

Economic Synergy between Rural Off-farm Income and Households' Poverty in Ekiti State, Nigeria

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ABSTRACT Off-farm enterprise is important for rural development and poverty alleviation. This study was undertaken to determine the economic synergy between off-farm income and farming households' poverty level. A total of 120 respondents were selected from six wards through a multistage sampling technique. Data was collected with the aid of a pre-tested structured questionnaire while descriptive methods, Foster-Greer-Thorbecke (FGT) poverty index and Ordinary Least Square regression (OLS) were used for data analysis. The set model produced a good fit for the data and the computed F-value was statistically significant ($p < 0.01$). The specific objectives were to examine the various on and off-farm income profiles and evaluate the effect of off-farm income on poverty level of the rural household farmers. The study shows that off-farm income reduces households' poverty rate by 32.2 percent. A mean household income of ₦ 601,064.39k was derived from both on and off-farms per annum, the World Bank's reference line, that is, USD 1.25 (₦ 200) and USD 2.0, PPP (purchasing power parity) per capital consumption per day were used as the benchmark for poverty line. Poverty incidence, depth and severity gave 52.3 percent, 26.4 percent and 25.1 percent respectively, in the study area. Major identified problems faced by the rural household farmers include lack of capital and poor welfare schemes. Formulation of appropriate holistic policies that will focus on these threats is inevitable in order to alleviate poverty and improve the welfare of farmers.

INTRODUCTION

The Millennium Declaration set year 2015 as the target date for achieving most of the Millennium Development Goals (MDGs), particularly with quantitative benchmarks of halving extreme poverty in all its forms. As the date approaches, the world still finds itself mired in an economic crisis that is unprecedented in its severity and global dimensions (MDG 2009). The rural economy of developing countries is synonymous with agriculture and rural poverty accounts for a very large sum of the world's poverty, meeting this set goal appropriately requires reducing poverty especially in the rural areas.

Agriculture has traditionally been perceived as the sole engine of rural growth, a recent literature on rural development has portrayed an alternative view in which agriculture fulfills a more synergistic function, in combination with other sources of employment. Also, Haggblade et al. (2007) report that non-farm income contributed thirty to forty-five percent of rural household income across the developing world. Empirical regularity emerging from studies of the non-farm economy in developing countries is that there exists a positive relationship between non-farm activity and welfare on average (Barrett et al. 2001).

This implies that the relationship between agricultural income and non-farm activities indeed remains positive, symbiosis and healthy to the reduction of household poverty, as the nonfarm income also plays a complementary role both directly and indirectly. Directly, by contributing considerably to rural households' income, indirectly, by influencing agricultural enterprise with potential implications for increase production and sustainability. In rural areas, given the challenge encountered by farmers in the area of farm expansion coupled with the rapid and continuous growth of the rural population, greater attention is being given to non-farm activities in view of their potential for economic development and poverty alleviation (De Janvry et al. 2005; Eswaran et al. 2008; Foster and Rosenzweig 2004; Gaiha and Katsushi 2007; Haggblade et al. 2007; Lanjouw and Rinku 2008; Unni and Ravendran 2007).

Kilic et al. (2009), Haggblade et al. (2007) and De Janvry et al. (2005) reported that the livelihoods of rural households are more often characterized by complex strategies that involve multiple income-generating activities by one or more household members, as non-farm income sources assume an increasingly important role over time. It is now well known that rural econo-

mies are not purely agricultural like before and that agricultural households across the world especially those of the developing world (Africa, Asia) earn an increasing share of their income from non-farm activities.

There are many reasons for a rural household to diversify into the rural off-farm economy. Beyond the conventional pull factor of higher returns to labor and/or capital in the off-farm economy, a number of push factors may drive income diversification. Limited risk-bearing capacity due to imperfections in credit, insurance, labor, farm input, and/or land markets may induce farm households to participate in the rural non-farm economy to manage risk more effectively. Also, facing agro-climatic shocks and/or market failures that limit agricultural production and induce food production shortfalls, farm households may utilize nonfarm income to stabilize aggregate income flows and preserve food security.

The reasons behind a household's decision to diversify income, as well as the impact of non-farm earnings depends on where the household stands on the income gradient. Richer agricultural households are more likely to practice off-farm activities for profit maximization, while poorer farmers may be keener to diversify in order to minimize risk, stabilize income, and food security. Agricultural rural households may rely on their nonfarm earnings to overcome liquidity limitations, and enhance agricultural investments as well as efficiency. Conversely, households may choose to channel their nonfarm surplus away from agricultural pursuits in the face of deep-rooted sectorial problems that cannot be readily overcome by the mere availability of household nonfarm income.

