Research Paper: Determinants of Poverty in Rural Ethiopia: Evidence from Tenta Woreda (District), Amhara Region

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ABSTRACT

Purpose: Poverty is a challenge facing all countries but worst in Sub-Sahara African. Ending poverty in its all form is the Nation's 2030 core goals where Ethiopia is striving. Therefore, to step forward the effort, it is necessary to assess rural poverty. Accordingly, the study intended to investigate the determinants of rural poverty at the household level in Tenta district, South Wollo Zone.

Methods: A mixed research design is employed to frame the study and 196 representative samples are identified using a multistage sampling technique from three agroecological zones. Primary data are collected through a detailed structured household survey which involves questionnaires, semi-structured interview and FGD techniques. Cost of Basic Needs (CBN) method and a binary logistic regression model is used for analyzing data.

Results: The result unveils that the total poverty line of the study area is 387.43 ETB per person per month and 4649.16 ETB per year where 67.3% of the societies are poor. The probability of rural household flees from poverty increases as they own beehive, large farmland size, oxen and small ruminant animals, and as the household headed by a male. On the other hand, family size and non/off-farm activities increase the probability of poor. Therefore, sex of household head, farmland holding size, beehive ownership, number of oxen and number of small ruminants, household size and non/off-farm activities were determinant factors of rural poverty.

Conclusion: The national, and regional governments should work together on family planning, farm income diversification and design gender-based anti-poverty development policy to curb poverty.

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1. Introduction

Sustainable Development Goals (SDGs) are now calling for ending poverty and hunger from all people everywhere by 2030 (Beegle et al., 2016; SDG Center for Africa (SDGC/A), 2019). However, poverty is common in rural areas where agriculture is a means of livelihood (FAO, 2019; IPC-IG, 2019). Even though the world's poor people are concentrated in Sub-Saharan Africa and South Asia (UNDP, 2019), it is the worst in Sub-Saharan Africa where 41 % of the population lives with less than $ 1.25 per a day and the Human Development Index (HDI) is 0.537 which is the lowest in the world (UNDP, 2018; IPC-IG, 2019).

Ethiopia is identified as one of the poorest countries in the world by all standard measures of poverty (Bevan & Pankhurst, 2008; UNDP, 2011; UNDP Ethiopia, 2018; UNDP, 2018). As the 2019 UNDP human development report shows that, Ethiopia's HDI value is 0.463 which is below the average of Sub-Saharan Africa countries (0.537) and even lower than the low human developed countries (0.504). This status put it in the low human development category and ranked 173th position out of 189 countries (UNDP, 2019). It is also among the countries with lowest poverty indices which the Multidimensional Poverty Index (MDPI) (0.470), Deprivation Intensity (58.5%), Headcount Poor (83.5 %) and a population living below $ 1.25 is 39 % in 2018 (UNDP, 2019). Even though there is no consensus on the reduction of the prevalence of poverty in the country, studies like Dercon (2001); Bigsten et al. (2003); MoFED (2006; 2012); FDRE Planning and Development Commission, (2018); UNDP Ethiopia, (2018) argued that Ethiopia's total poverty in general, as well as rural poverty in particular show significant improvement and Ethiopians are better off than they have been ever.

Despite all these, the most pervasive poverty in Ethiopia geographically concentrated in rural areas (World Bank, 2015; UNDP Ethiopia, 2018). As per FDRE Panning and Development Commission 2018 report, Amhara region has been identified as the highest poverty headcount index (26.1%) region in the country where it is high in the rural (28.8%) than urban (11.6%) (FDRE Planning and Development Commission, 2018). This is mainly attributed to land degradation, recurrent drought, and farmland fragmentation (Sahilu, 2003; IFAD, 2007; JICA, 2009). Shortage of household assets, the limited livelihood diversification, limited capacity of the government to introduce new farming technologies through adequately organized extension services, and the inability of agricultural production to pace with the rapid population growth are an additional cause for low agricultural productivity (Begna & Paul, 2010).

The study area, Tenta woreda (district), is part of South Wollo Zone which experience drought, food insecurity and poverty succeed areas found in Wagehimra and North Wollo zone in Amhara Regional State (Lakew et al., 2000). However, poverty and associated factors were given less attention at the micro level. Thus, identifying impediments (demographic, economic and social variables) with their potential effects are vital, since these variables take visible repercussions on the praiseworthy life of the households. Hence, studying rural poverty at the household level is crucial to contribute to the interventions made to meet the 2030 SDGs goals and poverty reduction strategies since it takes a worm's eye view of the problem. Therefore, the purpose of this study was to investigate the determinants of rural poverty at the household level and to identify the rural poverty line of Tenta woreda (district), Northeast Ethiopia.

