Gender Difference on Household Income and Asset Building: The case of Arbaminch Surrounding District, Gamo Gofa Zone, SNNPR, Ethiopia

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Abstract- Empowering the poor through household asset building and improving their economic status is now one of the top prioritized agenda by Ethiopian government. To address this, gauging gender differences in terms of determinants of income and asset accumulation by assessing the practical social and economic characteristics of FHH and MHH is critical in the area. This study was conducted in Arbaminch surrounding by selecting four rural kebeles. A stratified random sampling technique was employed to select 160 household heads for the study. Data were collected using semi-structured interview, key informant interviews and focus group discussion. Descriptive statistics and econometric techniques were employed for data analysis.OLS and Blinder Oaxaca decomposition model were used. The results of the study showed that MHHs own more productive resources such as savings, land, and livestock, labor and household equipment as compared to FHH. Moreover, OLS regression analysis in relation to household income showed that the numbers of livestock, cultivated lasnd size, labor availability, credit, distance to nearest market, irrigated land size were statistically significant for both MHH and FHHs while social capital was only significant for MHHs. In the case of asset accumulation, OLS regression analysis showed the extension contact and irrigated land size were significant to MHHs, while the rest of other variables were significant for both households. Blinder-Oaxaca decomposition indicated that the observable characteristics (endowments) play a significant role for observed differences by contributing for the gap by the -1.58 and -1.491 respectively for household income and asset accumulation between two groups. But the differences due to coefficient and interaction were not statically significant for observed differences in both household income and asset accumulation.Over all; findings of the study suggested a bundle of gender sensitive interventions and policies
to enhance the resource endowment.

Index Terms- Blinder- Oaxaca decomposition, household asset accumulation, household income, OLS, Male and female headed

I. Introduction

Economic security throughout the life course is basically linked to income and asset ownership. The majority of current social policies focus primarily on income supports and social services. However, building assets can also help individuals, families, and communities expand their economic horizons. Access to, control over, and ownership of assets are critical components of well-being (Carter and Barrett, 2006). Productive assets can generate products or services that can be consumed or sold to generate income. Assets are also stores of wealth that can increase (or decrease) in value. Assets can act as collateral and facilitate access to credit and financial services as well as increase social status. Flexibility of assets to serve multiple functions provides both security through emergencies and opportunities in periods of growth (Deere and Doss, 2006). Access to, control over, and ownership of assets including land and livestock, homes and equipment, and other resources enable people to create stable and productive lives. Increasing the nexus of control over assets also potentially enables more permanent pathways out of poverty compared to measures that aim to increase incomes or consumption alone.

Asset building is a key strategy to promote economic and social development. Over the last decade, interest in asset-building policies has grown under the premise that compared to income; assets may have a more sustainable impact on well-being (Moser, 1998). This policy push has been driven by both theoretical and empirical motivations. Theoretical models suggest that asset ownership may lead to better economic, psychological, social, civic, political, and intergenerational outcomes (Sherraden, 1991). Empirical research, discussed below, has provided some evidence to support these theoretical models. Empirical research has found associations between asset ownership and several positive outcomes, including increased wealth (Schreiner et al., 2003), future orientation (Shobe and Page-Adams, 2001), political participation (McBride, Lombe et al., 2003), educational attainment (Filmer and Pritchett, 2001), and health (Thomas et al., 2002). For women, control and ownership of assets increases their bargaining power in the household (Beegle et al., 2001; Breza, 2005; Doss, 2006); provides better prospects for their education and employment (Fawe, 2000); and increases female autonomy and empowerment (Panda, 2002; Panda and Agrawal, 2005)

Female-headed households have been singled out in development policy research as one of the key groups to which poverty alleviation efforts should be aimed. Female-headed households are viewed as being at greater economic disadvantage than male-headed households because women generally have lower earning capacity than men due to lesser human capital, discrimination, and less physical or financial capital (Fitsum, 2002).

There are socio-economic indicators of gender inequality. These include measure of employment, education, health, ownership of property and income disparities. Gender gap results

from inequality in decision making power which leads to inequality in access to resources and by the differential treatment given to women and girls as compared to men and boys. Gender discrimination exists as part of the social system and runs through all aspects of life and at different levels such as at family level, community level and institutional level (Bogalech, 2000)

In the study area FHH were faced similar economic disadvantage than their male counter parts in terms of household income and asset accumulation. FHH are less equipped with skills of income generation, low educational status, discriminated against cultural norms and marginalized in terms of credit and extension services which are basic ingredients or determinants for income earning opportunity available to them. Therefore, it is essential to study the household income and asset accumulation of female and male headed households in the area, where gender disaggregated information in this aspect is missing.

