Determinants of Money Metric Poverty among Female Headed Households in South-West Ethiopia: The Case Study of Districts around Gilgel Gibe Hydroelectric Dam

Jibril Haji   Muhdin Muhammedhussen   Wondaferahu Mulugeta   Haile Adema

Abstract

The main objective of this study was to investigate the determinants of monetary poverty among female headed households (FHH) in South West Ethiopia with special focus on districts around Gilgel Gibe Hydroelectric Dam. It also further aimed at look into the extent of poverty among female headed households by way of making comparison with the male headed households. Using household data of 400 samples, the study employed Foster, Greer and Thorbacke (FGT) class of poverty index to identify extent, depth and severity of poverty among female headed households as compared to Male Headed Household (MHH). The binary logistic model was used to find out the main factors that affect the poverty situation of female headed households in the area under consideration. The result of Foster, Greer and Thorbacke class of poverty index shows that the incidence, depth and severity of poverty are high among female headed households than male headed households which support the hypothesis of feminization of poverty. The results of logistic regression revealed that the poverty status of female headed households are negatively related with amount of land owned, access to market information and work experience of households. On the other hand, distances from the local market increases the likelihood of female headed households falling into poverty. Finally, the paper suggests that all concerned bodies should be actively involved in the empowerment of women so as to reduce overall poverty in the country.

Keywords: Poverty, Determinants, Female Headed Households

1. Introduction

Eradicating poverty and eliminating gender-bias are the central issues to global economic development. Poverty is a widespread problem that affects many people in the world. It has a multidimensional phenomenon that has multiple causes which include economic, social, demographic, and political features. Though rigorous efforts have been made globally for alleviating poverty, there is a growing realization internationally that women are bearing a disproportionately higher and growing burden of poverty (World Bank, 2001a; Khalid and Akhtar, 2011). The existence of large numbers of women among the poor along with the growing number and massive responsibilities of households headed by female in developed and developing countries pushed the growing attention to gender issues globally. For instance, in USA the households headed by female increases from 13% to 30% during the period from 1970-1992 (Triegaard, 2005); in South Africa around 41.9% of households are headed by female (Venter and Marais, 2005); in Ethiopia 23.5% of households are headed by female while in 2009 the figure increased to around 39% (Alemi and Dereje, 2014).

Since the 1990s, there have been a growing number of literatures on the idea that women constituted the largest proportion of poor group of society. For instance, in 1995 the issue of women poverty was the top agenda of the international development at the Fourth World Conference on Women taking place in Beijing (World Bank, 2001a). In that conference it was stated that 70% of the world's poor were female, and eradicating the ''persistent and increasing burden of poverty on women'' was adopted as one of the critical areas of the Beijing Platform for Action. Hence, the feminization of poverty hypothesis which was for the first time introduced by Pearce (1978) has been one area of investigation during the past few decades as far as poverty is concerned.

The concept of feminization of poverty implies that poverty is more prevalent among female headed households than male headed households since women are subjected to various socio-economic challenges in developed and developing countries. For instance, according to Mykyta and Renwick (2013) in the United States of America poverty rates for women are higher than poverty rates for men. In year 2011, for example, 16.3 percent of women had incomes below their official poverty threshold compared to 13.6 percent of men. Using the official measure women were 20 percent more likely to be poor than men. The poverty and vulnerability of female headed households are more serious in developing countries. According to the International Fund for Agricultural Development (IFAD, 2010), rural women in developing countries were among the poorest and most vulnerable people in the world.

Women are disadvantageous in many aspects of well‐being, including access to education, health, earnings, rights, and economic opportunities (e.g. Barros et al., 1997; World Bank, 2001a; Klasen and Wink, 2003). They are also discriminated by cultural norms and suffering from high dependency burdens, economic immobility and the "double day burden" of their heads (Khalid and Akhtar, 2011); women in the world are also the disadvantaged group as compared to men in their access to assets, credit, employment, and education which makes them more poorer than male-headed households (See, Joshi 2004). According to Chant (2013), gender disparities

in rights, entitlements and capabilities have been one of the main causes for the 'feminization of poverty.

