Asian Journal of Rural Development

ansinet
Asian Network for Scientific Information

OPEN ACCESS Asian Journal of Rural Development

ISSN 1996-336X
DOI: 10.3923/ajrd.2019.1.5

Research Article
Effect of Monetary and Non-monetary Factors on Rural Farmers' Income in Wamakko Lga, Sokoto-Nigeria

Umar Muhammad Gummi and Asiya Mu'azu

Department of Economics, Sokoto State University, Sokoto P.M.B. 2134, Sokoto, Nigeria

Abstract

Background and Objective: Farming serves as the major occupation among rural populace as well as the dominant factor that determines the income level of households. The study examined the monetary and non-monetary factors that determine the rural farmer's income in Wamakko Local Government Area of Sokoto state. **Materials and Methods:** The 106 small scale farmers were selected from four major communities in Wamakko using multi-stage sampling and structured interview and both descriptive (simple percentages) and inferential (Ordinary Least Squares regression-OLS) statistics were employed to measure the relationship between the explanatory variables and the dependent variable. **Results:** The study found that farm size, household (family) size, subsidy and stock of farm output have positive and statistically significant impact on the income level of rural farmers in Wamakko at 1 and 5%. If farm size, stock of farm output and subsidy change by 10%, rural farmers' income will change by 2.8, 2.6 and 4.11%, respectively. **Conclusion:** Increasing access to larger-sized farmlands is an incentive to rural farmers and raises their income level/standard of living. Also, subsidy from government is another incentive for farmers to earn marginal income because subsidy co-moves with rural farmer's income in Wamakko.

Key words: Rural farmers, farm output, farm size, stock to farm, subsidy, structured interview

Citation: Umar Muhammad Gummi and Asiya Mu'azu, 2019. Effect of monetary and non-monetary factors on rural farmers' income in Wamakko Lga, Sokoto-Nigeria. Asian J. Rural Dev., 9: 1-5.

Corresponding Author: Umar Muhammad Gummi, Department of Economics, Sokoto State University, Sokoto P.M.B. 2134, Sokoto, Nigeria

Competing Interest: The authors have declared that no competing interest exists.

Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

Small scale farming is a pre-dominant occupation among the rural populace in northern region of Nigeria, but have suffered serious setback as a result of many challenges such as inadequate technological farm tools, support from government, marketability of the farm product etc. Extreme poverty is overwhelmingly rural, majority of the world's poor live in rural areas and depend on agriculture and agriculture related small industries and services for a living. These include small scale farmers, landless wage laborers, pastoralists and artisanal fishers[1]. Of these are the world's 450 million small scale farming households who cultivate less than two hectares[2]. World Development Report asserted that agriculture remains the main source of livelihoods for an estimated 86% of rural people (2.5 billion people) and for many countries the main opportunity for sustained, employment-based growth[3]. The agricultural sector-broadly defined to include crop, livestock, forestry, fisheries and wildlife is the backbone of the economies of most sub-saharan Africa countries and will continue to be so in the foreseeable future. The key role of agriculture in Africa's economy is that, apparent-agriculture accounts for 35% of the continent's Gross Domestic Product, 40% of its export, 70% of its employment and more than 70% of the population depend for their livelihoods on agriculture and agri-business[4].

Small scale farming is pre-dominant occupation in northern region of Nigeria more specifically in Sokoto, but have suffered a serious setback as a result of many challenges confronted by the small scale farmers such as constrained access to markets, lack of sensitization and technology transfers to farmers, lack of association forums between small scale farmers and pesticide multinationals and low levels of technology adoption[4]. As a result, Nigeria remains among the relatively poor countries in Africa, with more than 80% of people living below the poverty line and between 1.5 and 3.5 million people dependent on food assistance at any given time[3]. These economic and environmental conditions make it difficult for small scale farmers to cultivate sufficient crops that will be enough for their personal consumption and for commercial purposes[5].

However, several studies highlighted the challenges faced by small scale farmers as well as how small scale farming helps in curbing poverty in a society. Sokoto District Development Plan (SDDP) in 2014 stated that the proportion of household incomes emanating from agricultural activities is about 80%. The question is what are the major determinants of this income? Some researchers are of the opinion that farm tools, subsidy from government and access to credit are the key determinants of rural farmers' income[6-8], yet others empirically confirmed the positive impact of technology and subsidy (support) from government and NGOs on rural farmers' income[5,9,10]. The study was unique in its ability to incorporate household size, stock of farm output and all the stated variables above in a single econometric model to examine their impact on rural farmers' income. Accordingly, the objective of the paper was to examine the effect of monetary and non-monetary determinants of rural farmers' income.