II.   RESEARCH METHODOLOGY

Description of the Study Area

Arbaminch surrounding district is found in GamoGofa zone of the SNNPR. It has common boundaries with Dita and Chencha in the North, Dirashe special woreda in the South, Amaro and Abaya in the East, Bonke in the West. The capital city of the district is Arbaminch town, which is located 505Km from Addis Ababa along South. The district has a total land area of 168172 hectares, of which 28414 is cultivable land. It has 29 rural kebeles and rural population of 189925, of which 94923are female and 95002 are male (AZWARD, 2011)

The average land holding per household is estimated to be 0.8 ha (AZWARD, 2011). The area is subdivided into three major agro climatic zones known to be Dega (14%) and WeynaDega (53%) and kola (33%).The average annual rainfall is about 661mm per year. The altitude is about 1265m.a.s. There are two main cropping seasons in the areas that arebelg and meher. The belg season begins from late February to late March/early April where maize, haricot bean and sweet potato are planted. The meher cropping season begins late June and continues up to end of September. Crops like tef, haricot bean, and sweet potato are planted in the meher season. The main livelihood activities being practiced in the woreda are farming, off farming and non -agricultural activities.

Land use pattern of the district indicates that about 2356, 4852, 5758 and 4535 hectares were used for annual crops, perennial crops, forest and grazing respectively. Mixed farming system is the main agricultural activity in the woreda. Cattle, goats, sheep, equine and chickens are important livestock species reared by farmers. Tef, banana, barley and maize are the major cereal crops in the area. The agricultural extension service in the woreda is mainly provided by the office of agriculture through development agents assigned in each development center.

Sampling Technique and Procedure

Arbaminch surrounding district was selected from fifteen districts of Gamo Gofa zone. Arbaminch surrounding district has 29 rural kebeles. From these, four kebeles were randomly selected for the study. The unit of analysis for this study was at household level. For the study stratified sampling technique was employed. A stratified random sampling was constructed by classifying the population into two stratums (MHHs and FHHs). To select a sufficient number of respondents from each stratum, simple random sampling technique was used. Then from the two strata proportionate male and female headed households were selected. Finally, to achieve the objective of the study a total of 160 respondents were selected that is proportionally 80 respondents from each stratum.

Data Sources and Data Types

The sources of the data for the study were both primary and secondary. Primary data related to the objectives and aspects of the study were gathered from the sampled households, key informants, focus group discussions and concerned bodies. The secondary data was collected from published and unpublished documents, rural development Office of the district. In addition to this, an in-depth literature search was conducted to gather information on the household income and asset building, determinants and related aspects.

Methods of Data Collection

The main data gathering methods for the study was semi-structured interview due to the educational back grounds of the target population mean that most of them are not able to write, and understand written materials without the assistance of researcher or enumerators. For this, interview schedule was designed in consultation with the respective advisors and additional amendments were incorporated in discussion with concerned offices of the district after being translated into local language (Gamoygna). To facilitate the data collection process together with the researcher, eight enumerators were recruited and trained before commencing the work based on their familiarity of culture ,language and the people as well as having good communication skill in consultation with the kebele administration officials. Besides, for the case of qualitative data in order to capture the socio economic context and to check the reliability of data, eight focus groups discussions (six person in each group) were held as well as the check lists for (men and women), key informant interview and observation at each PA were conducted.

Methods of Data Analysis

The data was processed and analyzed by using SPSS and Stata computer software. Both qualitative and quantitative data were analyzed. To analyze the quantitative data, simple descriptive statistics like percentage, mean, interpretation and inferential statistics (t-test and χ^2) were used. In order to examine gender differences in household income and asset accumulation, Blinder-Oaxaca decomposition analysis was used. It was used to shed light on the sources of the gender differences in household income and asset accumulation. And OLS regression analysis was also used to examine what predicts higher household income and asset accumulation for MHHs and FHHs. The determinants of outcome variables (i.e household income and asset building) were separately analyzed by using these models for MHH and FHHs.