2. Research Methods and Materials

2.1 Description of the Study Area

Tenta woreda (district) is located in the South Wollo administrative zone of the Amhara region. It is found 520 km north of Addis Ababa and 120 km from the zonal administrative capital, Dessie. It is located between 100 55' N to 110 29' N latitude and 390 03'E to 390 21' E longitude. The total area is 1316.37 square km where most of the topography is rugged. The elevation ranges from 1300 m to 4000 m above mean sea level and its relief consists of 54% mountain, 32% plain and 14% undulating hillsides and valley sides. It receives 1010 mm rainfall annually twice a year in summer and spring seasons. Agroecologically, the woreda (district) consists Kolla (tropical), Woyna Dega (sub-tropical), Dega (temperate) and Wurch (alpine) agroclimatic zones [(TWOARD, 2018).

The total population of the woreda (district) was 197,067 out of which 100,428 were males and 96,641 females. The total household heads were 39052 with 4.5 average family sizes. Out of the total population, about 95% were rural populations with small-scale farm holders. Traditional crop cultivation integrated with livestock is the main economic activity in the woreda (district) (CSA, 2013).

2.2 Research Design and Methodology

Mixed research design which comprises both quantitative and qualitative research approaches were employed (Almalki, 2016). Among the different types of mixed research methods, a concurrent method was implemented. It was used systematically to strengthen and bridge the gap of using a single method. A quantitative approach is concerned with the measurement of quantity, statistical analysis, generalize beyond the sample under investigation (Kothari, 2004). Therefore, the quantitative research approach was used to quantify determinants of rural household poverty such as demographic variables, asset ownership, non or off-farm activities and financial resources based on the data gathered through a questionnaire. The qualitative approach was also employed to provide a subjective assessment of attitudes, opinions and behavior of the subjects as well as researcher's insights and impressions (Wilson, 2006). Thus, a qualitative approach was used to strengthen and bridge the gap in the quantitative research method through investigating opinions and views of the respondents on determinants of poverty.

2.3 Sampling Technique and Sample Size

Multistage sampling technique was used to identify representative respondents. According to Lavrakas (2008) multistage sampling is a technique in which sampling is done sequentially across hierarchical levels to select manageable and representative samples from a larger area. Accordingly, since agricultural productivity and vulnerability to poverty vary across agroecology, in the first place, Tenta woreda (district) was clustered into Dega (temperate), Woina Dega (sub-tropical) and Kolla (tropical) agroecological zones. Secondly, representative sample Kebeles (sub-districts) such as Meserbi, Cheleme and Shola Woha (Sholaw) were selected from Dega, Woina Dega and Kolla agro-climatic zones respectively using a simple random sampling technique. Thirdly, a proportional number of representative sample households were selected from each sample kebeles (sub-district) using simple random sampling technique. Finally, 196 respondent household heads were taken as a sample from the total number of 3108 households by using Gomez and Jones (2010) sample size determination technique.

Key informants were selected from the woreda (district) and kebele (sub-district) agricultural extension workers, and kebele administrators purposively based on their knowledge and experience. Based on the data saturation level, 8 key informants were used. In addition, three focus group discussions (i.e. one focus group discussion with purposely selected 6 participants in each sampled kebele (sub-districts) were used to collect qualitative data for substantiating quantitative data which were collected via questionnaire (Figure 1).

2.4 Data Source and Data Collection Techniques

Questionnaire, in-depth interview and focused group discussion (FGD) were used to collect data from primary data sources. The questionnaire was used to collect data from representative sample household heads. In-depth interview and focused group discussion were conducted with key informants and participants who were considered as well-informed about the general socio-economic situation and rural poverty. Secondary data were also gathered from the annual report of the related offices of the woreda (district) and Central Statistics Agency.

