

GENDER PARTICIPATION IN NON-FARM EMPLOYMENT IN EBONYI STATE, NIGERIA

*Onya S.C., Amah-Jerry E.P. and Iheke O.R.

Department of Agricultural Economics,
Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria

*Corresponding author's email: simeononya@yahoo.com

ABSTRACT

This study examined gender participation in non-farm employment in Ebonyi State, Nigeria. The study used primary data collected from 149 respondents selected through a multistage sampling technique. Data were analysed using descriptive statistics and double hurdle model. The result of the descriptive statistics showed that female household heads were younger (38.3 years) than the male (44.4 years), the male had more years of education, spent more time in work than the female; and also the male farm income were more than that of the female, while the female non-labour income were higher than that of the male. Also, the females were more involved in tree cropping and livestock-keeping than their male counterparts, while on the non-farm activities, the female were more into these practices than the male. The result of the double hurdle estimation showed that age, marital status, years spent in school, household size, number of dependent, farm size, non-labour income, and distance to the market significantly influenced the participation decision of both male and female headed households in non-farm employment; while age, marital status, years spent in school, household size, number of dependent, farm size, non-labour income, distance to the market, and distance to the urban centre significantly influenced the hours of work decision of male and female headed households in non-farm employment in the study area. The study recommends policy measures that will improve the skills and educational level of the farmers especially the female as it will go a long way in reducing the number of unskilled labours while increasing the number of skilled labour of the people in the study area.

Key words: gender, participation decision, hours of work decision, non-farm employment

INTRODUCTION

Gender differential in labour, wage, land distribution and productivity are critical issues that have been central to the socio-economic life of countries in Africa. In Nigeria, women constitute half or more of the country's population, but they contribute lesser than men towards the value of recorded production both quantitatively in labour force participation and qualitatively in educational achievement and skilled manpower (Olukemi, 2009). Available evidence portrayed rural non-farm employment as a continuously occurring phenomenon of adding onto on-farm employment, new forms of non-farm livelihood activities, and thereby expanding available livelihood options for both men and women (Davis and Bezemer, 2004).

In agricultural societies, considerable gender disparities in access to non-farm employment opportunities usually exist. Nicodemo and Waldmann (2009) reported that both employment and participation are influenced by supply and demand factors. On the supply side, gender specialization in both farm production and household activities dictate gender differences in both time constraints and the value of time. On the demand side,

qualifications such as formal education dictate differences between the demand for male labour and the demand for female labour. Both supply and demand could also be subject to considerable gender discrimination in traditional societies in which most of these factors work against women. However, increasing women's position is known to be favourable not only to household income but also to child education, health and nutritional status of all household members (Quisumbing, 2003). More so, labour market opportunities are an important determinant of women's bargaining power in household decision making, which has been shown to be positively correlated with household spending on goods that benefit children, (Costa and Bob, 2012).

Right from the pre-colonial traditional Nigeria society to its modern state, women have often been discriminated upon in affairs that led to deplete their contribution to aggregate employment. Such discrimination is often perceived in grounds that they are the weaker sex. Women rarely own land, may have lower education due to discriminatory access as children, and their access to productive resources as well as decision-making tend to occur through the mediation of men (Oluwatayo, 2009).

The fact that women and men particularly in Africa have significantly different roles in the making of livelihoods decisions, calls for the need to further understand how gender influence individual decision to participate in non-farm employment. (Simtowe, 2010). It is possible for participation in non-farm employment to improve the independent income generating capabilities of women, care and nutritional status of children. This is because a high proportion of cash income in the hands of women tends to be spent on family welfare (Simtowe, 2010).

Rural livelihood portfolio is widely known to be expanding and diversifying beyond agriculture (Csaki and Lerman, 2000; Davis and Bezemer, 2004; Idowu *et al.*, 2013). However, very little is known on gender dimension of rural non-farm employment and whether gender makes any difference in rural dwellers choices of livelihood. Hence the objectives of the study were to (i) examine the socioeconomic characteristics of the respondents, (ii) identify major types of non-farm employment available, and (iii) estimate the determinants of participation in non-farm employment in the study area.