III.   RESULTS AND DISCUSSION

Sources of income and its share on household income differentiated by gender

Rural people derive income from multiple sources both from within and outside agriculture. They have commonly more than one source of income as they usually participate in both on farm and off farm activities. Crop and livestock income play an important role for the households in the study area. Besides farming, some of the households participated in off/non-farm activities and diversified the means of their income earning options.   The households who couldn't meet their home consumption through farming and those who were pulled to get additional income were engaged in off/non-farm activities. Most of the households depend on their income earning options beside farming include agricultural or nonagricultural labor wage employment, hand crafting, fuel wood collection, charcoal selling, petty trading ,brewery, small business(shopping) and fishing. The survey results indicates that the majority of the households were earning income from both sale of crop and livestock production in addition to participating in off or non-farm activities. This indicates that agricultural activities (crop production and livestock rearing) were significantly pursued by either household. Among the sampled households 63.125% were

engaged in farm activities, 25.625% were involved in off-farm activities and 11.25% were in non-farm activities. Income from these sources at an average is lower for the FHHs.

With regard to gender of household head participation in different income earning options, FHHs have participated and dependent more on off-farm activities than MHHs.   This is mainly because most of the MHs cultivate larger land size and earn income primarily from banana, maize, barley and fruits. As pointed out earlier, agriculture alone does not satisfy the basic needs of the people. Therefore, people have to acquire alternative sources of income .As a result, 32.5% of FHH participated only in off-farm activities compared to 18.75% of MHHs. Most of them were engaged in the low-return, unskilled wage employment and in business activities with low capital requirements. This indicates that some of MHH and FHH were engaged in different off-farm activities in addition to agricultural activities such as petty trade, working as daily laborer, spinning and etc. Discussion with FGD revealed there were a number of constraints that hinder people's participation in off and non-farm activities such as shortage of business knowledge, lack of motivation to look alternative income sources, low information and low educational status are some to mention.

Table 1.Participation of the respondents in income earning options by gender wise.

Income earning activity	MHHs	FHHs	Total
Farming	**55(68.75%)**	**46(57.5%)**	**101(63.125%)**
Crop	14(17.5%)	13(16.25%)	27(16.875%)
Livestock	7(8.75%)	3(3.75%)	10(6.25%)
Mixed farm	34(42.5%)	30(37.5%)	54(33.75%)
Off-farm	**15(18.75%)**	**26(32.5%)**	**41(25.625%)**
Petty trading	8 (10%)	15(18.75%)	23(14.375%)
Wage labor	6(7.5%)	7(8.75%)	13(8.125%)
Selling grass ,straw and charcoal	1(1.25%)	4(5%)	5(3.125%)
Non-farm	**10(12.5%)**	**8(10%)**	**18(11.25%)**
Shopping	3(6.25%)	1(1.25%)	4(2.5%)
Hand craft	4(5%)	5(6.25%)	9(5.625%)
Fishing	5(6.25%)	0(0%)	5(3.125%)
Weaving	2(2.5%)	0(0%)	2(1.25%)
Brewery	0(0%	4(5%)	4(2.5)

Source: Own survey, 2013

On average, households in the research area earned a total income of around 15000 Ethiopian birr (ETB) from a wide variety of activities with agriculture being the most important source. The comparison of mean total household income for the MHHs and FHHs shows that about 17000 birr and 13000 birr respectively. The t test for the mean difference in mean total household income between the FHH and MHH was statistically significant at less than 1% probability level   hence differences in income sources between the FHH and MHHs.

The comparison on the share of income by their sources to the total sampled households; it shows agricultural income accounts for 53.34% of the mean total household income by indicating its important role on people's livelihoods. The share of off -farm activities accounts for almost 26.67% and the share of no-farm account about 20% of the total income of all the sampled households. Also a comparison of mean total household income share by its sources for MHHs and FHHs indicate the share of agriculture was about 58.82%, and 57.69 % for male and female respectively.

Table2.The means level of income share and their sources

Income category	MHH		FHH		Total	
	Mean (ETB)	Share (%)	Mean (ETB)	Share (%)	Mean (ETB)	Share (%)
Farm income	10,000	58.82	7500	57.692	8000	53.34
Off-farm income	4000	23.53	3000	23.07	4000	26.67
Non-farm income	3000	17.65	2500	19.23	3000	20
Total mean income	17,000	1000	13,000	100	15000	100

Source: Own survey, 2013

Household Expenditure

In order to compare the economic status of households, the expenditure was computed instead of the income since expenditure is assumed to be more stable as households try to attain a certain level of welfare overtime. The expenditure data under consideration included money spent within a year on: food and non- food items such as cloths and foot wear, health/medical treatments, agricultural inputs ,livestock inputs, repair of house, energy/fuel , education, social activities such as wedding, *mahber*, etc . The aggregate of these all types expenses were worked for the total annual expenditure per capita in the sampled households.