Ethiopia is one of the developing countries in the world with the largest proportion of people living in rural areas. Around 84% of the people in Ethiopia are living in rural areas and engaged in traditional agriculture which is the major source of their livelihood. According to Ministry of Agriculture (MoA) report (2010) agriculture contributes 45% of the national Gross Domestic Product (GDP), more than 80% of employment opportunities and over 90% of the foreign exchange earnings of the. According to CSA (2008) of the total nearly 84% of Ethiopian women reside in rural areas. The rural women are mainly engaged on traditional agriculture, which is basically labour intensive and exerts a heavy physical burden. Although rural women make a significant contribution to the agricultural sector, they are usually vulnerable to poverty. Mainly, in rural areas of Ethiopia households headed by female are among the largest portion of society hit by severe and persistent poverty due to their poor social and economic conditions which result from gender inequalities and discrimination that prevail in the country (Ellis and Tassew 2005; IFAD 2010; Farnthworth and Tamene 2010;).

Despite the efforts made so far, poverty eradication has still remained the primary goal of the Ethiopian government. Since poverty is a multidimensional and complex phenomenon, the struggle to eradicate overall poverty in Ethiopia also requires a good understanding of the extent and causes of poverty in every dimension. One of the dimensions is to analysis poverty based on feminine form. This implies any policies and strategies targeted to reduce overall poverty in the country should also address the female face of poverty which require identifying and analysis of sources of female poverty. Therefore, this study was aimed to analysis the extent and sources of poverty amongst female headed households in south west Ethiopia, Jimma zone using household level data. The outcomes of the analysis are used to inform any concerned policy makers to design appropriate intervention policies and for assessing effectiveness of on-going policies and strategies in reduction of poverty.

2. Empirical Literature Review: Poverty and Female Headed Households

Poverty is one of the most serious social problems in the world. It is the multi-dimensional concept defined and expressed in a various ways. The welfare of society can be measured objectively (monetary approach using either consumption or income level; or non-monetary approach such as health, education, life expectance, standard of living, etc.) or subjectively that based on the perception of people well being. Most studies used money metric approaches by using either income or consumption level so as to measure the well being and hence the poverty status of an individual. The monetary approach defined poverty as indicator of lack of access to resources and income opportunities (if the income or consumption level of an individual fall below some minimum level necessary to meet basic needs) (Phlip and Rayhan, 2004).

Over worldwide during the past few decades there have been number of studies done on the concepts of feminization of poverty in different parts of the world. However, the empirical evidence regarding the poverty status of women headed households in comparison to men headed households is ambiguous. Few researchers found lacked evidence for the existence of feminization of poverty hypothesis (e.g. IFAD, 1999; Appleton, 1996; Loi, 1996; Dreze and Srinivasan, 1997)); but, numerous studies have been providing a support for the hypothesis that female headed households are poorer than male headed households (e.g. Kossoudji and Mueller, 1983; Rodgers, 1990; Joshi, 2004; Katapa, 2005; Geda et al., 2005; Koster, 2008 and Rajaram, 2009). The feminization of poverty hypothesis is very helpful for the developing countries to struggle against poverty since poverty reduction policies require multidimensional approaches and strategies that incorporate women in the planning process.

Empirically there have been number of studies done on the factors that can contribute to one's poverty status by look at the characteristics of the household as a whole or that of the household head as possible determinants of poverty. The study conducted by Malik (1996) and Minot and Boulch (2005) concluded that family size and dependency ratio are positively related with the level of poverty. Moreover, age of household heads (Malik, 1996) and years of schooling of the head of the household (Minot & Baulch, 1997) are significantly reducing the probability of falling into poor category. According to Geda et al. (2005) households headed by males are found to have a lower probability of being poor compared to those headed by female.

The result of study conducted by Sekhampu (2012) on socio-economic determinants of poverty amongst female-headed households in South Africa show that household size, age and employment status of the head of household significantly explain variations in the household likelihood of being poor. Household size was positively associated with the probability of being poor, whereas the age and employment status of the head of the household reduces the probability of being in the poor group. As of study conducted by Alemi and Dereje (2014 on female headed households and Poverty in rural Ethiopia using binary logistic model shows that the probability of being poor is on average higher for female headed households relative to the male headed households. Moreover, the study found that lower family size, more years of schooling; larger livestock ownership and land holding of the head of household significantly reduce the likely of remaining in the poor group.

3. Methodology of the Study

This study employed household survey data collected from household heads living in four districts located around Gilgel-Gibe hydro electric dam in Jimma zone of Oromia Regional State, Ethiopia. The survey covers a sample of 400 households (consisting of 300 male headed and 100 female headship households) living in the area under consideration. The survey data contain detailed information on the demographic characteristics, the socio-economic characteristics, consumption expenditure, and income level and sources of household head.

