Analysis of Savings Determinants among Agro-based firm Workers in Nigeria: a Simultaneous Equation Approach

Sunday Brownson Akpan*[1] Edet JoshuaUdoh[2] Ebirigor Aya Aya[2]

1. Department of Agricultural Economics, Michael Okpara University of Agriculture, Umudike, Abia state, P.M. B. 7267, Umuahia, Abia State Nigeria

2. Department of Agricultural Economics and Extension, University of Uyo, P.M.B. 1017, Uyo Akwa Ibom State, Nigeria.

    * E-mail of the corresponding author: sundayakpan10@yahoo.com

Abstract

The study determined factors that affect household saving of rural agro-based firm workers in the south-south region of Nigeria. Two-stage least squares method of simultaneous equation model was used in the analysis. Cross-sectional data were collected from 250 randomly selected workers of five agro-based firms in the study areas. The results of the analysis revealed that income, tax, job experience, education, family size and membership of a social group influence saving attitude of workers. To promote household savings among agro-based workers in Nigeria, policies aim at periodic increase in worker's salary and reduction in tax rate in line with the changing pattern of macro-economic variables in the country were advocated. Others include policies that will promote birth control, increase public awareness on the on-going family planning programme in the country, and encourage social group formation among workers as well as those aim at reduction in agricultural production constraints.

Keywords: Saving, rural, agro-based, income, labor, simultaneous equation.

1. Introduction

Households saving play an important role in the economic development of both developed and developing nations, due to its significance influence on the circular flow of income in the economy (Iyoha et al., 2003). Savings are important means of improving well-being, insuring against times of shocks, and providing a buffer to help people cope in times of crisis (Rutherford, 1999; Zeller & Sharma, 2000). The sustenance of household savings increases the possibility of future investment both at the micro and macro- levels in the economy. Economic theory postulates that households' saving is the difference between households' income and consumption. Household income is aggregate income a household earns from all sources in a particular period. Consumption on the other hand, is the total amount of goods and services that is consumed by households during a particular period. Solow (1956) has suggested that savings influence growth of the economy, as higher savings lead to capital accumulation and hence economic growth. The agricultural sector's productivity for instance, is largely depended upon the proportion of income farmers save from their farming activities (Adeyemo et al., 2005; Awe & Ayeni, 2010). In the same way, the agro-based industry sub-sector's productivity is influenced by the proportion of remuneration workers earned and save over time (Steven, 1992).Wages and salaries in the agricultural sector in most developing economies like Nigeria are poor and this has resulted to a general decline in the labor well-being (CBN, 2008).

In Nigeria, saving mobilization among agro - based workers is low and this is evidence in inability of most

workers' to provide for the basic needs of life during active service years (Birdsall et al., 1996; Nwachukwu & Peter 2009). This should be a source of concern to policy makers, since about 70 of Nigeria's population are engaged in agricultural activities (IFAD, 1993). The sustainability of the agro based industry could be jeopardized if the sub-sector's labor force welfare is not given due attention. Agro based industry is one of the key provider of industrial employment and also plays an important role in an attempts to achieved food self sufficiency policy of the government as well as contributing substantially to poverty alleviation among Nigerians (ADB, 2000 and ADF, 2000). Therefore, to increase the efficiency of the sub sector in Nigeria, workers well-being must play a pivotal role.