In the study areas, households headed by men have the highest mean per capita expenditure than FHHs. The mean annual per capita expenditure for the total sampled households was about 2000 Ethiopian birr. And a comparison of mean per capita expenditure by gender of the household head revealed FHHs are lower than MHHs, mainly due to lower non-food expenditure in real terms.

Regarding the per capita food and non-food expenditures are 12.5% and 18.18% higher for MHHs than FHHs respectively. As indicated by the corresponding t values, these differences are statistically significant. The Mean food expenditure per capita accounts for 40% of an average household's expenditure per capita in the study area, in which it takes 40.9% and 42.1 % of an average expenditure per capita of FHHs and MHHs respectively. And also non-food expenditure per capita accounts for 60% an average household's expenditure per capita in the study area, in which it takes 59.09% and 57.89% of an average expenditure per capita of MHHs and FHHs respectively

Table 3. Annual mean expenditure per capita for the household by gender (in birr)

Items	MHH	FHH	Total	Share(%)	t-value
Mean food expenditure per capita	900	800	800	40	2.713**
Mean non-food expenditure per capita	1300	1100	1200	60	3.581*
Mean total expenditure per capita	2200	1900	2000	100	5.17*

** Imply at 10% probability level, * at 1% probably level.
Source: Own survey, 2013

Housing characteristics of the household Head by gender

Another indicator of the asset building the members of the society is their status .The survey assesses a number of variables relating on the dwellings of households. The first important piece of information is about the ownership of the dwellings where households currently reside. As it can be seen from Table 19, a total of 92.5% of the households in the study area live in dwellings they themselves own. Remaining 7.5% have rented house. Accordingly, for both MHHs and FHHs the most dominant one is personal ownership of dwelling, followed by rented houses from Kebele and from others. Therefore, in terms of the ownership structure of households' dwellings, there was no any gender difference.

However it was observed gender differences by the type or quality of the house. At the time of the survey period serious field observation was made and a number of variable relating to the dwelling of HHs such as roof material, floor material, wall material as well as lights were observed. Most of the houses in the study area were made of wood logs and mud. With regard to light, 40% of total sampled households have lights. Among them 50% were MHH and 30% were FHHs. The house made from local material and no light could have low value, and the house made from roof of iron sheet and having light values more. The percentage difference for the type/quality of house between MHH and FHH has statistically significance difference at 1% probability level. A family having relatively better quality of house tends to have more asset accumulation in relative term than those who have poor quality houses.

Table4.Ownership of house and its quality by gender

Ownership status	MHH (%)	FHH Total	(%)
Own	95	90	92.5
Rented	5	10	7.5
Total	100	100	100

Type of house			
Grass roofed and wood wall	28.75	36.25	32.5
Plastic roofed and mud walled	13.75	18.75	16.25
Plastic roofed and wood/ bamboo walled	17.5	20	18.75
Iron sheet roofed and wood wall	40	25	32.5
Lights in house	50	30	

Source: Own survey, 2013

The household asset accumulation by gender of household

Many households in our sample have tangible or real assets, such as livestock's and household durable goods. They serve not only as store of value but also are used as collateral in asset pawn market or are sold when cash is short. These assets also provide immediate use value whether for consumption or productive/business purposes to its owner.

Household asset building can be measured using market value of household asset and its agricultural asset .To measure total value of asset accumulated by the respondents, the researcher focused on fair market price of all house hold assets by considering the periods they served except for livestock and land. The household assets included in this study were household equipment's, farm tools, transport equipment and livestock's as well as rental value of land. In addition to this, financial assets were also considered. The monetary valuation of the different assets owned by households showed gender differences on asset accumulation. Accordingly the average total value of household assets in male-headed households was 25750 birr, whilst female-headed households had only 20500 birr. Male-headed households had more than the amount of productive assets in female-headed households including number of livestock and financial assets.