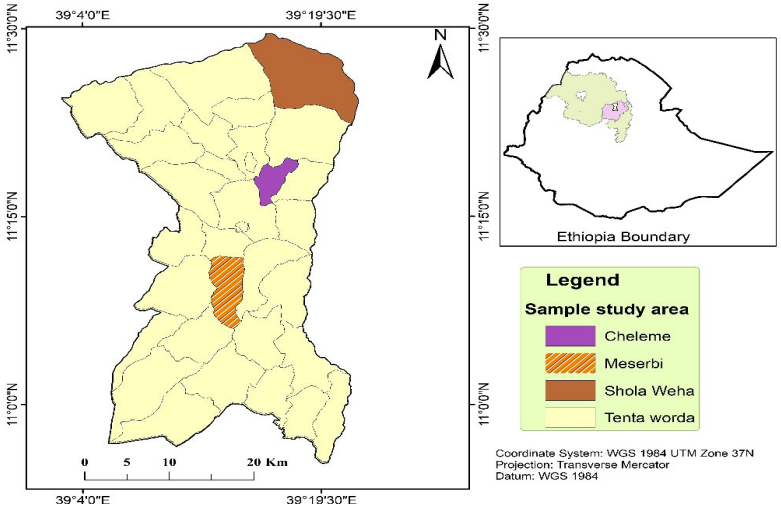

Figure 1. Location map of the study area

2.5 Methods of Data Analysis

The poverty line of Tenta woreda (district) was constructed by using the Cost of Basic Needs (CBN) method which considers households' expenditure for both food and non-food items (Bellu & Liberati, 2005). The rural poverty line was set using CBN method which involve five basic procedures. The first was computing the food poverty line. It was done through constructing a food basket or bundle typically consumed by the poor and converting the quantity of each of the food items in the bundle into caloric consumption. The result was rescaled to a predetermined level of minimum calorie requirement which is 2200 Kcal per adult per day (WFP & CAS, 2019). Secondly, each quantity of the item in the food basket was valued at the local market price which was gathered from the two main weakly markets and then add up.

Thirdly, the total consumption level of a household was divided by the total number of the household members. In order to control consumption differences resulted by age and sex of the household members, the overall household consumption expenditure was transformed into Adult Equivalent Unit (AEU) by using Adult Equivalent Conversion Factors (Dercon & Krishnan,1996). Next to this, poverty line for the non-food component items were computed. As per Bigsten et al. (2002); Ayalneh et al. (2005); Begna and Paul (2010) it was estimated by dividing the food poverty line to the average food share of households that failed to attain a food consumption level equal to the food poverty line. Finally, the total poverty line was computed by summing up the result of the food poverty line and the non-food poverty line. Then, the poor and non-poor households were identified by using poverty incidence Headcount Index.

A binary logistic regression model was used to analyze the relationship of dichotomous dependent variable with independent variables (Hyeoun-Ae, 2013). It enabled to determine the impact of multiple independent variables on dichotomous dependent variable and to identify determinant variables. It combines the independent variables to estimate the probability of rural household falling below the poverty line or not. As per Gujarati (2004) the probabilistic distributive function of a rural household falling below the poverty line, P(Yi=1) is given by:

$$P(Yi=1)=\frac{e^{Yi}}{1+e^{Yi}} \quad (1)$$

To proceed further, it needs to identify the probability of the rural farm household not falling below the poverty line which is given by 1-P(Yi=1)

$$P(Yi=0)=\frac{1}{1+e^{Yi}} \quad (2)$$

When the ratio of equation 1 to 2 calculated (the probability of rural poverty occurring to the probability of occurring rural non-poverty), it gives the odds ratio:

$$\frac{P(Yi=1)}{P(Yi=0)}=\frac{\frac{e^{Yi}}{1+e^{Yi}}}{\frac{1}{1+e^{Yi}}}=e^{Yi} \quad (3)$$

The logistic equation can be obtained via taking the natural log of equation 3

$$In(e^{Yi}) = Yi = \beta i \ Xi \quad (4)$$

Where: βi and Xi are set of parameters and explanatory variables respectively.

As per the regression model test coefficient table, the model was statistically significant (chi-square =213.930, p-value 0.01 with df = 10) and appropriate for the data. Concerning to the predictive efficiency of the model, the fitted binary logistic model explains 96.4 %, of the total sample households. The model also correctly predicted 97.7 % of the poor households and 93.8 % of the non-poor households in their respective categories. Regarding error rates committed in the classification table, the false positive rate (the number of errors where the dependent is predicted to be poor but is in the fact non-poor) was 2.3 % while the false negative rate (the number of errors where the dependent is predicted to be non-poor, but is in the fact poor) was 6.2 %.