Therefore, the net impact of nonfarm income on agricultural outcomes is very complex to be conceptualized a priority. In addition, there is no reason to assume that the impact of nonfarm income on agricultural outcomes would be homogenous either across types of farm households or across space. In fact, it is likely that the relation may differ, for example, across high and low potential agricultural areas, or between farmers with different degrees of exposure to the market, as each may have different uses and investment potentials for nonfarm income. The understanding here is that households possess some specific characteristics, which can be

skillfully manipulated through policies to improve welfare status (Akerele 2011; Osinubi 2003).

This study therefore sought to assess the on and off-farm income of respondents as well as their poverty levels disaggregated by socio-economic profiles of agricultural households in Ekiti State, Nigeria. Specifically, this study seeks to answer to the following research questions:

- ◆ Are respondents in the study area poor?
- ◆ How far are the households from the poverty line?
- ◆ Can households' involvement in on or off-farm activities help them out of poverty?
- ◆ What are the directions of influence/relationship of the off and on-farm enterprises on poverty status and the likely policy implications for poverty reduction?

MATERIAL AND METHODS

Study Area

The study was carried out in Ekiti State, the choice was due to its well known subsistent agricultural activities and also, based on NBS (2005) survey of self-assessment poverty in Nigeria, which reveals that Ekiti State has the highest poverty rating than other states in the southwest part of the country. Ekiti state is located entirely within the tropics, between latitude 7°40'N and longitude 5°15'E. The state lies south of Kwara and Kogi State, East of Osun State and bounded by Ondo State in the east and in the south. Ekiti State has 16 Local Government Areas. The 2006 population census by the National Population Commission put the total population of Ekiti State at 2,384,212 people and 6353 km² land areas, it is also an upland zone (over 250m above sea level). The average annual temperature in the study area is 27°C, high humidity and mean annual rainfall of about 1,400 mm. The state is situated within the rainforest vegetation and is endowed with extensively fertile soil suitable for agricultural production.

Sampling Procedure

The population for the study consisted of all small-scale farmers in the State. A multistage sampling technique was adopted in the study. The state is divided into two zones according to the Agricultural Development Project's (ADP) zoning, with each zone consisting of eight local

government areas. The first stage is the selection of Ikere Local Government from zone 2 and Ekiti West, Local Government Area from zone 1. The second stage involved random selection of three political wards (out of an average of 11 political wards) from each local government area. The selected wards were Ward 2, 4 and 10 from Ekiti West Local Government area, and Agbado-Oyo, Atiba-Aafin and Ogbonjana wards from Ikere Local Government area. The communities were purposively selected because they are agrarian in nature with small-scale farmers. The third stage was a random selection of 20 farming households from each of the chosen wards. A well-structured questionnaire was administered to the 120 randomly selected respondents. The questions were translated into the local language (Yoruba) for proper understanding by the respondents. Data collected include socio-economic/demographic characteristics, agricultural production cost, total farm income and total non-farm income record of respondents.

Method of Data Analysis

In analyzing the data obtained for this study, a number of analytical methods were employed and these include descriptive statistics, FGT poverty index and the Ordinary Least Square regression model. Descriptive statistics such as standard deviation, mean, frequencies, percentages and distributions were used to examine the socio-economic characteristics, income classes, mean on and off-farm income of respondents in the study area.

Poverty Assessment

Respondents' poverty level was assessed by employing the Foster-Greer-Thorbecke (FGT) poverty index, as the model is a class of additively decomposable measure of poverty. The measure considers the head count index, also the poverty depth, and allows for the distributional sensitive measure of poverty through the choice of a poverty aversion parameter "θ", the larger the value of the "θ", the greater the weight given by the index to the severity of poverty (Ayinde et al. 2002). The measures relates to different dimensions of poverty as θ₀, θ₁ and θ₂ were used for incidence, depth and severity of poverty respectively in this study. These measures were based on just a formula but each index puts dif-

ferent weight on the extent to which a household or individual falls below the set poverty line. The specification of the model is given thus:

$$P_{\theta} = \frac{1}{N} \sum_{i=1}^u \left[\frac{Z_1 - y_i}{Z_1} \right]^{\theta} \tag{1}$$

P_θ = FGT index (0 < P_θ < 1). It is the weighted poverty index.

N = The total number of individuals in the reference population.

Z₁ = It is the per capita expenditure (1.25 US dollars/day), benchmark below which a household is considered poor. It is constant for all respondents.

y_i = Daily per capita expenditure of the household under consideration.

u = Individual household whose per capita expenditure is below poverty line.