MATERIALS AND METHODS

The study employed survey design on cross-section of 106 rural farmers in March, 2018 residing in Wamakko LGA of Sokoto state to determine the factors affecting the level of their annual income. The choice was justified by the increasing number of small scale farmers in 2018 and government's commitment towards economic diversification and sustained growth.

Study area: Wamako is a Local Government Area in Sokoto state, Nigeria. Its headquarters are in the town of Wamako (or Wamakko) on the Sokoto River. It has an area of 697 km^2 and a population of 179,619 at the 2006 census. The concentration of wealth, prestige, the political power and religious learning centers in Wamakko attracted large numbers of rural-urban migrants, both from the neighboring state and from distance regions. Presently the ongoing projects in Wamakko are Sokoto State University, National Youth Services Corps camp (NYSC), Amusement Park. As of 2010 the research conducted by National Bureau of Statistics, the estimated rural-urban migrants in the area is about 4,536 and it's increasing at the rate of 10% annually. Wamakko Local government is mainly populated by Hausa people. It also comprises four villages: Kammata, Gwamatse, Kauran Kimaba and Kokani Cidawa. The inhabitants were mostly farmers and animal raisers but the initial inhabitants were Sulubawa but now the area was dominated by Hausa.

Data, sampling technique and sample size: Primary data sourced through structured questionnaire was used by the paper. Multi-stage sampling technique was employed in the collection of primary data for this study. In the first stage, four villages in the Local Government Area were selected. In the second stage, one community each was randomly selected from the selected villages, giving a total of 4 communities (Kalambaina, Kasarawa, Kwalkwalawa and Cidawa). In the third stage, sampling of farmhouse holds

in each community was determined proportionately using Yamane[11] formula as modified by Kristen and Van Zyl[12]:

$$n = \frac{N}{1 + N(e)^2} \quad (1)$$

Where:
n = Sample size
N = Finite population
e = Limit of tolerable error (level of significance = 0.05)
1 = Constant

Data were collected using structured questionnaire. Data for this study was analyzed using both descriptive and inferential statistics. To analyze the determinants of rural farmers' income, multiple regression model was used.

Setting: For simplicity, the study employed a functional form setting to represent relationship between the annual income of rural farmers and its determinants:

$$Y = f(FS, HHS, OSI, ATC, SUBD, EDU, EXP, SFO) \quad (2)$$

The functional setting is transformed into the econometric models:

$$Y = \alpha + FS\beta_1 + HHS\beta_2 + OSI\beta_3 + ATC\beta_4 + SUBD\beta_5 + EDU\beta_6 + EXP\beta_7 + SFO\beta_8 + \mu \quad (3)$$

Where:

Y	=	Annual income of small scale farmer
FS	=	Farm size
HHS	=	Household size
OSI	=	Other sources of income
ATC	=	Access to credit facilities
SUBD	=	Subsidy from government and non-governmental organizations
EDU	=	Educational level
EXP	=	Years of farming experience
SFO	=	Stock of farm output/month
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$	=	Coefficients of the regression model
α	=	Intercept (constant) of the model
μ	=	error term

The OLS regression model was used to test the hypothesis formulated for this study. In testing the hypothesis, the estimated coefficients in the OLS model were used. The statistical significance of the estimated coefficients aided the confirmatory tests.

RESULTS AND DISCUSSION

The section is classified into two, descriptive and inferential results. The former presented the theoretical description of relationship while the later explain the extent of the relationship based on statistical inference.