As we seen from the table below, gender difference was observed in specific types of assets. There was significant gender difference by possession of financial assets between male and female by indicating differential saving behavior between the two groups. Likewise great significant difference was also observed in possession of household equipment's. This was due to some household appliances (e.g. television, sewing machine, DVD player, refrigerator, etc.) were present mostly in MHHs compared to the FHHs. The comparison of livestock asset value also showed a significant difference between MHHs and FHHs. This indicates the types and the quality of livestock owned by

MHHs was highly better than those of FHHs. It is consistent with data from Northern Nigeria, Dillon and Quinones (2009) estimated the value of men's livestock holdings to be about two times that of women's in 2008. The mean value of total real assets is higher for MHHs than for FHHs. This was due to differential gender patterns on accumulation of specific types of assets and this in turn may be partly explained by the nature of employment or income earning activities that these respondents are engaged in. Farmers use income of agricultural activities to build asset in form of construction of house, purchase of agricultural equipment and household goods etc.

Table 5. Mean value of total household tangible assets by gender (in birr)

Mean real asset values	MHH	FHH	t-value
Farm equipment's	500	450	1.4
Rental value of land	3500	3400	0.67
Financial assets/deposits	1750	1250	3.76[*]
Livestock asset values	11000	9000	2.45[*]
Household equipment's	5500	3500	3.53[*]
Transport equipment's	3500	2300	3.15*
Mean total value of all assets	25750	20050	5.22[*]

* imply at 1% probably level
Source: Own survey, 2013
Econometric Analysis

Multicollinearity Test

Before running the analysis, it is necessary to check for the existence of multi-co linearity among the continuous and discrete variables. The reason for this is that the existence of multicoliniarity will affect the parameter estimates seriously. Therefore, following Gujarati (2004), multicolinearity problem for continuous explanatory variables was assessed using a technique of Variance Inflation Factor (VIF) and Tolerance Level (TOL) where each continuous explanatory variable is regressed on all the other continuous explanatory variables and contingency coefficient is computed. The results of VIF analysis indicate that the VIF values for all continuous explanatory variables were less than 10. Therefore, all the explanatory variables were included in the model for further analysis.

Table6: Multicollinearity Test among Continuous Variables

Variables	VIF	Tolerance
AGE	1.11	0.898773
CULS	2.21	0.453248
LAVIA	1.79	0.559686
DISMRKT	1.67	0.598467
IRGLAS	1.61	0.619226
NULIVS	1.61	0.622602

Sources: Own survey, 2013

The values of VIF for continuous variables were found to be small (i.e. VIF values less than 10).To avoid serious problem of multicollinearity, it is quite essential to omit the variable with value 10 and more from the analysis. Based on the VIF result, the data have no serious problem of multicollinearity. Similarly, the contingency coefficients, which measure the association between various discrete variables, were computed in order to check the degree of association among the discrete variables. The values of contingency coefficient range between 0 and 1, with zero indicating no association between the variables and values close to 1 indicating a high degree of association. Accordingly, the results of the computation reveal that there was no serious problem of association among discrete explanatory variables when the contingency coefficients did not exceed 0.75, which is often taken as a cut-off point.

Table7. Contingency coefficient for discrete/dummy explanatory variables

	HHSIZE	EDCAT	FECONT	PLAMT	MORG	CREDIT	RERECIV
HHSIZE	1.0000						
EDCAT	0.4608	1					
FECONT	0.3302	0.3116	1				
PLAMT	0.0615	0.0492	0.0052	1			
MORG	0.2167	0.1059	0.0440	0.2377	1		
CREDIT	0.248	0.117	0.158	0.088	0.0796	1	
RERECIV	0.0377	0.0819	0.0316	0.0772	0.0219	0.0144	1

Source: Own survey, 2013

Model results for determinants of household income and asset building

Table8.Determinants of Household Income for MHH and FHH as well as pooled (OLS Regressions)