MATERIALS AND METHODS

The study was carried out in Ebonyi State, Nigeria. The state is located in the Southeastern Nigeria, and lies within latitude 5.40' and 6.45'N and longitude 7.30' and 8.30'E. It covers an area of 6,421.2 km² with a population of 2,176,947 (NPC, 2006) which accounts for 1.6% of total Nigeria population. The state is characterised by mean annual rainfall of between 2250 mm in the south and 1500 mm in the North with an average temperature of about 27°C and relative humidity of 85%. The people are predominantly farmers and grow crops such as rice, yam, maize, oil palm and vegetables; and they also rear livestock. Non-farm employment activities common in the area range from hired farm labourers, petty trading to civil service (Onya *et al.*, 2016).

Sampling Procedure

Multi-stage sampling technique was adopted for the study. Ebonyi State is divided into three agricultural zones. The three agricultural zones were used for the study. The first stage involved the random selection of one local government area (LGA) from each agricultural zone where farming activities are predominant, namely Ohaukwu, Ikwo and Onicha LGAs. The second stage involved the random selection of two rural autonomous communities from each LGA namely Ezzamgbo and Ndi-Akpu in Ohaukwu LGA, Ndi-Achara and Eka Awoke in Ikwo LGA and Isu-Aguke and Abaomege in Onicha LGA making a total of six autonomous communities. Third stage involved the random selection of three villages from each of the selected autonomous communities making a total of 18 villages. The villages are Amechi, Amike, Amovu Ezzamgbo in Ezzamgbo Autonomous Community,

Ndiagu, Ogbodo, Nsulakpa in Ndi-Akpu Autonomous Community, Agubata-Ndufu, Ndiagu, Umoka Ndiufu in Ndi-Achara Autonomous Community, Aguiyima Echare-Ukwu Ezeke in Eka-Awoke Autonomous Community, Obeagu, Mbala-Ukwu, Agba in Isu-Aguke Autonomous Community and Ebusirike, Omege, Okworike in Abaomege Autonomous Community. In the final stage, random selection of 10 farming households from the 18 selected villages gave a sample size of 180 rural households (of both male and female headed households) used for the study. Out of the 180 questionnaires distributed to the farmers 149 consisting of 96 male headed households and 53 female headed households were found useful for the study and consequently used for the study.

Data Analysis

Descriptive statistics such as frequency counts, percentages and means were used to present the results for the first and second objectives, while the double hurdle modelling approach was used to analyze for the third objective.

Specification of Non-Farm Labour Supply Function

Many empirical studies analyzed non-farm labour supply of farm households by considering a binary choice dependent variable (participation versus non-participation), and thus estimated a Probit model (Beyene, 2008; McCarthy and Sun, 2009) or a logit model (Norsida and Ismaila, 2009; Roslan and Siti, 2011; Onya *et al.*, 2016). But both models ignore an important aspect of labour supply decision, i.e, the hours of work decision. As a solution to this problem, some other studies examined the non-farm labour supply decision of households using single equation Tobit model (Tassew, 2000; Abebe, 2002).

However, the Tobit model by itself has many drawbacks. In the Tobit specification, first, all zero observed hours of work are interpreted as corner solutions. Second, it is based on a restrictive assumption that both participation and the hours of work decision given the decision to participate are determined by the same set of variables which implies that a variable that increases the probability of participation also increases the number of hours worked (Wooldridge, 2002). Thus, as an alternative approach, the non-farm labour supply of male and female members of households could be modeled as a two-stage (double hurdle) process. This method provides a general approach to modelling participation and hours of work decision as two stage decision process. Although the approach was widely used in the empirical studies of consumer demand and agricultural technology adoption (Simtowe and Zeller, 2007; Getachew *et al.*, 2009; Onya *et al.*, 2019), it has also been used to study labour supply decisions (Matshe and Young, 2004; Bedemo *et al.*, 2013a).

Therefore, it has the advantage that it permits the joint modeling of the decision to participate and the intensity of participation (hours of work) in the Non-farm labour market (Matshe and Young, 2004; Bedemo *et al.*, 2013a). In this model, individuals should pass two-step decision processes; first they have to decide to participate in non-farm activity and then they need to work a certain hour in the labour market at a prevailing market wage. Therefore, if we observe a positive hour of work, the inference is that the individual concerned has completed a two-stage process. In other words, the zero hours of work observed is because of the participation decision (not participating) or the hours of work decision (not supplying positive hours of work) or both.