Definition of poverty is society and country specific and also can vary in places or/and in time. Different countries developed their own poverty line. The demarcation of households into poor and non-poor require clearly defining poverty line (a threshold line that distinguishes poor from non-poor). Though most studies used consumption expenditure to measure monetary poverty, this study used income per adult equivalence to define and measure the poverty status of female headed households. However, in context of Ethiopia there is scant development of official poverty line. As a result, this study used the level of income at first twenty-fifth percentile for sampled households as the absolute poverty line.

This paper used Foster, Greer and Thorbacke (1984) class of poverty index to measure the poverty profile of sampled households. This poverty index decomposes aversion of poverty in to three parts: incidence, depth and severity of poverty.

The FGT index can be expressed as follows:

$$P_\alpha = \frac{1}{n}\sum_{i=1}^{n}(\frac{Z-Yi}{Z})^\alpha$$

Where P_α is FGT poverty index, Z is the poverty line, Y is the level of per-capita income of households below the poverty line and α is the poverty aversion parameter represents the weighted attached to a gain by the poorest. The value of α vary from 0 to 2. When the value of α is 0, the poverty index represent the head count ratio (incidence of poverty) which measures the percentage of population living below the poverty line. If we set α to 1, we get poverty gap index which measures how far the poor people are below the poverty line. When we set α equal to 2, we obtain severity of poverty (poverty gap squared index) which gives greater emphasis to the poorest of the poor.

To characterize the poor female headed household in the area under consideration, the study was used a probability model in which the chance of falling into poverty is associated to demographic and socio-economic characteristics of household heads. In particular, the binary logistic model was employed to examine the factors that affect the probability of female headed households falling below the poverty line. The probability of being poor is defined as:

$$P_i = E(Y = 1/R_i) = \alpha + \beta Ri$$

Where P_i represents the probability of ith households being poor, R_i is vector of explanatory variables that includes demographic, social and economic determinants of poverty, and β is vector of slope coefficient of explanatory variables. Assuming P_i is a Bernoulli variables and its distribution depends on the vector of predictor R, so that the logistic distribution function can be stated as:

$$P_i(R) = \frac{e^{\alpha+\beta R}}{1+e^{\alpha+\beta R}}$$

For estimation, this logistic function is written in the odds ratio as:

$$\ln\left[\frac{Pi}{1-Pi}\right] = \alpha + \sum \beta iRi$$

Where $\ln\left[\frac{Pi}{1-Pi}\right]$ is the natural log of the odds in favor of the poor households where βi is the measure of change in the log of the odds ratio of the probability of poor to non-poor household.

4. Model Variables and Their Description

To find out main determinants of poverty among FHHs, we regress the dependent variables (the poverty status of sampled households) on independent variables. Table 1 gives detail description of variables along with expected sign.

Table 1: Description of the explanatory variables

Description	Variables	Category	Expected sign
Age of household head	Age	Continuous variable	-/+
Family size of household head	Family size	Continuous variable	+/-
Educational status of household head	headubina	Discrete variables (Illiterate/literate)	-
Work experience of household head (measured in years)	Workexp	Continuous variable	-
Total amount of land owned by head (measured in hectare)	Tland	Continuous variable	-
Distance from nearest local market (measured in KM)	Locmkt	Continuous variable	+
Access to market information	mktinfo	Discrete variables (access to market information/ no access to market information)	-

5. Results and Discussion

5.1. Demographic and Socio-economic Features of Respondent

In this section the proportions of poor and non-poor female headship households based on various demographic and socio-economic characteristics was analyzed. Test of significant difference between the poor and non-poor groups of households was made regarding the respective variables as summarized in Table 2 and table 3. Table 2 shows the demographic features of sampled female headed households.

The first demographic characteristic of respondent is the educational level of the head of households. As shown in table 2, majority of respondents (either poor or non-poor) are illiterate as most of them living in rural areas where majority of people are uneducated. The result shows that the highest incidence of poverty is observed among the illiterate female headed household where as the lowest poverty incidence is found among households' head that have secondary education and above. In contrary to many previous studies, the chi-square statistics revealed that there is no statistically significant difference between poor and non-poor female headed households in terms of educational level.

Table 2: Decomposition of Respondent by Demographic characteristics

Variables		Female headed household		Chi-square value (P-Value)
		Poor (in %)	Non-Poor (in %)	
Education of household head	Illiterate	68.3	81.3	2.2632(0.13)
	Read and Write	26.8	13.6	
	Primary education	2.5	5.1	
	Secondary Education and Above	2.4	0	
Family size	<3	31.7	30.5	0.3894(0.82)
	3-5	36.6	42.4	
	>5	31.7	27.1	
Age of household head	<30	4.8	6.7	1.1093 (0.775)
	30-40	17.1	11.9	
	40-50	31.7	40.6	
	>50	46.3	40.7	

Source: Own computation (2016)

Majority of (36.6% of poor and 42.4% of non-poor) FHHs have 3-5 family size. There is no significant difference between poor and non-poor female headship households in terms of family size. The result also reveals that as family size increases initially the household become poorer as additional member become more dependent. However in large family, some members of household can contribute to family labor which in turn increases the production as compared to consumption and hence the proportion of poor people will reduce.