	Pooled (N=160)		MHH (N=80)		FHH (N=80)	
Variable	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
AGE	-.145	-1. 94**	-.113	-1.06	-.134	-1.23
HHSIZE	.263	2.24**	.1879	1.34	.0799	-0.47
EDUCAT	.434	6.13*	.458	4.71*	.371	3.21 *
NULIVEST	.250	3.86*	.3642	2.74*	.138	1.78***
CULS	.3156	5.27*	.456	3.69*	.1925	2.70*
PLAMT	.0645	1.48	.0063	0.03	.0054	0 .056
DISMRKT	-.5695	-5.76*	-.8749	-5.93*	-.4160	-3.10*
CREDIT	.4035	3.587*	.4434	3 .65**	.353	2.69**
LABAVAI	.4366	3.76*	.524	2.75*	.4077	2.62*
FECONT	.1550	3.13*	.1425	2.33**	.1727	2.13**
MORG	.2995	1.75***	.5120	2.03**	.1437	0.541
RERECIV	.1054	.567	.226	0.98	.1089	0.41
IRGLAS	.2093	3.26*	.2749	2.42 *	.1695	2.30**

Source: Own survey, 2013

*, **,*** Significant at <1%, 5% and 10% probability level respectively

Table 9. Determinants of asset accumulation for MHH and FHH as well as pooled (OLS

	Pooled(N=160)		MHH(N=80)		FHH(N=80)	
Variable	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
AGE	-.215	-2.95*	-.2433	-2.51*	-.217	-1.85**
EDUCAT	.3575	4.88*	.4464	5.01*	.3647	2.94*
NULIVEST	.1738	2.56*	.4668	2.27**	.334	2.34**
CULS	.1347	2.06**	.4289	3.22*	.3693	2.79*
PLAMT	.121	0.77	.10298	0.42	.0723	1.02
DISMRKT	-.375	-3.81*	-.7556	-5.61*	-.3852	-2.68*
CREDIT	.238	1.46	.2900	1.35	.16583	0.6
LABAVAI	.443	4.11*	.71045	3.71*	.4635	3.43*
FECONT	.037	0.76	.0980	1.80*	.100	1.1
MORG	.192	1.20	.635	2.42*	.3567	1.6
RERECIV	.144	.54	.136	0.63	.2517	0.93
IRLAS	.116	1.89**	.1762	2.73*	.156	1.27

Regressions

*, **, *** Significant at <1%, 5% and 10% probability level respectively

Source: Own survey, 2013

Blinder- Oaxaca decomposition analysis

Table 10. Total income differential between MHH and FHH

Mean log income	Coeff.	Std. Err.	z	P>|z|
Overall				
Group_1	4.0625	.1849	21.97	0.000
Group_2	5.2875	.2456	21.53	0.000
Difference	-1.225	.3074	3.98	0.000
Endowments	-1.583	.2927	5.41	0.000
Coefficients	.3949	.25286	1.56	0.118
Interaction	-.0367	.24865	0.15	0.882

Note: Group_1 imply FHH and group_2 imply MHH

Source: Own survey, 2013

Table11. Total assets accumulation differential between MHH and FHH

Mean log AA	Coeff.	Std. Err.	z	P>|z|
Overall				
Group_1	4.5625	.1773	24.96	0.000
Group_2	6.125	.2404	25.47	0.000
Difference	-1.5625	.3047698	-5.13	0.000
Endowments	-1.491838	.2792398	-5.34	0.000
Coefficients	-.1069496	.2629	1.41	0.684
Interaction	.0362875	.26007	0.14	0.889

Note: Group_1 imply FHH and group_2 imply MHH
Source: Own survey, 2013

Interpretation of Econometric Results
Interpretation of Blinder-Oaxaca decomposition model results

Blinder-Oaxaca decomposition model help to measure the contribution of the different effects (endowments, coefficient and interaction) to income and asset accumulation differences between male and female headed households. This method distinguishes the income and asset accumulation difference that can be explained by differences in household endowments and differences in the coefficient (i.e. means differences in how the characteristics translate into accumulation of wealth or earn income) based on the asset function of these endowments. This model confirmed that the differences in both average household income and asset accumulation results highly from endowments between men and women.

The decomposition output of this study reports the mean predictions by groups and their difference. It showed the mean of log income was 4.0625 for FHHs and 5.275 for MHHs, yielding log income gap of -1.225 which is statically significant at less than 1% probability level. Similarly it also showed the mean of log asset accumulation was 4.5625 for FHHs and 6.125 for MHHs, yielding log asset accumulation gap of -1.5625 which is statically significant at less than 1% probability level

Table 10 and 11 indicates that differences in endowment account for about more than half the income and asset accumulation gap. The second term which is the coefficients quantifies the change in women's income or asset accumulation when applying the men's coefficients to the women's characteristics. The third part is the interaction term that measures the simultaneous effect of differences in endowments and coefficients. Here it indicates that the observable characteristics (endowments) play a significant role by contributing for the gap by the -1.58 and -1.491 respectively for household income and asset accumulation between two groups. The negative sign in endowments in table 10 and 11 indicates FHH were disadvantaged in terms of endowments than their counterparts. But the differences due to coefficient and interaction were not statically significant for observed differences in both household income and asset accumulation. The explained difference in household income and asset accumulation was due to the higher endowments by MHHs. Hence, it is possible to argue that higher total household income as well as higher asset accumulation associated with MHHs was resulted from their higher endowments.