The south-south region of Nigeria has numerous agro based firms, especially the plantation agro based firms. The sustainability of the agro based firm in the region has been linked to workers commitment which is directly related to their well-being (Udoh and Sunday, 2009). Keynes (1936) stated that savings depend upon disposable income. Duesenberry (1949) proposed that consumption/ saving was a function of ratio of current income to previous level of income. Friedman (1957) hypothesized that household savings was based on permanent income. Ando and Modigliani (1963) postulated that households were net dis-savers in their early and old age but they saved more in their middle age. Apart from income, other variables might be responsible for inability of agro-based firm workers to sufficiently save part of their remuneration. The study focused specifically on the workers of rubber plantation estates in the south-south part of Nigeria specifically in Cross River State. The rubber estates employed all categories of labor in it production and processing activities (Udoh et al., 2009). The study is necessitates by frequent undulating movement of labor in the estate and low societal ranking of the estate workers compared to other job areas available in the state. In an attempt to uncover why labor are not steadily attracted to the agro-based outfit, despite saturated labor market posed a serious question on workers well-being in the estates. Saving and consumption are proxies of labor welfare (Quartey, 2006). Hence those variables that motivate the agro-based firm workers to save part of their remuneration are likely the determinants of their welfare and these factors among others may be responsible for the unsteady labor movement in the sub sector. Being a rural based agro-firm, it is assumed that the workers depend on job remuneration and off-job income (farm income and or non-farm income). The workers income is also assumed to be either consumed or saved. Leakages and injections into the circular flow of income in this rural setting is assumed negligible. Simultaneous equation model was adopted to specify the saving and consumption function with a definitional equation involving income, consumption and saving. Adoption of simultaneous equation model help to reduce exogenous variable- error term correlation ($\Sigma X_i U_i = 0$). Therefore, the study specifically sought to examine the socio-economic characteristics of rubber plantation estate workers and determined factors that affect their saving mobilization in the study area.

Several studies have revealed that poor rural people in developing countries like Nigeria do save part of their earned income (Wright et al., 2000; Ashraf et al., 2003; Siyanbola et al., 2005; Ezedima et al., 2005; Nwachukwu & Peter 2009). Orebiyi, (2005) studied determinants of saving mobilization by farmer's cooperators in Kwara State Nigeria, using multiple-regression and descriptive statistics techniques; the results reveal that household size, farmer's expenditure and membership experience are major determinants of saving. Adeyemo et al, (2005) examined the pattern of saving and investment among cooperators farmers

in south western Nigeria and reported that income, loan repayment and amount of money borrowed are significant variables that influenced saving pattern. Ayanwale et al., (2000) in their study on rural savings in Osun state Nigeria, asserted that saving behaviour of rural farmers in developing nation is less depended on the absolute aggregate income but more on the relationship between current and expected income, the nature of business, household size, wealth and age. A study on some Asian countries on savings by Lahiri (1989) reported that the rate of growth of personal disposal income determines private savings. Bergheim and Garrett (1996) in Kenya showed that savings rates increase with education. Oliveira and others (1998) found income, physical wealth, household size, education and age of household head as the determinants of financial saving in rural Mozambique. A study of saving pattern in Netherlands and Italy by Alessie et al., (2004) reported that child's income share has strong positive effects on household saving rate. Kibet et al., (2009) reported that saving among small holder farmers, entrepreneurs and teachers in the rural Kenya is determined by the type of occupation, household income, age, gender of the household head, education, dependency ratio, service charge, transport cost, and accessed to credit. Lisa et al.,(2006) in Philippines discovered that education, proportion of young dependent and proportion of elderly are major determinants of household saving. Rehman et al., (2010) in Pakistan reported that Spouse participation, total dependency rate, total income of household and size of landholdings significantly raise household savings. Education of household head, children's educational expenditures, family size, liabilities to be paid, marital status, and value of house significantly reduce saving level of households. Harris et al., (1999) in Australia and Horioka and Junmin (2007) in China as well as Abdelkhalek et al., (2009) in Morocco confirm positive relationship between household saving and income growth.

2.0: The process of simultaneous equation model

On the premised that some variables that affect saving also affect consumption of workers, we specify simultaneous equation model as follows (koutsoyiannis, 1977);

Sav = ƒ (Inc, Tax, Age, Exp, Edu, Moa, Hhs) …………….…………….. (1)
Con = ƒ (Inc, Tax, Exp, Edu, Nfe, Hhs, Fmi, Vfo) …………………..…….. (2)
Inc = Sav + Con..…………….….………………………………………….(3)

Where

Sav =   Households saving defined as Inc- Con in (₦)

Inc =   Income of i_{th} worker define as Salary + Allowance + farm income + off- job income (₦)

Con =   Household consumption expenditure (Con = Inc- Sav) (₦)

Tax =   Tax defined as (Tax = t_0 + t_iInc*) where Tax is a predicted value of tax in (₦) and Inc* is the salary + allowance of i_{th} worker.

