79) as compared to earnings from nonagricultural wage jobs. Similarly livestock income is more unequally distributed income compared to crop income. The Gini result also showed that farm income as a whole accounted for 82 %, while nonfarm income accounted for 19% of total inequality. It also learnt from the study while nonfarm income was inequality-decreasing, farm income was inequality-increasing in the context of rural Harari.

The analysis of nonfarm employment and earnings effect on equity suggests that nonfarm income is an inequality-decreasing activity in the rural areas of Eastern Ethiopia. Therefore, non-farm activities serve as a solution for the absorption of rural surplus labor. Participation in non-farm activities provides rural households with an additional source of income, improving their living standards and narrowing income gaps as well. Thus, policy makers aiming to alleviate income inequality and poverty should continue to explore options for promoting the nonfarm sector suitable for the resource poor farmers.

Interventions related to unskilled nonagricultural wage employment could serve as an instrument to reduce income inequality. Moreover, youth targeted rural entrepreneurship and skill development, and promotion and expansion of entrepreneurship should be the focus of the policy makers in study area.

## 6 REFERENCES

- Adams R. 1994. Livestock income and Inequality in rural Pakistan. *Journal of Development Studies* 31 (October):110-133.
- Adams, R. 1999. Non-farm income, inequality and land in rural Egypt. Washington, D.C.: The World Bank
- L'opez-Feldman 2006. decomposing inequality and obtaining marginal effects. *The Stata Journal* 6, Number 1, pp. 106–111
- Ann G. and Catherine, C. 2001. Rural nonfarm activities and poverty alleviation in sub-Saharan Africa. Policy Series 14 Chatham, UK: Natural Resources Institute.
- Agricultural Transformation progress report, 2015. Ethiopian Agricultural transformation Agency(ATA). Addis Ababa
- Babatunde O. 2009. Rural Non-farm Income and Inequality in Nigeria. International Food Policy Research Institute (IFPRI)
- Beyene A.2008.Determinants of off-farm participation decision of farm households in Ethiopia, *Agrekon*, Vol 47,

No 1 (March 2008)

- Bigsten, A., Bereket, K., Abebe, S. and Mekonnen, T. 2002. Growth and Poverty Reduction in Ethiopia: Evidence from Household Panel Survey Working Papers in Economics no 65.
- Central Statistical Agency of Ethiopia (CSA). 2003. Ethiopian Agricultural Sample survey report. Central Statistical Agency of Ethiopia (CSA). 2005. National Labor Force survey report.
- Davis J. R. and Bezemer, D. 2004. The Development of the Rural Nonfarm Economy In Developing Countries And Transition Economy: Key Emerging And Conceptual Issues. Chatham, UK: Natural Resource Institute.
- Delgado, C. 1997. Rural Economy and Farm Income Diversification In Developing Countries. Mssd Discussion Paper No. 20. Paper presented at a Plenary Session of the XXIII International Conference of Agricultural Economists, U.S.A.
- Elbers, Chris and Peter Lanjouw. 2001. "Inter-sectoral Transfers, Growth, and Inequality in Rural Ecuador", World Development 29(3): 481-496.
- Ellis, F. 1993. Peasant Economics: farm households and agrarian development. Cambridge University press New York, USA.
- Ellis, F. 1998. Sustainable rural livelihoods: Livelihood diversification and sustainable rural livelihoods. Paper presented at DFID's national resource advisors conference. July 1998 London UK.
- Escobal, Javier. 2001. "The Determinants of Non-Farm Income Diversification in Rural Peru", World Development 29(3): 497-508
- Federal Democratic Republic of Ethiopia (FDRE). 2008. Summary and Statistical Report of 2007 population and Housing census. Addis Ababa. Ethiopia.
- Fredu, N., Marysse, S. Tollens, E. and Mathijse, E. Diversification, Income Inequality and Social Capital In Northern Ethiopia.
- Hagblade, S., Hazell, P. and Reardon T. (2002). Strategies for Stimulating Poverty-Alleviating, EPTD Discussion Paper No. 92. International Food Policy Research Institute.
- Hossain, M. 2004. Rural Nonfarm Economy in Bangladesh: A View from Household Surveys. Center for Policy Dialogue (CPD) Occasional Paper Series no 40, Dhaka: Center for Policy Dialogue.
- Jayne T.S., Yamano T., Weber M., 2001. Smallholder Income and Land Distribution in Africa: Implications for Poverty Reduction Strategies. MSU International Development Paper No. 24. Department of Agricultural Economics. Michigan State University. Michigan. USA.
- Lanjouw J.O. and Lanjouw P. 1995. Rural Nonfarm Employment: Survey. Yale University and the World Bank. World Development Report. Washington D.C.
- Lanjouw J.O. and Lanjouw P. 2000. The rural nonfarm sector: issues and evidence from developing countries. Agricultural Economics 26. [online] [Http://www.Elsevier.com/locate/egecon](http://www.Elsevier.com/locate/egecon). Retrieved on December 6, 2008.
- Lerman, R. and S. Yitzhaki, S. 1985. Income inequality effects by income sources: A new approach and applications to the US. The Review of Economics and Statistics
- Mulat Demeke. 1995. Rural Nonfarm Activities in Impoverished Agricultural Communities: The case of northern Shoa. Addis Ababa. Ethiopia.
- Park K. and Kerr P. 1990. Determinants of academic performance: A multinomial logit approach, the Journal of economic education, volume 21. no.2.
- Planning and Economic Development Bureau of Harari region (2000). Regional Atlas of Harari.
- Reardon, T. 2000. Challenges in fighting rural poverty in the globalizing economy of Latin, America: focus on institutions, markets, and projects, Michigan State University.
- Reardon, T., Berdegue, J., Barrett, C. and Stamoulis, K. Household Income Diversification into Rural-Nonfarm Activities.
- Reardon, T. Stamoulis, K., Balisacan, A., Cruz, M. E., Berdegue, J. and Banks, B. 1998. Rural non-farm Income in Developing Countries. In: FAO (ed.). The State of Food and Agriculture.
- Sosina Bezua, Holdena. S and Barrett. C 2009. Activity Choice in Rural Nonfarm Employment (RNFE): Survival versus accumulative strategy.
- Start. D .2001, The Rise and Fall of the Rural Nonfarm Economy: Poverty Impacts and Policy Options. Development Policy Review.
- Tassew, W. 2000. Economic Analysis and Policy Implications of Farm and Off-Farm Employment: A Case Study in the Tigray Region of Northern Ethiopia. PhD dissertation submitted to Wageningen Agricultural University, The Netherlands.
- Economic Studies. Proceedings of the 25th. International Conference of Agricultural Economists (IAAE) University of Manchester, Oxford, UK.
- Xu, K. 2004. How has the Literature on Gini's Index Evolved in the Past 80 Years? Department of Economics, Dalhousie University. Halifax, Nova Scotia, Canada.