The model works under the assumption that there exist two latent variables which are γ_1^{**} related with the individual's decision to participate in the non-farm employment activity and γ_2^{**} with his decision on the number of hours worked in non-farm employment activity (Matshe and Young, 2004; Bedemo *et al.*, 2013a). These latent variables are expressed as linear functions of the first and second hurdle regressors, X_1 and X_2 , respectively:

$$\begin{aligned} \gamma_1^{**} &= \chi_1\beta_1 + \mu_1 \dots \dots \dots (1) \\ \gamma_2^{**} &= \chi_2\beta_2 + \dots \dots \dots (2) \end{aligned}$$

where X_1 represents the regressors used to explain the participation decision in equation 1 and X_2 those used to explain the hours of work decision in equation 2. Suppose that an index variable γ_1^* is expressed as $\gamma_1^* = 1$ if the individual participates and $\gamma_1^* = 0$, otherwise, then we have: $\gamma_1^* = 1$ if $\gamma_1^{**} > 0$ $\gamma_1^* = 0$, if otherwise.

Assuming that the error term μ_1 in equation 7 is normally distributed, the first hurdle corresponds to a probit model. Similarly, turning to the hours of work equation, provided that the first hurdle was cleared, γ_2^* can also be generated as:

$$\gamma_2^* = \gamma_2^{**}, \text{ if } \gamma_2^{**} > 0, \text{ and } \gamma_2^* = 0, \text{ if otherwise}$$

This second hurdle takes the form of truncated regression and is capable of generating zero levels of non-farm labour hours, independent of the first hurdle. Finally, the observed (actual) hours of work, γ , is determined by the interaction of both hurdles, that is: $\gamma = \gamma_1^* \gamma_2^*$. The double-hurdle model specification assumes a bivariate normal distribution (BVN) of latent variables given as:

$$\begin{pmatrix} \mu_1 \\ v \end{pmatrix} \sim BVN \left[0, \begin{pmatrix} \sigma_\mu^2 & \rho\sigma_\mu \\ \rho\sigma_\mu & 1 \end{pmatrix} \right] \dots \dots \dots (3)$$

As indicated by Blaylock and Blissard (1992), this general model nests a number of formulations and extensions based on the assumptions made about ρ . For instance, if $\rho = 1$, the model will be reduced to a

standard Tobit model; and it will be an independent double hurdle or Cragg (1971) model if $\rho = 0$. The use of maximum likelihood method to obtain consistent estimates in this approach is based on normality assumption. However, if this assumption is violated, the maximum likelihood estimates of the model will be inconsistent (Pagan and Vella, 1989). Thus, it is necessary to conduct test of normality besides covariance and Tobit restriction tests.

Variables; age (years), marital status (married = 1, otherwise = 0), household size (number), number of dependents (numbers), level of education (number of years spent in school), farm size (hectares), distance to the market (km), farm income (naira), non-labour income (income from rent, remittances and pension), distance to the urban centre (km).

RESULTS AND DISCUSSION

Summary Statistics of the Socioeconomic Characteristics of Farmers in the Study Area

Table 1 shows the summary statistics of the of the socioeconomic characteristics of the respondents. The average ages of the male and female headed households were 44.4 and 38.3 years respectively. Implying that the male headed household were older than the female headed households and that the respondents are relatively young and can actively participate in non-farm activities.

The mean household size of the respondents was 7 and 4 persons with standard deviation of 3.2 and 2.5 for the male and female headed households respectively. The mean years spent in school of the respondents were 9.1 and 8.6 years with standard deviation of 5.6 and 5.8 for the male and female headed households respectively. The average number of dependents of the respondents was 3.7 and 4.4 persons with mean deviation of 1.5 and 3.1 for the male and female headed households respectively. This implies that the male headed household head were more educated with large family size and less dependents than the female headed household heads.

The mean farm size of the respondents were 1.8 and 0.6 hectares with mean deviation of 1.0 and 0.6 for the male and female headed household respectively, implying that male headed household had larger farm size than the female headed household. This could be as a result of poor access to arable land by the female and also because of the need of the male to fend for his household as the overall head of the household.

The average non-labour income (income from rent, remittances and pension) of the respondents was ₦6208.33 and ₦9849.06 with mean deviation of 17573.3 and 20499.9 for male and female headed household, respectively. The higher non-labour income of the female headed households could be because most of the remittances sent by migrants are sometimes given to their mother believed to be weak and to need more care than the males.