Interpretation of OLS results

The separate regression models were run for male and female-headed households .Brief discussions of the OLS regression results for significant variables for MHH and FHHs household income and asset accumulation are presented below.

Cultivated Land size: As mentioned in descriptive part, land is the most important household asset for households that depend on agriculture for their livelihoods. Access to land is a basic requirement for farming and control over land is synonymous with wealth, status and power in rural areas. It has a significant and positive impact on household income in both MHH and FHH, indicating that the larger the cultivated land size, the higher is the household income (HI). As seen in table 24 other factors being constant, a unit increase in cultivated land increases household income by 0.456 and 0.1925 unit for male and female headed households respectively. In other words, these figures indicate that farmland contributed about 45.6% and 19.25% to the household income for MHH and FHH respectively. This reflects that greater farmland holdings allow its holders for crop diversification and integration of crop production with cattle rearing .In the case of asset accumulation, cultivated land size was also significant for both MHH and FHHs households. Other factors being constant, a one unit increase in cultivated land would increases household asset accumulation (HAA) by. 42895 and .3693 for MHHs and FHHs,respectively.

Age of household head: The variable is found to be not significant for both MHH as well as FHH and has negative association with the household income. That is, the households with older age tend to be less able to participate in different income earning options than medium aged household heads. Contrary to that the variable was significant and negative impact on household asset accumulation in both MHH and FHH. As table 24 shows increases in age at one unit would increase asset accumulation in certain limit and decrease the probability of asset accumulation by -.2433 and -.217 for MHH and FHH respectively. In other hand this implies that after 30 years old, households are in the way in accumulating wealth whereas after 61 years old, farmers have a chance to lose what they have accumulated during their medium age level and reaches to dependency syndrome.

Number of livestock owned (TLU): It serves as accumulation of wealth and social prestige as well as generate income through sale of animal and sale of its product. As expected, possession of livestock has a positive impact on households' income and asset accumulation for both MHH and FHHs. That is due to households with more number of livestock obtain more milk and milk products. Besides, a household with large livestock holding can obtain more cash income from the sale of live animals. The results for number livestock holding indicates that, other things being constant, the increase in a unit increase in a tluwould increases household income by .3642 and .138 for MHH and FHH respectively. Likewise the results for number livestock holding indicates that, other things being constant, the increase in a unit increase in a tlu would increases asset accumulation by .4668   and .334 for MHH and FHH respectively.

Education level: It has a positive influence on household income and asset accumulation because educated individual have better opportunities to participate in different income earning options whether agriculture or out of agriculture in better manner than illiterates. Other things being constant, an increase in household's education level by one unit results in an increase in the probability of increase in household income by .45865 and .371 for MHH and FHH respectively.   Regard to asset accumulation, results for educational level indicates that, other things being constant, the increase in one level of education would increases asset accumulation by .4464 and .3647 for MHH and FHH respectively. The reason for this was educated individuals have better access to different information, business knowledge and have opportunity to engage in high return activities. This result indicates that, encouraging the rural people's education will enhance individual ability to accumulate asset.

Distance to nearest market (in kilometer): Proximity to market centers creates access to additional income by providing off-farm/non-farm employment opportunities, easy access to inputs and reduces transportation cost. It was, therefore, expected that households nearer to market center have better chance to improve household income options than those who do not have a proximity to market centers. Distance to local market has significant and negative impact on income and asset accumulation. The significant impact of distance to local market indicates the presence of regular local market facilities up to date transaction between suppliers and demanders and helps the expansion of micro enterprise to generate new employment opportunities. The negative impact of distance to market implies increase in distance to market by unit would decrease household income (HI) by -.8749 and -.4160 for MHH and FHH respectively. And also with regard to asset accumulation (HAA), increase in distance to market by unit would decrease asset accumulation by -.7556 and -.3852 for MHH and FHH respectively

Household labor availability (in ME): Household labor availably is one of the determinants of farm activities and determines household's engagements in different off or non-farm income earning activities. As result shows labor availability was positive and significant for household income (HI) and asset accumulation (HAA) in both MHH and FHH. An increase in labor in one unit in ME resulted.524 and .4077 increase in household income and also .71045 and .46355 increase in asset accumulation in MHH and FHH keeping other factors constant. The numbers of adult male and female members of household (aged from 15 to 64 years) have positive and significant effects on the income diversity and this in turn increases probability of asset accumulation and income.