Age =   Age of i_{th} respondent in years

Exp =   Experience on job measure in years

Edu =   Educational qualification of respondent in years

Hhs =   Household size in number

Fmi   =   Income of other family members (₦)

Nfe   =   Expenditure, defined as Household non-food expenditure (₦)

Vfo   =   Value of Farm output of respondent in (₦)

Moa   =   Membership of Isuzu Association in Years (A local contribution group among workers)

2.1: Identification of the Structural Model

We identify the behavioral equations (i.e. equation 1 and 2) so as to determine whether unique numerical estimates of the parameters of the structural equation can be obtained from the estimated reduced form coefficients. To do this, we employed the order and the rank conditions of identification. The result of the exercise is shown below:

(a) Order condition

For equation (1)   For equation (2)

k –M ≥ G-1   **K – M ≥ G – 1**

12-8> 3-1   **12 – 9 > 3 – 1**

(b) Rank condition

$$0 = -Sav + a_1Inc + a_2Tax \quad a_3Age \quad a_4Exp + a_5Edu + a_6Moa + a_7Hhs + a_8Fmi + 0Con + 0Nfe + 0Vfo$$
$$0 = 0Sav + b_2Inc + b_6Tax + 0Age + Exp + b_7Edu + 0Moa + b_1Hhs + b_3Fmi - Con + b_4Nfe + b_5Vfo$$
$$0 = Sav - Inc + 0Tax + 0Age \quad 0Exp + 0Edu + 0Moa + 0Hhs + 0Fmi + Con + 0Nfe + 0Vfo$$

Matrix of coefficient

$$\begin{pmatrix} -1 & a_1 & a_2 & a_3 & a_4 & a_5 & a_6 & a_7 & a_8 & 0 & 0 & 0 \\ 0 & b_2 & b_6 & 0 & 0 & b_7 & 0 & b_1 & b_3 & -1 & b_4 & b_5 \\ 1 & -1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 0 & 0 \end{pmatrix}$$

$For\ equation\ (1)$ $\begin{vmatrix} -1 & b_4 \\ 1 & 0 \end{vmatrix}$ **/determinant/ = 0 - b₄   = -b₄**

$For\ equation\ (2)$ $\begin{vmatrix} -1 & a_3 \\ 1 & 0 \end{vmatrix}$ **/determinant/ = 0 - a₃   = - a₃**

The result of the identification shows that the structural model is over- identified since $K – M > G – 1$ (order condition) and the rank conditions are fulfilled. (Where K = total number variables in the model, M = total number of variables in each equation and G = total number of endogenous variables in the model). From equation (1) and (2) we investigated the relationship between the error terms and established that Cov $(U_1, U_2) = 0$; meaning that U_1 and U_2 are contemporaneously independent. This further confirms the relevance of 2- stage least squares method of simultaneous equation model specification over others. A reduced formed model was specified and the estimated value of endogenous variables was used to correct for the endogenous variable specify as exogenous variable in the structural model.

$$Sav = \pi_{10} + \pi_{11}Tax + \pi_{12}Age + \pi_{13}Exp + \pi_{14}Edu + \pi_{15}Moa + \pi_{16}Hhs + \pi_{17}Fmi + \pi_{18}Nfe$$
$$+ \pi_{19}Vfo + u_1 \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (4)$$

$$Con = \pi_{20} + \pi_{21}Tax + \pi_{22}Age + \pi_{23}Exp + \pi_{24}Edu + \pi_{25}Moa + \pi_{26}Hhs + \pi_{27}Fmi + \pi_{28}Nfe$$
$$+ \pi_{29}Vfo + u_2 \dots \dots \dots \dots \dots \dots \dots \dots \dots (5)$$

$$Inc = \pi_{30} + \pi_{31}Tax + \pi_{32}Age + \pi_{33}Exp + \pi_{34}Edu + \pi_{35}Moa + \pi_{36}Hhs + \pi_{37}Fmi + \pi_{38}Nfe$$
$$+ \pi_{39}Vfo + u_3 \dots \dots \dots \dots \dots \dots \dots \dots \dots (6)$$

The estimation of equation (6) generated the predicted value of income (Inc*) which was used to correct for the specify income (Inc) in equation (1).