Table 1: Socio-economic characteristics of the respondents in the study area

Variables	Mean	Mean deviation	Mean	Mean deviation
Age	44.43	9.688	38.26	7.25
Household size	6.34	3.21	4.39	2.47
Years spent in school	9.05	5.58	8.64	5.79
Number of dependants	3.65	1.48	4.39	3.10
Farm size	1.79	0.95	0.58	0.65
Non-labour income	6208.33	17573.3	9849.06	20499.9
Farm income	145,031.3	193077.3	72,301.89	89521.29
Hours spent in work	4.92	3.49	3.24	2.95
Distance to market	2.90	1.01	2.92	1.69
Distance to urban centre	9.56	9.48	11.58	9.88

Source: Field Survey, 2016

The mean farm income of the respondents was ₦145031.3 and ₦72301.9 per annum with mean deviation of 193077.3 and 89521.3 for the male and female headed households, respectively. This is in line with *a priori* expectation, since the male are more energetic and had larger farm size than the female. Hence the higher the farm size the higher the income derived from it. This corroborates the findings of Ahmadu and Idisi (2014) that women have less access to arable land than men in Nigeria.

The average distance to the market of the respondents was 2.9 and 2.9 km with mean deviation of 1.0 and 1.7 for the male and female headed households, respectively. The relatively close distance to the market of male and female headed households were because they virtually stay in the place and visit the same market irrespective of gender. The mean distance to the urban centre of the respondents was 9.6 and 11.4 km with mean deviation of 9.5 and 9.9 for the male and female headed households, respectively. The lower distance to the urban centre of the male could be as a result of the fact that male tend to go closer to the urban centre where they can easily find something to engage themselves with in order to be able to carter for the family they left behind.

The hours spent in work of the respondents were 4.9 and 3.2 hours with mean deviation of 3.5 and 3.0 for the male and female headed households, respectively. The lower hours spent in work by the female headed households relative to the male headed households is as a result of the fact that female headed households have responsibilities such as cooking and caring for their family unlike the male counterpart whose responsibility is to provide for his family and as such will tend to spend more time in work in order to make more income. This in line with the findings of (Bedemo *et al.*, 2013b) who found that male spent more time at work than female that participated in non-farm employment.

Type and Sources of Non-Farm Employment

The type of economic activities engaged by the farmers (both male and female-headed households) and their percentage distribution is presented in Table 2. From the result, all the farmers participated in arable cropping. Also, 22.9 and 26.4% of the male and female headed households, respectively engage in tree cropping; 33.3% and 43.4% of the male and female headed households, respectively engage in keeping of livestock in the study area. Then, 11.5% and 3.8% of the male and female headed households, respectively engaged in fishing. Fishing activity in the study area was, therefore, predominated by male. The male headed households dominated the forest activities having 8.3% while the female had 5.7%.

For the non-farm activities, 53.1% and 62.3% of the male and female farmers were involved in non-farm unskilled labour respectively. This shows that non-farm unskilled labour is dominated by female in the study area. 19.8% of the male headed households where engaged in non-farm skilled labour while 20.8% of the female headed households were involved in non-farm skilled labour. Non-farm self-employment where dominated by male (27.1%) relative to the female (17.1%).

Gender Participation in Non-Farm Employment (Double Hurdle Estimation Result): Participation Decision

Gender participation in non-farm employment is presented in Table 3. The coefficient of age was positive and significant at 5% for male and female headed households respectively. This implies that age is directly related to participation decision of households in non-farm employment, i.e., as age increases the likelihood to participate in non-farm employment increases. This finding is contrary to Roslan and Siti (2011) and Ike (2015) who separately noted that the older the farmer, the less the probability for him/her to participate in non-farm employment.

Table 2: Distribution of the farmers according to type and sources of non-farm employment

Type of activity	Frequency	Percentage	Frequency	Percentage
Farm activities				
Arable cropping	96	100	53	100
Tree cropping	22	22.91	14	26.41
Livestock production	32	33.33	23	43.39
Fishing	11	11.45	02	3.77
Forest related activities	08	8.33	03	5.66
Non-farm activities				
Non-farm unskilled labour	51	53.12	33	62.26
Non-farm skilled labour	19	19.79	11	20.75
Non-farm self-employment	26	27.08	09	16.98

Source: Field Survey, 2016

The coefficient of marital status of male headed households was positive and significant at 10% while that of the female headed households was negative but not significant. The implication is that marital responsibility leads the household head into non-farm activities in order to argument their farm income.