3. Result and Discussion

3.1 Poverty line of Tenta woreda (district)

Based on the food basket or bundle typically consumed by the poor, food poverty line was constructed and valued at the local consumer price to compute its minimum cost (Bigsten et al., 2002; MoFED, 2006; Ayalneh & Korf, 2009; Begna & Paul, 2010). As it is shows in Table 1, the result of food poverty line was 311.10 Ethiopian Birr (ETB) (11.1107 U.S. dollar) per adult per month, or 3733.20 ETB (133.22 U.S. dollar) per adult per year. The result was significantly higher than 653.68 ETB (23.34 U.S. dollar) per adult per annum of Zeghe peninsula (Maru, 2010), 649.872 ETB (23.20 U.S. dollar) per adult per annum of Kersa Kondaltity woreda (district) (Metalign, 2005), 1419.36 ETB (50.69 U.S. dollar) per adult per year (Begna & Paul, 2010) as well as the national

average (647.81 ETB or 23.14 U.S. dollar) (MoFED, 2012).

The non-food poverty line of the woreda (district) was 76.33 ETB (2.72 U.S. dollar) per adult equivalent per month, or 915.96 ETB (32.72 U. S. dollar) per adult per year. Thus, total poverty line of the woreda (district) was 387.43 ETB (13.84 U.S. dollar) per adult per month, or 4649.16 ETB (116.04 U.S. dollar) per adult per year (Table 1). In line with the results of other studies conducted in Zeghe peninsula (Maru, 2010); Kersa Kondaltity woreda (Metalign, 2005); Shashemene woreda (Begna and Paul, 2010) and the national average (MoFED, 2006) it is the significantly higher. The result of poverty incidence Headcount Index shows that 67.3 % of the households were found poor who were living below the poverty line of the study area and the remaing 32.7% were non-poor.

Table 1. Poverty line of Tenta woreda

No.	Items	Quantity (Kg)*	Unit Price (ETB)**	Total Cost (ETB)**
1		Cereals		
1.1	Teff	1.63	21.94	35.76
1.2	Barley	4.24	8.33	35.32
1.3	Maize	3.82	7.23	27.62
1.4	Sorghum	4.53	9.38	42.49
2	Pulses			
2.1	Beans	1.84	11.85	21.80
2.2	Chickpeas	0.71	9.63	6.84
2.3	Cow pea	0.35	12.68	4.44
2.4	Lentils	0.35	16.43	5.75
2.5	Shiro	0.92	28	25.76
3		Vegetables and Root Crops		
3.1	Cabbage	0.21	4.15	0.87
3.2	Onion	0.35	9	3.15
3.3	Potatoes	0.14	9	1.26
4		Other Food Items		
4.1	Coffee	0.57	100.75	57.43
4.2	Milk/yoghurt	0.49	5.85	2.87
4.3	Salt	1.20	4.00	4.8
4.4	Sugar	0.14	17.65	2.47
4.5	Bread	0.14		1.54
4.6	Pepper (Berbere)	0.85	45.00	38.25
4.7	Oil	0.28	26.25	7.35
	Food poverty line per adult per month			311.10
	Food poverty line per adult per annum			3733.20
	Non-food poverty line per adult per month			76.33
	Non-food poverty line per adult per annum			915.96
	Total poverty line per adult per month			387.43
	Total poverty line per adult per annum			4649.16

Source: *Adapted from Dercon (1999: 89) cited in Metalign (2005: 85), **Survey Result (2018)

Determinants of Rural Poverty

Binary logistic regression model was used to regress the dependent variable (poverty) against 14 explanatory variables so as to identify the major determinants of rural poverty. However, one variable (livestock holding size) was discarded due to multicollinearity effect with small ruminant, oxen and household size with the correlation value of 0.848, 0.825 and 0.834, respectively. Therefore, 13 major explanatory variables were considered in the analysis.

Engagement in non/off-farm activities: Off-farm/ non-farm activity engagement hypothesized as it plays a significant role in reducing the probability of households being non-poor because it diversifies rural farmer households' livelihood and enhance their income. However, as the regression analysis result showed it is correlated negatively with rural household poverty and statistically significant ($\beta = -1.790$ and P - value $= 0.079$) at 0.1 significant level (Table 1) which is also confirmed by the Wald statistics (3.077). The odds ratio (0.167) indicated that engagement of rural household in non-farm/off-farm activities increases the probability of poor by the factor of 0.167. This is because most of the non-farm/off-farm activities were not practiced as a mean of accumulating more wealth for further profitability and productivity rather they used it as a means of coping mechanisms and alternative activities which is not productive like farmland and other agricultural resources.