3.0: Materials and Methods

3.1The study area, data collection and sampling technique: The study was conducted in Calabar Municipality, Odukpani, and Akamkpa Local Government Areas of Cross River State, Nigeria.   The three local government areas cover the operational areas for most productive rubber estates in the southern part of Nigeria. Primary data were collected with the aid of a well structured questionnaire and interview scheduled. Five rubber estates in the study areas were used for data collection. Two hundred and fifty (250) workers in the different estates payrolls were randomly selected from the various operational areas of the agro based firms. Baseline information on the socio-economic characteristics, saving, income and consumption pattern as well as their off job engagement were collected and analyzed.

3.2: Empirical model: Simultaneous equation model was used; explicitly the structural model is as shown below:

$$S = a_0 + a_i \sum X_{ij} + e_1 \dots \dots \dots \dots \dots \dots \dots \dots \dots (7)$$

$$C = b_0 + b_i \sum X_{ij} + e_2 \dots \dots \dots \dots \dots \dots \dots \dots \dots (8)$$

$$Y = S + C$$

Where e's are white noise error terms, X's are vector of explanatory variables including endogenous variable specify as explanatory variables. Details of X's are as given in equation (1), (2) and (3).

4.0: Result and Discussion

Table 1 presents the socio economic characteristic of respondents in the study area. The results reveal that, the rubber sub- sector in the south-south region of Nigeria is dominated by middle age workers who are predominantly males. More than 70% of the workers had some years of formal education while majority of the workers have moderate family size. In addition about 97% of the workers have invested more than one year in the various estates sample. Also, about 76.8% of respondents belong to the local cooperative society (Osuzu) in the estate which is basically a saving oriented cooperative group.

4.1: Two – stage least square estimates

The estimated saving function is shown in Table II. The linear function was chosen as the lead equation because it exhibited better diagnostic test statistics than other models. The R^2 of the lead equation indicates that, about 87.30 percent of variability of workers' saving is attributed to the specified explanatory variables in the model. This shows that, the specified explanatory variables were important determinants of household saving among respondents. The F-statistic value of 17.43 is statistically significant at 1 percent probability level, suggesting that the R^2 is significant and the estimated linear regression equation has goodness of fit.

The empirical results show that worker's income (Inc) has a significant positive effect (at 1% significance level) on worker's saving. This is in agreement with Keynesian postulates that relate income positively to saving and the Friedman permanent income hypothesis. This implies that as the worker income increases, the tendency of the workers to save increase too. The hypothesis asserted that household will spend their permanent income while the transitory income is channeled into saving with marginal propensity to save approaching unity. The result indicates that, a naira increase in monthly income of agro-based worker will result to 0.584 naira increase in worker's saving. Similar result has also been obtained by Adeyemo et al., (2005); Ayanwale and Bamire, (2000); Lahiri (1989); Harris et al., (1999) in Australia; Horioka and Junmin (2007) in China; Abdelkhalek et al., (2009) in Morocco and Kibet et al.,(2009) in Kenya.

Tax has a significant negative influence (at 1% significance level) on saving of agro based workers. This means that as tax rate increases, the permanent income according to Friedman hypothesis will reduce thereby resulting in a reduction of transitory income. This will lower the ability to save by the worker. Alternatively, this implies that as tax rate increases the aggregate disposal income is lowered thereby resulting in increase in the consumption expenditure of households and a corresponding decrease in saving. The result indicates that for every 1% increase in tax, about ₦3.527 is lost or diverted from been save. The result corroborates the finding of Rehman et al., (2010) in Pakistan.