Descriptive results: Table 1 described the socio-economic characteristics of small scale farmers in Wamakko LGA with most the respondents being male (92 = 97.52%) and these findings are in accordance with Bekelu[11] that "most of the

Table 1: Socio-economic factors of small scale farmers in Wamakko LGA

Variables	Frequency	Percentage	Mean (Standard dev.)
Age			
<30	20	21.20	
30-39	61	64.66	
40-49	11	11.66	
50-59	9	9.54	
>59	5	5.30	25.2 (5.3)
Household size			
1-5	69	73.14	
6-10	22	23.32	
11-15	6	6.36	
>15	9	9.54	5.2 (11.67)
Years of experience			
<11	11	11.66	
11-20	31	32.86	
21-30	52	55.12	
31-40	7	7.42	
>40	5	5.30	22.5 (7.3)
Farm Size			
0.5-2.0	91	96.46	
2.5-4.0	11	11.66	
4.5-6.0	3	3.18	
>6.0	-	0.00	1.46 (16.4)
Gender			
Male	92	97.52	
Female	14	14.84	
Mode of acquiring land			
Educational level			
None	4	4.24	
Quranic	72	76.32	
Primary	5	5.30	
Secondary	20	21.20	
College of education	2	2.12	
Polytechnic	3	3.18	
University	-	2.80	
Credit accessibility			
Yes	94	88.87	
No	12	11.32	
Subsidy			
Yes	59	55.66	
No	47	44.34	
Other sources of income			
Yes	32	30.19	
No	74	69.81	

Source: Field Survey, 2018

Table 2: Result of the regression model dependent variable (Y) = Annual Income (AI)

Independent variables	Coefficients
Educational level	-0.016 (0.726)
Household size	0.078 (0.000)***
Years of experience	0.112 (0.168)
Farm size (ha)	0.282 (0.008)***
Access to credit	0.008 (0.929)
Other sources of income	-0.213 (0.297)
Stock of farm output	0.263 (0.085)**
Subsidy	0.411 (0.015)***
R^2	0.589
F-statistics	15.119***

Author's computation using SPSS software version 20.0, values in the parenthesis represent the t-ratios of the estimated parameters and *,**,***10, 5 and 1% significant level, respectively

farmers in rural areas are mainly men". Also, the dominant age group in the small scale farming activities are mostly youth between the ages of <30-39 years. From the analysis, household size in the study area is genuinely substantial with an average of 5 members. An average of 22.5 years of experience in farming was recorded among the respondents and 1.45 ha as average farm size among the respondents. Subsidy regime from the government also covers majority of the rural farmers as more than 55.66% enjoyed one type of subsidy or the other. Apart from farming, only 30.19% of the respondents have other sources of income for their livelihood.

Inferential results: Table 2 presented the results of the regression model and it was found that the coefficient of household size 0.078 is positively related to smallholder farmers' annual income. The finding coincided with those of Awotide *et al.*[4], Olawepo[6], Olawutayo[13] and counter the findings of World Bank[3]. As the size of household increases by 10% *Ceteris paribus*, annual income increases by 0.78%. Farm size impacted positively on smallholder farmers' income with. The coefficient of farm size is 0.282 and statistically significant at 99% confidence interval, a 10% increase in the hectares of farmland, raises annual income by 2.82% *Ceteris paribus*. Moreover, stock of farm output is estimated at 0.263 and significance at 5% level, impliedly, as the stock of farm output rises by 10% annual income increases by 2.63%. This is in line with Salawu *et al.*[14], Teshome and Edriss[15], Dalberg[16] and contradicts the findings from Adebayo *et al.*[5] and Idowu *et al.*[7]. Subsidy regime has a marginal effect of 0.411. As farmers access to subsidy changes by 10%, annual income changes by 4.11% Subsidy has positive and statistically significant impact on annual income of small holder farmers and this confirms the findings FAO[17] and George[18].

However, from Table 2 the value of F-statistics is significant at 1% level and it implies that model (setting) is fit and adequate in explaining the relationship between the annual income of rural farmers and its determinants as captured in the model. The Coefficient of Determination (R^2) was measured to be 0.589, which implies that about 59% of the variation in annual income of small rural farmers is explained by the variables captured in the model.

CONCLUSION AND RECOMMENDATIONS

Based on the findings of this study, it was concluded that, farm size, stock to farm output, household (family) size and subsidy from government have statistically significant positive impact on annual income of rural farmers in Wamakko. While educational level, access to credit, other sources of income and years of experience exert significant impact on the income of rural farmers. Furthermore, the study suggests full utilization of idle land to allow farmers to increase their farm size and maximize their income.