Similar results were reported by MoFED (2002); Bigsten et al. (2002); Borko (2017); Dereje and Haymanot (2018); Girma and Temesgen (2018) where household engaged in non or off-farm activities increase the probability of being poor by 11% than household did not engage. This is because in rural Ethiopia such activities are used as a coping mechanism than as a means of enhancing household's income and wealth. However, literatures revealed that off-farm and non-farm activities are a means to get out of poverty (Babu & Reda, 2015). Hence it is largely depending on their ability to get access to non-farm/off- farm income opportunities.

A study reported by Eshetu and Gian (2016) shows that engagement in non-farm activity decreases poverty by 35.73 percent as the household engaged in one or more non-farm activities since it provides the household with additional resources for both consumption and investment. Similarly, a study conducted in Tigray region (Babu & Reda, 2015), in southeastern Harergeh (Bogale, 2011), and southern part of Ethiopia (Deressa & Sharma, 2014) showed that engagement in non-farm activity decreases the probability of rural poverty because it absorbed a large number of low income groups of the society. Ayalneh and Korf (2009); Shete (2010); Alemu et al. (2011); Dawit et al. (2011); Muhammedhussen (2015); Borko (2017) were also reported non-agricultural activities contributed for enhancing rural household asset accumulation and opens up additional opportunities to diversify income and escape out from poverty.

Sex of household head: Sex of household head has an impact on the poverty status of female headed rural households. This is because females were engaged and occupied by non-productive activities and they are deprived of vital and productive resources like land. In line with this, the logistic regression analysis revealed that the coefficient of the headship of the household influenced (male headed household) positively and it was founded statistically significant at 0.05 level of significance ($\beta = 2.94$ and P - value $= 0.022$). Therefore, it has emerged as a determinant factor of rural poverty in the area. The odds ratio revealed that male headed households have a chance to be non-poverty by the factor 18.925 than female headed households (Table 2).

A similar result was obtained from the focus group discussions and interviews where females have additional responsibility and relatively less skilled in farming and livestock rearing. They also share unequal and inequitable resources as well as less social status during a divorce. This results in less productive and in turn poverty. In line with this, Bigsten et al. (2002); Ermiyas et al. (2013); Deressa and Sharma (2014); Biyase and Zwane (2017); Borko (2017) reported that female headed households have the higher probability to fall into poverty than male headed households in rural areas of Ethiopia. Even though this attributed to different socio-economic situations, mostly it might be due to the presence of discrimination against women in the labor market, or women tend to have lower education status than men and paid lower wages.

Oxen holding size: Oxen holding size was positively and statistically significant at 0.01 levels of significance ($\beta = 3.072$ and P - value $= 0.000$) with rural household poverty. Similarly, the Wald statistics (12.807) also show that it is significantly related to rural household poverty. The odds ratio indicated that a unit increase in oxen holding size increases the probability of non-poor by a factor of 21.594 (Table 2). Focus group discussions and key informant participants confirmed that owning oxen is vital for escaping out of poverty.

The result was also consistent with the findings of Bigsten et al. (2002); Metalign (2005); Ermiyas et al. (2013); Endalew and Tassie (2018). Bigsten et al. (2002) indicated that an additional ox decreases the probability of households to be poor by 6.9% (where $p < 0.1$) and Metalign (2005) also reported that rural poverty reduced by 14.9%. Similarly, Muhammedhussen (2015) in his research pointed out that ownership of oxen significantly influences the probability of households' poverty status where those who owned have a high probability to escape out of poverty. The possible reason is that it provides an additional income source and enhance productivity.

Farmland size: Agricultural crop production is the foremost means of livelihood in the study area, so with no doubt farmland is a decisive asset. The regression result reveals that farmland size was positively associated with poverty at 0.01 significance level ($\beta = 5.761$ and $P\text{-value} = 0.001$). The Wald statistics (10.785) also shows its significant relation with poverty. The odds ratio reveals that the probability of non-poor households increases by the factor of 317.825 as farmland size increases by one hectare. The descriptive statistics also revealed that the poor have either no land or have small (on average 0.5 hectare). The undisputed contribution of landholding size for poverty reduction was also confirmed by the key informants and focus group discussion participants. This is because farmland is among the prime resources and sources of livelihood for rural farm households.