Age of household head is another demographic characteristic that could affect the incidence of poverty. As observed from (table 2), the larger proportion age of respondents for both poor and non-poor lies above 50 years. This has two implications: on one hand, households headed by older individuals will tend to be poorer than those headed by younger individuals as most of household living in rural areas engaged in agricultural activities which require heavy physical labor. So, if they have no enough labour within their households, older household heads are disadvantageous economically. On the other hand, as age of household increases, they can get more experience and also accumulate more wealth which makes them to lift out of poverty. With the 0.05 level of

significance, the chi- square test result shows that there is no significant difference between poor and non-poor groups of female headed households in terms of age.

Table 3: Socio-economic characteristics of Respondent

Variables			Female headed household		
		Mean	Poor (in %)	Non-Poor (in %)	Chi-Square Value(P-value)
Access to market information	have no access to information	0.6	53.7	35.6	5.4925 (0.019)
	have access to information		46.3	64.4	
Amount of land owned	<1 hectare	0.92	85.4	59.3	26.3745 (0.000)
	[1-2) hectare		14.6	25.4	
	>=2 hectare		0	15.3	
Work experience of head	<10 years	20.1	39.0	10.2	12.6933 (0.002)
	10-20		36.6	28.8	
	>20		24.4	61.0	
Local market (in KM)	<5	9.8	28.8	27.1	1.5140 (0.469)
	5-10		24.4	28.8	
	>10		48.8	44.1	

Source: Own Computation (2016)

The result of table 3 shows that there is a statistically significant difference between poor and non-poor groups of households headed by female in terms of access to market information, land size and work experience. On the other hand, there is no significant difference between the two groups in terms of distance from nearest local market.

From total sampled female headed households, majority of them have access to market information. Of them when we compared the poor and non-poor households, majority of non-poor (64.4%) have access to market information contrary to only 46.3% of poor households. This implies that households that have access to market information are less likely to be poor.

As regard to asset ownership, the possession of land by FHHs is on average 0.92 hectare. When we compare the amount of land owned by the two groups, majority of poor groups of FHHs total land holding (85%) lies between 0 and 1 hectare to only 59.3% for non-poor households. This implies that non-poor households have more land than poor households. Moreover, the FHHs have 20.1 years average experience of working. Based on the data, we classified working experience in to three categories: less than 10 years, 10-20 years and above 20 years. The result shows that majority of respondents (46%) have more than 20 years of working experience. Interestingly, we observed small proportion of poorer households and larger proportion of non-poor households as working experience of household increases. Finally, the mean average of distance from the nearest market is 9.8 Km.

5.2. Incidence, Depth and Severity of Poverty

As mentioned earlier, FGT index are used to measure the extent of poverty in the study area. For the purpose of scrutiny the hypothesis of feminization of poverty, the economic poverty of female headed households is compared with male headed households. In general, the result shows that female headed households are poorer than male headed households. All the three poverty indexes: head count ratio, poverty gap ratio and squared poverty gap ratio shows the same thing.

Table 4: Poverty indices of sampled households

Household head	Poverty indices		
	Head count ratio	Poverty gap ratio	Squared poverty gap
FHH	0.410	0.152	0.068
MHH	0.215	0.0637	0.029
Total	0.25	0.086	0.039

Source: Own computation (2016)

The result (table 4) shows 41% of sampled female headed households are fall below the absolute poverty line compared to only 21.5% to those who are male headed. Putting differently, 41 % of female headed households are shortfall of minimum income per adult equivalent and live under absolute poverty compared to only 21.5% of households headed by male. This may be due to the fact that FHHs are usually have less access to resources (such as land), fewer assets, less access to market information, and education as compared to MHHs. Therefore, it is very interesting to note that FHHs are poorer than MHHs which support the hypothesis of feminization of poverty. Regarding the poverty gap ratio (depth of poverty) which shows the distribution of poor people below the poverty line, it is found that (table 4) if the nation mobilize and distribute resources equal to 15.2% and 6.37% of the

poverty line for each female headed and male headed households respectively to bring each of those to the poverty line the poverty could be eliminated.