Irrigated land size. It is found to have significant for household income with 1% and 5% probability level for MHH and FHHs. The result for size of irrigation land displays that, other variables being constant, the probability of increase in household income by.2749 and .1695 as a size of irrigable land increases by one unit in MHH and FHHs respectively. This implies that the people tend to be increased income when there is an additional size of irrigable land. In relation to asset accumulation the variable was only significant for MHH. Other variables being constant, the probability of increase in household

asset accumulation (HAA) by.1762 as the size of irrigable land increases by one unit in MHH.

Frequency of extension contact: Frequent extension contacts can deliver services like advice, training and information on agricultural and other related issues. The frequency of contact between a farmer and development agents increase both crop and livestock production of farmers. Further observation of the result indicate that keeping all other things constant, the probability of household income(HI) increases by a coefficient of .1425 and .1727 as frequency of extension contact increases by one unit in MHH and FHHs respectively. Also in the case of household asset accumulation the variable was significant for MHHs at 10% probability level and not significant for FHHs. The result shows keeping all other things constant, the probability of household asset accumulation (HAA) increases by a factor of .0980 as frequency of extension contact increases by one unit in MHH. This is because the advice the MHHs got from DA's might help them increase agricultural productivity such as crop and livestock production and this in turn enhance s their ability to accumulate real assets than those who has low extension contact with extension agents.

Credit received: It has positive and significant influence on household income and significant at 5% probability level for MHH and FHHs. This is due to those farmers having access to credit are able to purchase agricultural inputs as well as able to engage in different income earning options such as off or non-farm activities and they expected to increase their income. Moreover the results indicate unit increase in household's credit would increase the probability of household income by .4434 and .353 respectively for MHH and FHHs.

Social capital (membership to organization): The result shows membership to organization has positive effect on total income and asset accumulation for MHHs. Keeping other things constant, membership to organization would increase the probability of household income and asset accumulation by .5120 and .63455 respectively for MHHs.

IV.   CONCLUSION

The research study has mainly investigated gender differences in terms of household income and level of asset accumulation in Arbaminch ZuriaWoreda of SNNPR. Considerable progress has been made in measuring the household income and asset accumulation by gender and in understanding the factors that account for the gender differences in household income and asset accumulation. To analyze the survey data both descriptive and econometric analysis were employed in this study.

The result of the OLS regression model revealed that out of 13 variables included in the model, 10 explanatory variables are found to be significant up to less than 10% probability level. Those are age, education level of household head, cultivated land size, livestock holding, labor availability, membership to organization, frequency of extension contact, credit, distance to nearest market and irrigated land size were found to have significant association with household income and asset accumulation.

Statistically significant dissimilarity persists between MHH and FHHs in household income and asset accumulation. The result of Blinder-Oaxaca model confirmed that the differences in level of income and asset accumulation marked highly by the differential endowments between men and women. In line with this, the decomposition output reports the mean predictions by groups and their difference. It shows the mean of log income is 5.275 for men and 4.0625 for women, yielding income gap of -1.225 which is statistically significant at 1% probability level.

Appendix

Appendix table 1. Conversion factor that used to estimate equivalent labor factor

Age category	Male	Female
<10	0.0	0.0
10-13	0.2	0.2
14-16	0.5	0.4
17-50	1	0.8
>50	0.7	0.5

Source: Storck et al., 1991

Appendix table 2 .Conversion factors that used to estimate tropical livestock unit

Livestock type	TLU	Livestock type	TLU
Calf	0.25	Donkey (young)	0.35
Weaned Calf	0.34	Donkey(adult)	0.70
Sheep & Goats (adult)	0.13	Heifer	0.75
Sheep & Goats (young)	0.06	Cow and ox	1.00
Chicken	0.013	Horse	1.10

Source: Storck et al., 1991

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