Correspondingly, Sepahvand (2009); Alemu et al. (2011); Dawit et al. (2011); Deressa and Sharma (2014) have reported that the larger the farmland size increases the probability of the households to be non-poor and the small the farmland size increases the probability of the households to be poor. Due to higher (52%) income of households earned from activities associated with land non-poverty increase by 99%. Since land is a critical asset for rural households, Metalign (2005) stated that a one hectare increase in the ownership increases the probability of non-poor. Bigsten et al. (2002) and MoFED (2002) on the other hand founded that the size of the land cultivated by households has no association with rural poverty due to the land tenure system which is allotted based on family size in Ethiopia.

Table 2. Logistic regression model result of the determinants of poverty

Variables in the Model	B	S.E.	Wald	Sig.	Exp(B)
Age of the HHH****	0.006	0.014	0.214	0.644	1.007
Educational status of HHH	-0.912	0.957	0.909	0.340	0.402
Sex of the HHH	2.940	1.287	5.220	0.022**	18.925
Household size	-0.561	0.220	6.508	0.011**	0.571
Dependency ratio	-0.015	0.011	2.142	0.143	0.985
Farmland size	5.761	1.754	10.785	0.001*	317.825
Oxen holding size	3.072	0.859	12.807	0.000*	21.594
Small ruminant holding	0.492	0.130	14.277	0.000*	1.636
Beehive ownership	2.899	1.480	3.836	0.050**	18.155
Engagement in non/off-farm activities	-1.790	1.020	3.077	0.079***	0.167
Modern agricultural inputs	-0.074	0.960	0.006	0.939	0.929
Saving habit	3.499	7.208	0.236	0.627	33.086
Credit access	-0.038	0.307	0.016	0.900	0.962
Constant	-6.433	3.150	4.170	0.041	0.002

*significant at 0.01 level **significant at 0.05 level ***significant at 0.1 level

**** Household head

Source: Research finding, 2018

Small ruminant holding size: Small ruminant (sheep and goats) holding size is positively related with rural household poverty. It was statistically significant ($\beta = 0.492$ and P - value $= 0.000$) at 0.01 level of significance (Table 2). The odds ratio (1.636) indicates that a unit increase in the number of small ruminants increases the probability of households to be non-poor by a factor of 1.636. The result of the FGD and interview also showed that having a larger number of small ruminants (sheep and goats) assists a household to be non-poor because it enables the household to generate income for consumption expenditure as well as for owning more agricultural resources. Similar result was reported by Ayalneh et al. (2003).

Household size: Household size or family size influenced rural household poverty negatively and it was statistically significant at 0.01 level of significant ($\beta = -0.561$ and P - value $= 0.011$). The odds ratio of 0.571 implies that the probability of a household to be non-poor decreases by a factor of 0.571 as a family size increases by a unit. As it is confirmed by interview and focus group discussion, large household size affects the poverty status of a rural household because of the inconsistent relationship between household size and resource ownership.

According to the findings of Metalign (2005); Ayalneh and Korf (2009); Shete (2010); Dawit et al. (2011); Mohammed (2017); Imam, Islam, and Hossain (2018) as the number of family in the household increases the probability of rural poor increases. Similarly, Dawit et al. (2011) stated that small family size increases the probability of a household to be non-poor where a unit increase in the family size reduced the probability of being non-poor by 0.11. Therefore, big family size with nonworking, non-earning members increases poverty. In contrary to this Sepahvand (2009) reported that the depth of poverty is high for household sizes less than three individuals as compared to those larger (from 7 to 9) household members. This is due to the association of household size with the number of workers.

Beehive owning: Owing beehive correlated positively with rural poverty and statistically significant at 0.05 level significant ($\beta = 2.899$ and P - value $= 0.050$). It is also confirmed by Wald statistics (3.836). The odds ratio (18.155) showed that a unit increase in a beehive owning increase the probability of non-poor by the factor of 18.155 (Table 1). This result was similar with the finding of (Maru, 2010). FGD and interview confirmed that beehive owing is an opportunity for diversifying livelihood of the rural farmers and generating extra income to support other agricultural activities, and increase the chance of the households to be non- poor. However, this result is not consistent with the finding of Metalign (2005).