The result also show squared poverty gap index which measure the severity of poverty of sampled households. If the government continues to fight and eventually eradicate poverty among female headship and male headship households, then poverty severity could be reduced by 6.8% and 2.9% respectively.

5.3. Analysis of Determinants of Poverty among Female Headship Household
To identify possible determinants of monetary poverty among FHHs, the binary logistic regression model was used.

Before running the regression, the adequacy of model, and the presence of multicollinearity were checked. The log-likelihood statistics show that the binary logistic model fitted the data very well. H-L test used to test the goodness of fitness of the model. The result reveals that the data fitted the model very well. Another important test that we conducted is the presence of problems of multi-collinearity. The covariance matrix didn't indicate the presence of any serious problems of multicollinearity.

The results of estimated logistic regression model are given in table 5. In general, the study shows that total land size, work experience on farming, market information and distance from local market are the main determinants of monetary poverty among female headed households and have the expected sign. On the other hand family size, educational level and age of female headed households are not significantly affecting the probability of being poor.

The coefficient of total land as measured by total hectares of land the household owned is statistically significant. The coefficient for the variable is negative and significant at 1% significance level. The sign of the coefficient for land size show that larger land sizes contributes negatively to the probability of becoming a poor household. The probability of a household being poor tends to diminish as land size of the household head increases using per capita household income. Results of marginal effect suggest that land size contributes 4.0% in reducing of the probability of being poor households. This is evident from the facts that land is the most important asset and resources of many Ethiopian living in rural parts of the country.

Table 5: Binary Logistic estimates for determinants of poverty among FHHs

Dependent variable: the probability of being poor (1 if the household is poor and 0 otherwise				
Explanatory Variables	Coefficients	P-value	Odds Ratio	Marginal effects
familysize	0.139	0.291	1.15	0.032
headedubina	-0.257	0.697	0.77	-0.059
age	0.015	0.431	1.016	-0.018
totland	-2.206	0.000***	0.11	0.004
localmkt	0.150	0.012**	1.16	-0.1508
workexpe	-0.077	0.009***	0.93	0.034
Mktinform	-1.207	0.026**	0.30	-0.267
_cons	2.626	0.182		
Pseudo R2 = 0.3594		LR chi2(7) = 48.08		
Prob > chi2 = 0.0000		Log likelihood = -42.836822		
Prob > chi2 = 0.592		Hosmer-Lemeshow chi2(8) = 6.49		
Number of groups = 10		Number of Observations = 100		

Note:
- – *** indicates that the coefficients are statistically significant at 1% significance level
- – ** indicates that the coefficients are statistically significant at 5% significance level

As regard to the coefficient of households distance from the nearest local market, the study concluded that the distance from the local market is statistically significant and positively related with the probability of households falling in to poverty. The marginal effect for the distance from the local market of household head shows a contribution of 15.1% in raising the probability of being a poor. This implies that probability of being poor rises as households far away from the local market.

Work experience of households is statistically significant at 1% level of significance. The result revealed that the household who have more experience of farming will be less likelihood of falling in to poverty. In this case as households work experience, on average, increase by one year, then the odds ratio of falling into poverty decrease by 0.93, all other factors remains constant.

The result also indicates that access to market information is another important variable significantly explain variation in money metric poverty among FHHs. The binary logistic regression shows that its coefficient is negatively correlated with probability of being poor and statistically significant at 5% significance level. This implies that households who have access to market information are less likely to be among poor groups. An increase of access to market information enhances household welfare through the provision of valuable

information regarding their business activities. Contrary to many previous studies, family size, education and age of household heads are not statistically significant.

6. Conclusions and Policy Implications

This study was aimed to assess the determinants of monetary poverty among FHH using household level data collected through field survey. The FGT index was employed to identify the incidence, depth and severity of poverty among FHH as compared to MHH. The finding of the study revealed that households headed by female are poorer than male headship households. This finding supports the hypothesis of feminization of poverty in the study area since female has less access to land, education, and market information in most rural areas of Ethiopia. The result of logit model shows that total land holding, work experience, distance from the nearest local market and access to market information are statistically significant at explaining the variation in the incidence of poverty among FHHs. As total land size and work experience of households increases the less likelihood that the households falling into poverty. Moreover, the household who have access to market information has less probability of being poor whereas the more far away from the local market the more likelihood of falling into the poor category. Finally, this study suggests that all concerned bodies should design and implement policies and strategies that incorporate women in the planning process, particularly in the empowerment of women so as to reduce overall poverty in the country.

7. References

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