The coefficient of years spent in school was positive and significant at 5 and 10% for male and female headed households respectively. This implies that participation decision of household increases as the level of education of the household head increases. Educated people are likely to diversify their income source relative to the non-literate and as such participation decision is high for the educated household heads. In other words, households with better educated head and with more number of educated members show a higher tendency to participate in labour markets as compared to non-literate ones. This is in line with some previous empirical studies (Zhang *et al.*, 2003; Bedemo *et al.*, 2013b; Ike, 2015) who noted that the more educated a farmer is, the more the likelihood that he or she will look for additional source of income outside farming. Furthermore, households with more number of educated family members choose working outside the farm. This may be supported by the fact that an increased education leads to an increased participation in non-farm employment as a result of which farmers tend to substitute farming for off-farm activities as long as the marginal of non-farm income is higher than marginal cost of farming.

The coefficient of household size was positive and significant at 5% for male headed household implying that the higher the household size, the higher the tendency to participate in non-farm employment by the male headed households. The coefficient of number of dependants was positive and significant at 5% for male and female headed households respectively. This shows that the higher the number of dependants, the higher the participation decision of the household in non-farm employment. Household with higher number of mouths to feed will always look for other means of livelihood and also with the higher number of dependent all hands must not be into farming and as such same will be redeployed into other activities outside farming.

The coefficient of farm size was negative and significant at 10% for the male headed households, implying that the larger the farm size the less is the tendency to participate in non-farm activity. Households with larger farm size tend to concentrate in farming activities than households with little or no land for farming. This is in line with the finding of Bedemo *et al.* (2013a) who asserted that the negative impact induces them to look for off-farm activity due to push factors such as shortage of land. However, households with very small fraction of cultivated land mostly participate in selling labour outside farming activities.

The coefficient of non-labour income was negative and significant at 10% for the male headed households. This implies that households that receive non-labour income such as pension, remittances and other transfer payments tend to have less interest in non-farm activities. Besides, most of the household heads that receive non-labour income are retirees who are aged and may be less energetic to participate in other activities that may seem strenuous to them. This is consistent with the work of Idowu *et al.* (2013) who noted that an increase in farm income and non-labour income significantly reduced the tendency to participate in off-farm activity.

The coefficient of distance to the market was negative and significant at 10% and 5% for male and female headed households respectively. This implies that participation decision is negatively related to distance to the market. The closer the distance to the market, the higher the participation decision of the households in Non-farm employment.

Hour of Work Decision

The coefficient of age was positive and significant at 5% for male headed households and negative and significant at 1% for female headed household. By implication older male headed households spend more time in work than the female headed households. This is not unconnected to the fact that the female household heads have domestic responsibilities such as cooking and caring for their family unlike their male counterpart.

The coefficient of marital status was positive and significant at 10% for male headed households and negative and significant at 5% for female headed households. This shows that married men spend more time in work than married women. This could be as a result of the need to meet up with family responsibilities that keep the male headed households in work than their female counterpart.

The coefficient of years spent in school was positive and significant at 10% for the male and female headed households respectively. Hours of work decision is directly related to education, educated people tend to spend more time in off-farm work than they spend in their farm and their major occupation is always non farming activity unlike the uneducated ones.

The coefficient of household size was positive and significant at 5% for the male headed household but negative and significant at 10% for female headed households. The implication is that with large household size the male headed households are likely to spend more time in work so as to earn more wages to fend for the large household size. The larger the household size of the female headed household the lesser the hours of work engaged in non-farm employment. Also, the female headed households have the responsibility to take care of their children and do other domestic chores in the house than the male and as such spend less time at work.