The slope coefficient of experience on job (Exp) is positive and statistically significant at 1% probability level. The magnitude of the coefficient implies that about 11.17 naira is saved by agro based worker for every one year experience on the job. This means that older workers have higher tendencies to save than those that are new on the job. The result to an extent agrees with Ando and Modigliani (1963) postulates. Since most of the worker sample was more than 30 years, this means that most workers are at their middle age, and will likely be net savers. On the other hand, most workers that are new on the job were below 30

years because of the laborious nature of the job. Thus, they will likely be net net dis-savers.

Household size has a significant negative effect (at 10% significant level) on saving of rural agro-based workers. This suggests that, a worker with a large household will likely channel more of his income to food consumption expenditure rather than to save. This also implies a lower well-being for a worker with a larger household size. On the other hand, a worker with a smaller family size will have high tendency to save. The result is in line with empirical results reported by Orebiyi (2005); Oliveira et al., (1998) and Rehman et al., (2010) in Pakistan.

Education has a significant positive effect (at 5% significant level) on saving of rural agro-based worker in south-south Nigeria. This means that saving is predominant among workers who have some form of formal education. About 75% of our respondents have some levels of formal education: this suggests that they can access financial facilities, adopt improved technology in their farming activities including easy movement from one job to another to increase their aggregate monthly income. This has the tendency to increase savings, since income is positively related to saving. The result indicates that, educated agro based worker will likely save about ₦21.64 every month from his total or aggregate monthly income. Oliveira et al., (1998); Orebiyi (2005) and Lisa et al., (2006) have reported similar result. However, Rehman et al., (2010) in Pakistan reported contrary result.

Membership of local association (Moa) is the strongest determinants of saving among agro-based workers in the study area. The result reveals that a worker will likely save about ₦34.15 every month from his total monthly income if such worker belongs to a local contributing or Isuzu group. This could be attributed to the social capital accumulation derivable from been a member of such social group. Also social networking among social groups can generate additional sources of revenue to members thereby increasing their aggregate monthly income.

The marginal propensity to save is 0.584 (at 1% significant level) and the average propensity to save is 0.677. The result is consistent with the classical model for saving behavior.

5.0: Conclusion

Income has a positive relationship with saving and this implies that policies which ensured periodic increased in the workers' remuneration will enhance saving among agro-based workers in the country. Worker depended also on off-job (farm or non-farm) income, as such farm level policies which remove agricultural production restraints will also increase the workers income and encourage saving among workers. To improve saving among agro-based firm workers in Nigeria, policies on tax rate reduction and free or subsidized education are strongly advocated. These will reduce their expenditure and subsequently increase their aggregate monthly income, which is positively related to saving. Policies that reduced household size will improved saving of agro-based workers in the region. The priority areas should be birth control, education and intensive awareness on the need for moderate family size especially in the rural areas through the on-going family planning programme in the country. Policies on youth empowerment through gainful employment and self-reliance will impact positively on saving of rural agro-based workers. This will reduce dependent ratio of children on parent while increasing the aggregate family income. Finally

agro-based workers should be encouraged to form social groups and belong to social groups. This will encourage the accumulation of social capital in form of savings.

References

[1] Abdelkahalek, T. Florence A. Najat E. and Sabine M. 2009. A Microeconometric analysis of household saving determinants in Morocco. http://gdri.dreem.free.fr/wp-content/d21-arestoffetal.

[2] ADB, (2000). African Development Bank operation evaluation document

[3] Adeyemo, R., and A. S. Bamire, 2005. Saving and Investment Patterns of Cooperatives Farmers in Southwestern Nigeria. J. Soc. Sci., 11: 183 – 192.

[4] ADF, (2000). African Development Fund operation evaluation document.

[5] Alessie R, A Brugiavini, G Weber, 2004. "Saving and Cohabitation: The Economic Consequences of Living with One's Parents in Italy and the Netherlands", Paper presented at The NBER 2004 International Seminar on Macroeconomics, Reykjavik, Iceland.