In the current study among explanatory variables considered in the analysis, dependency ratio ($\beta = -0.0561$ and P - value $= 0.143$), credit access of households ($\beta = -0.038$ and P - value $= 0.9$) and saving habit of households ($\beta = -3.499$ and P - value $= 0.627$) were statistically insignificant and negatively associated with rural poverty. As key informants and participants of the group discussion justified, they do have access to get credit. In spite of the fact that they did not use it properly for further enhancing their income more over a limited number of farm households were participated in saving. However, Bigsten et al. (2002); Bigsten et al. (2003); Metalign (2005) have reported that these variables have significant contribution for reducing rural household poverty.

Education of household heads: The education level of rural farm households was expected to enhance their understanding and utilization of modern agricultural technologies which augment productivity and profitability of agricultural activities. As a result, literate households would be in a better position to escape from poverty. However, the model revealed that education of household heads was not significant at 0.1 level of significance ($\beta = 0.006$ and P - value $= 0.644$). Similarly, the focus group discussion and interview participants disregard the role of education to escape out of poverty. They believed that productive resource (land) is the way to escape from poverty than modern education. This result was in consistence with findings of Shete (2010); Dawit et al. (2011). In light of this, Shete (2010) associate this to the lack of strong extension services that provides coffee farmers with appropriate technologies while Dawit et al. (2011) associate it to the general low-level education among the surveyed households.

In contrary to this, Metalign (2005); Sepahvand (2009); Mohammed (2017); Imam et al. (2018) reported that education has got a significant correlation with poverty where schooling increases household welfare by 8.5% and helps to escape from poverty. As per Ayalneh et al. (2003) promoting the household head by one level of education will reduce the risk of poverty by nearly 6%.

Credit access of households: The assumption was that credit access broadens the opportunity of involving rural households to agricultural and non-agricultural activities like petty trade and others, as a result of which

households could increase and diversify their income and escape out of poverty. However, the result of the model reveals that the coefficient for the variable was negative and not significant at 0.1 level of significance ($\beta = -0.38$ and P - value = 0.900). As the focus group discussion participants showed that utilization of credit for an unintended purpose (for basic needs and ceremonies) and repayment and large interest rate lessen the role of credit in the area. Inconsistent with this Metalign (2005) founded a significant relationship; and thus, households with access to rural credit were found to fall in poverty by a factor of 6.17. This is due to failure to repay the loan since many of them use it for unintended purposes, and that causes fear of others to take loans.

Saving habit of households: Saving habits of households were hypothesized to smooth poverty overtime by paving the way for engagement in meaningful investment. However, the regression model result shows that it was statistically insignificant at 0.1 level of significance ($\beta = 3.499$ and P - value = 0.627). The insignificant relation could be due to the small number of households who practiced saving in the study area where the non-poor households drain a substantial amount of their income to consumption. In contrary, Metalign (2005); Shete (2010) ; Endalew & Tassie (2018) found out that households with the culture of saving could reduce poverty by a factor 0.307, i.e., households were found to have 23.5% probability of escaping out poverty.

4. Conclusion

Poverty is a common phenomenon in the rural parts of Ethiopia. This study aimed to explore determinant factors of rural household poverty in Tenta woreda (district) South Wollo zone. The analysis result shows that the total poverty line of Tenta district was 387.43 ETB per person per month and 4649.16 ETB per year. Based on this, 67.3% of the communities were below the obtained rural poverty line. The binary logistic regression model analysis identified that the rural household poverty in the study area is positively and significantly influenced by the sex of household head (male headed household), farmland holding size, beehive ownership, number of oxen and number of small ruminants (sheep and goats). This implies that households with better access to the above stated assets have a high probability to be non-poor and escape out from poverty.

On the other hand, household size and engagement in non-farm/off-farm activities correlated negatively and statistically significant with rural household poverty. As households engaged in non or off-farm activity and their family size increase the probability to be poor will increase. Since poverty pervades in the rural farm households of the study area, agricultural productivity is a central element of poverty reduction. Therefore, the national and regional governments, as well as NGOs, have to work in enhancing agricultural productivity and create awareness about the techniques of poverty reduction. Since female headed households are more exposed to poverty, skill-based training for female household heads should be provided, and gender based anti-poverty development policy measures are also useful to curb poverty in rural areas of Tenta woreda.

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Conflict of Interest

The authors declared no conflicts of interest.

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