SIGNIFICANCE STATEMENT

This study adds to the stock of available knowledge in the study area and also served as reference point and help future researchers to uncover the critical non-monetary factors determining the income level of rural farmers that previous researchers were not able analyze. So, a new premise could be arrived at especially on farm and household sizes to theorize on the relationship between rural farmers' income and its determinants.

ACKNOWLEDGMENT

Authors acknowledged the support from Sokoto State University, appreciate the comments and suggestions from teachers and the entire research community for creating an enabling environment for effective dissemination of research ideas and timely suggestions.

REFERENCES

1. Ogunleye, O.S., 2010. Towards sustainable poverty alleviation in Nigeria. Afr. Res. Rev., 4: 294-302.
2. Faurus, J.M. and G. Santini, 2008. Water and the rural poor: Interventions for improving livelihoods in sub-Saharan Africa. FAO Land and Water Division, Food and Agriculture Organization of the United Nations and IFAD, Rome.

3. World Bank Group, 2017. Enabling the business of agriculture, 2017. The World Bank, Washington, DC., USA. http://pubdocs.worldbank.org/en/929581534213514304/EBA17-Full-Report17.pdf
4. Awotide, O.D., A.L. Kehinde and P.O. Agbola, 2010. Poverty and rural livelihood diversification among farming households in Southwest Nigeria. J. Food Agric. Environ., 8: 367-371.
5. Adebayo, C.O., G.O. Akogwu and E.S. Yisa, 2012. Determinants of income diversification among farm households in Kaduna State: Application of Tobit regression model. Prod. Agric. Technol. J., 8: 1-10.
6. Olawepo, R.A., 2010. Determining rural farmers income: A Rural Nigeria experience. J. Afr. Stud. Dev., 2: 99-108.
7. Idowu, A.O., J.O.Y. Aihonsu, O.O. Olubanjo and A.M. Shittu, 2011. Determinants of income diversification among farm households in South-West Nigeria. Econ. Fin. Rev., 1: 33-44.
8. Awoniyi, O.A. and K.K. Salman, 2008. Non-farm income diversification and welfare status of Rural households in South West Zone of Nigeria. International Food Policy Research Institute, Washington DC., USA.
9. Minot, N., M. Epprecht, T.T.T. Anh and L.Q. Trung, 2006. Income Diversification and Poverty in the Northern Uplands of Vietnam. International Food Policy Research Institute, Washington, DC., USA.
10. Abdulai, A. and A.C. Rees, 2001. Determinants of income diversification amongst rural households in Southern Mali. Food Policy, 26: 437-452.
11. Yamane, T., 1967. Statistics: An Introductory Analysis. 2nd Edn., Harper and Row, New York, Pages: 919.
12. Kirsten, J.F. and J. van Zyl, 1998. Defining small-scale farmers in the South African context. Agrekon: Agric. Econ. Res. Policy Pract. Southern Africa, 37: 560-576.
13. Oluwatayo, I.B., 2009. Poverty and Income Diversification among Households in Rural Nigeria: A Gender Analysis of Livelihood Patterns. Proceeding ofthe 2nd Instituto de Estudos Socialise Economicos (IESE) Conference on Dynamics of Poverty and Patterns of Economic Accumulation in Mozambique Conference paper No 41, April 22-23 2009, University of Ado-Ekiti, P.M.B. 5363, Ado-Ekiti, Ekiti State, Nigeria.
14. Sallawu, H., L. Tanko, J.N. Nmadu and A.M. Ndanitsa, 2016. Determinants of income diversification among farm households in Niger State, Nigeria. Russian J. Agric. Socio-Econ. Sci., 2: 55-65.
15. Teshome, B. and A.K. Edriss, 2013. Determinants and patterns of income diversification among smallholder farmers in Akaki district, Ethiopia. J. Res. Econ. Int. Fin., 2: 68-78.
16. Dalberg, 2018. What works to increase small holder farmers' income? A landscape review. Working Draft for Discussion. Wageningen University and Research. https://www.farmerincomelab.com/Content/Theme/docs/What%20Works_FINAL_9.19.pdf
17. FAO., 2017. The future of food and agriculture: Trends and challenges. Food and Agricultural Organization of the United Nations. Rome. http://www.fao.org/3/a-i6583e.pdf.
18. George, R., 2015. The economic lives of smallholder farmers: An analysis based on household data from nine countries. Food and Agricultural Organization. http://www.fao.org/3/a-i5251e.pdf