[6] Ando, A., Modigliani, F. (1963). The 'Life Cycle' hypothesis of saving: Aggregate implications and tests. American Economic Review, 55-84.

[7] Ashraf, N., Nathalie G., Deans K., Wesley Y., 2003. A review of commitment savings products in developing countries. A project sponsored by the Asian Development Bank.

[8] Awe, A., and Ayeni R., 2010. Empirical investigation into industrial relations and national productivity in Nigeria. Ozean J. Applied Sci., 3; 331-339.

[9] Ayanwale, A. B., and A. S. Bamire, 2000. Rural Income Savings and Investment Behavior among farmers in Osun State Nigeria. The Indian J. Econ. 81: 49 – 60.

[10] Bernheim B. D., D. M. Garrett, 1996. The Determinants and consequences of Financial Education in the Workplace: Evidence from a Survey of Households. Stanford University working Paper No. 96-007,   1-52. California, U.S.A.

[11] Birdsall N., Thomas C., and Richard H., 1996. Why low inequality spurs growth; Savings and investment by poor. Inter- American Development Bank; Office of the chief Economist, working paper 327.

[12] Central Bank of Nigeria (CBN) publication: statistical bulletin and annual financial reports 2008.

[13] Duesenberry, J. S. (1949). Income, Saving and the theory of consumer behavior. Harvard University Press, Cambridge, Mass.

[14] Ezedima, C., R. Okechukwu, and L. Sanni, 2005. Marketing of garri in Benin City and   Enugu   in Nigeria. A publication of international Institute of Tropical Agriculture. Ibadan, Nigeria.

[15] Friedman, M. (1957). A theory of the consumption function. Princeton: National Bureau of Economic Research.

[16] Hafeez ur Rehman, H. Muhammad Zahir F. and Furrukh Bashir (2010). Households Saving Behaviour in Pakistan:A Case of Multan District. Pakistan Journal of Social Sciences (PJSS) Vol.   30, No. 1, pp. 17-29

[17] Harris, M. N. Joanne L. and Elizaberth W. 1999. Determinants of household saving in Australia. Melbourne Institute of Applied Economic and Social Research. University of Melbourne.

[18] Horioka, C.Y. and Junmin W. (2007). The determinants of household saving in China.a dynamic panel analysis of provincial data. Paper presented at the institute of social end economic Research Osaka, University of Japan.

[19] IFAD. 1993. The state of world rural poverty: A profile of Africa, International Fund for Agricultural Development, Rome, Italy.

[20] International Fund for Agriculture and Development (IFAB), 2000. "Rural Finance for the Poor". From Unsustainable Projects to Sustainable Institutions. IFAD Rural Finance Policy document Rome.

[21] Iyoha, M., S. A. Oyefusi, and D. E. Oriakhi, 2003. An introduction to modern Macroeconomics. Mindex publishing, Benin City, Nigeria.

[22] Keynes, J. M., 1936. General theory of employment, interest and money: London.

[23] Kibet, L., Benjamin K., Desterio E., Shem A., and George O., 2009. Determinants of household saving: case study of small holder farmers, entrepreneurs and teachers in rural areas of Kenya. J. Dev. Agric. Econ., 1: 137-143.

[24] Koutsoyiannis, A., 1977: Theory of Econometrics Second edition. Macmillan Press Limited London. UK

[25] Lahiri, A., 1989: "Dynamics of Asian Savings: The Role of Growth and Age Structure", IMF   Staff Papers. 36: 228-61.

[26] Lisa Grace S. Bersales and Dennis S. Mapa (2006).Patterns and Determinants of Household

[27] Nwachukwu, T., and Peter O., 2009. What drives private saving in Nigeria? A paper presented at the centre for the study of African economies (CSAE) conference, University of Oxford.

[28] Oliveira A., D. W. Larson, M. B. Hencourt and D. H. Graham, 2003. The Potential for Financial Saving in Rural Mozambican Households. Proceedings of 25th international conference of agricultural economists. South Africa. Pp 1198-1204.