Table 3: Gender participation in non-farm employment (Double Hurdle Estimation Result)

Explanatory variables	Probit regression for participation decision. Dependent variable: Participation (1/0)				Tobit regression for hours of work decision. Dependent variable: Ln (Off-farm hours worked)			
	Male		Female		Male		Female	
	Coeff	T-value	Coeff	T-value	Coeff	T-value	Coeff	T-value
Age	.01788	2.80**	.05674	2.23**	.15943	2.08**	-.18278	-3.04***
Marital status	.59718	1.66*	-.01479	-0.07	2.6494	1.74*	-.78679	-2.62**
Years spent in school	.08863	2.62**	.08979	1.83*	.08458	1.73*	.29626	1.76*
Household size	.21823	2.52**	-.14177	-1.49	.97923	2.57**	-.53209	-1.77*
Number of dependent	.34392	2.04**	.06547	2.52**	1.7537	2.40**	-.08132	-0.38
Farm size	-.47023	-1.93*	.30123	0.51	-.86207	-0.84	-3.7367	-3.66***
Non-labour income	-8.36e-07	3.17***	-.00001	-0.98	-1.15e-06	-0.03	-.02005	-9.79***
Farm income	-1.51e-07	-0.19	-7.74e-07	-0.34	-4.46e-07	-1.36	-4.23e-06	-0.56
Distance to the market	-.04286	-1.93*	-.02172	-2.31**	-.07457	-1.80*	-.16765	-1.67*
Distance to the urban centre	-.03552	-1.57	-.02517	-0.64	.24797	2.57**	-.19749	-1.86*
Constant	2.0196	2.35**	-2.4349	-2.23**	6.5122	1.76*	-3.9852	-1.66*
Log Likelihood	-98.237		-131.781		-198.425		-160.268	
Pseudo R ²	0.1034		0.0949		0.0338		0.0276	

Source: Field Survey, 2016. * Significant at 10%, ** significant at 5% and *** significant at 1%

The coefficient of number of dependants was positive and significant at 5% for the male headed household. This implies that male headed household with large number of dependants tend to spend more time in work in order to meet up with their needs. The coefficient of farm size was negative and significant at 1% for female headed household. This shows that female headed households with large farm size spend more time in their farm than they spend in other activities outside farming.

The coefficient of non-labour income was negative and significant at 1% for the female headed households implying that the higher the non-labour income the less the hours of work engaged in non-farm employment. Female headed households with large non-labour income tend to relax and enjoy rather than engage their time in non-farm activities. This is in line with Bedemo *et al.* (2013b) that the estimated farm income and non-labour income significantly reduces off-farm hours of work decision for both sexes, which may be due to the substitution and income effects. This is because farm income increases the shadow value of farm labour and makes farmers devote more time on farm work. An increase in farm income may also increase the demand for leisure thereby reducing the time allocated to working off-the farm.

The coefficient of distance to the market was negative and significant at 10% for male and female headed household respectively. This is in line with *a priori* expectation that the higher the distance to the market the lesser the hours of work that will be put into non-farm employment like trading, handcrafting, etc. The coefficient of distance to the urban centre was positive and significant at 5% for the male headed household and negatively significant at 10% for the female headed households. The positive relationship of male headed household's distance to the urban centre with hours of work decision could be as a result of the fact that they travel to reside within their place of work during the work days and return during weekends thereby giving more time to their work; also the negative relationship between the distance to the urban centre and hours of work

decision of female headed household could be as a result of the fact that the female needs to give more attention to domestic chores and children upbringing and as such spend little time at her place of work that is far from her resident.

CONCLUSIONS/RECOMMENDATIONS

This study focused on gender participation in non-farm employment and the employment type of the farmers in the area. The female headed households were found to receive more non-labour income than the male headed household and also the male headed households were found to spend more time at work than the female headed household in the study area.

Among the non-farm employment activities, non-farm unskilled labour was dominated by females while self-employment activities were dominated by males. Generally fishing, forest related activities, non-farm skilled labour experienced low participation.

From the estimated result of the double hurdle, age, marital status, years spent in school, household size, number of dependent, farm size, non-labour income and distance to the market significantly influenced the participation decision of farmers in non-farm employment in the study area while age, marital status, years spent in school, household size, number of dependent, farm size, non-labour income, distance to the market and distance to the urban centre significantly influenced the hours of work decision of the farmers in the study area.

Policy measures that will improve the skills and the educational level of the farmers especially the female will go a long way to reducing number of unskilled labours while increasing on the number of skilled labour of the people in the study area.

The benefits of women's participation in non-farm employment are determined by their control of productive resources and household level decisions. Concerted effort must, therefore, be made to ensure that women have better, cheaper and equal access to land so as to improve their use of land for agricultural purposes since they spend less time in non-farm activities.

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