[29] Orebiyi, J. S., 2000. Determinants of Saving Mobilization by Farmers Cooperators in Kwara   State Nigeria. Int. J. Agric. Rural Dev., 6:   66 – 73.

[30] Quartey, P., 2006. The impact of Migrant Remittance on Household Welfare in Ghana: Final Reports submitted to the African Economic Research Consortium (AERC), Nairobi, Kenya.

[31] Rutherford, S., 1999. The poor and their money. Delhi, India: Oxford University Press Saving in the Philippines. A paper submitted to USAID/Philippines OEDG.

[32] Siyanbola, T., Olasupo A., Adebayo A., Wakeel I., Olukemi L., and Omolara Q., 2005. Protecting   the poor from macroeconomic shocks in Nigeria. An empirical investigation and policy options. International research project on macroeconomic policy challenges of low income countries conducted by the University of Lagos, Nigeria.

[33] Steven, K. M., 1992. Remuneration Systems for labour intensive investments: Lessons for equity and growth. Int. Labour Rev., 131, 1992, No. 1

[34] Udoh, E. J., S. B. Akpan, and A. E. Aya, 2009. Determination of Optimum Replacement Period for Rubber Plantation Estates in Cross River State, Nigeria. Agric. Econ. Market, J.,2: 29– 35.

[35] Wright, G. A., 2000. Microfinance Systems Designing Quality Financial Services for the Poor. (Dhaka: The University Press Limited).

www.iiste.org

[36] Zeller, M., & Sharma, M., 2000. Many borrow, more save and all insure: Implications for food and micro-finance policy. Food Pol., 25: 143–167.

Table 1: Socio-economic characteristic of respondents

CHARACTERISTIC	FREQUENCY	PERCENTAGE
Age (Year)		
< 20	26	10.4
20 – 30	58	23.2
> 30	166	66.4
Total	**250**	**100.0**
Sex		
Female	55	22.0
Male	195	78.0
Total	250	100.0
Education (year)		
No schooling	58	23.2
Primary school	119	47.6
Secondary School	60	24.0
Tertiary	13	5.2
Total	**250**	**100.0**
Family size		
<3	38	15.2
3 – 5	102	40.8
> 5	110	44.0
Total	**250**	**100.0**
Experience (year)		
< 1	6	2.4
1 – 10	116	46.4
> 10	128	51.2
Total	**250**	**100.0**
Association member (year)		
< 1	26	10.4
1 – 10	145	58.0
> 10	79	31.6
Total	**250**	**100.0**

Source: Field survey, 2010 and 2011.

www.iiste.org

TABLE: II   Two-Stage Least Square Estimates

Variable	Linear (LD)	Exponential	Semi-log	Double-log
Income (Inc)	0.584***	0.409***	9597.33***	2.481**
	(7.451)	(3.543)	(5.022)	(2.561)
Tax	-3.527**	-0.001	-2693.146*	-0.919
	(-2.422)	(-1.396)	(-1.990)	(0.906)
Age	16.359	-0.7070*	-1444.032	-2.046
	(0.250)	(-1.694)	-0.443	(1.218)
Exp	11.117***	0.075*	626.763	0.747
	(3.142)	(1.709)	(0.485)	(1.237)
Edu	21.637**	0.035	-394.123	0.055
	(2.214)	(0.634)	(-0.318)	(0.096)
Moa	34.146**	0.013**	-154.192	-0.155
	(2.503)	(2.368)	(0.224)	(-0.519)
Hhs	-0.69*	-0.05317	-433.223	-0.015
	(-1.878)	(1.354)	(0.487)	(-0.037)
Constant	-2204.773***	7.719***	-60164.7***	-3.386
	(-3.209)	(7.081)	(-3.737)	(-0.407)
R^2	0.873	0.574	0.705	0.540
R^2- Adjusted	0.828	0.460	0.611	0.346
F-stat.	17.433***	5.054***	4.054***	2.789**

Note: *,** and *** represent 10%, 5% and 1% significant levels respectively. Value in parentheses is t -value. LD = lead equation.