θ = The FGT parameter that takes on the values of 2, 1 and 0 for poverty severity, depth and incidence.

For this study, the widely recommended USD 1.25 (₦ 200) per day was used as the poverty line. A dollar was approximately equal to ₦160 at the time of data gathering and collation for this study. Therefore, a household is considered poor if the household's per capita adult equivalent expenditure per day is lower than the poverty line of USD 1.25 (₦ 200).

Ordinary Least Square (OLS) Regression Analysis

The effect of off-farm income on poverty status was estimated with the aid of inferential statistics using STATA 10, and the Linear Multiple Regression is specified thus:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, \dots, X_{10}, ei) \dots \dots \{2\}$$

Y is poverty status of respondents while the independent variables that were included are Year of farming experience (X₁), Age (X₂), Farm Size in Hectares (X₃), Source of labor (X₄), Household size (X₅), Total farm income (X₆), Unearned income (X₇), Total revenue (X₈), Total off-farm income (X₉) and Years of Education (X₁₀), while ei represents the error term.

RESULTS AND DISCUSSION

Demographic Characteristics of Respondents

The socio-economic characteristics that were considered in the study include the farmer's sex,

age, marital status and years of education. Table 1 shows that the average age of the respondents was 45 years. This reflects gradual aging of agricultural households in the study area, this is as well in line with previous studies, the consequences of lack of young stars in agricultural activities can be very fatal for agricultural development in a nation where most of the farmers are already aging and youths are not participating in agriculture (Olatunji et al. 2012). About 85.8 percent of the respondents were male while the rest (14.2%) were female, which implies that male households dominated the captured respondents in the study area and this is in line with many studies carried out in Ekiti State.

Table 1: Demographic characteristics of respondents

<i>Demographic characteristics</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Sex</i>		
Male	103	85.8
Female	17	14.2
Total	120	100
<i>Age</i>		
< 30	15	12.5
31-40	32	26.7
41-50	41	34.2
51- 60	31	25.8
>60	1	0.8
Total	20	100
<i>Marital Status</i>		
Single	14	11.7
Married	103	85.8
Widow	1	0.8
Divorced	2	1.7
Total	120	100
<i>Years of Education</i>		
Primary education	19	15.8
Secondary education	61	50.8
Tertiary education	23	19.2
No formal education	17	14.2
Total	120	100
<i>Household Size</i>		
1-4	47	25.8
5-8	31	40.0
>9	42	34.2
Total	120	100
<i>Farming Experience</i>		
< 5	3	2.5
6-10	38	31.7
11-15	55	45.8
16-20	20	16.7
> 25	4	3.3
Total	120	100

Total observation = 120

Source: Computed from Field Survey Data.

In addition, the highest percentage (85.8 %) of the respondents was married while singles

and widows were 11.7 percent and 0.8 percent, respectively. Those that were divorced constituted 1.7 percent of the total respondents. The fact remains that most of the respondents were mature and responsible to cater for their households as well as have good knowledge of existence. The mean household size in the study area was 9 with majority being dependent, and this is true reflection of cause of poverty in the study area. This also corroborates with Ali and Ahmad (2013) who opined that a larger household exacerbates poverty levels. However, farming households often depend on the pull of their family labor to carry out some labor intensive farm operations in other to maximize their profit.

Table 1 also shows the distribution of the educational status of farming households. It reveals that 15.8 percent of the respondents attained primary education, 50.8 percent had secondary education, 19.2 percent had vocational education, while 14.2 percent received no formal education. This shows that good numbers of the respondents were educated and this may help in their farming and off-farm activities. Respondents' year of experience in farming activities is also very fine with over ninety-four percent of them having 6 to 20 years of experience, and this is very good as respondents' wealth of experience will help in their farming and off-farm endeavors. Also, good number of farming households (69.9%) had access to credit facilities from friends and relatives, cooperatives, saving and thrift in order to finance their farming enterprise and cater for their basic needs, this could be a major reason why they are low producers as credit obtained from these sources are relatively small. The respondents mean farm size of 2.6 Ha was derived, which confirms the respondents as subsistence in nature and this suggests the reason why they are poor since the scale they operate on is small, they are bound to realize little or no income. Hence, poor welfare and increased poverty.

Table 2 shows that ninety percent of the respondents engage in off-farm activities with 9.2 percent into transportation business as driver or bus conductor. 4.2 percent of them were into trading, 14.2 percent were civil servants. Also, 19.1 percent are into services while those that were into artisan, for example barbing/platting, vulcanizing, fish smoking, pottery, carpentry, shoe making, tailors, bricklayers, basket weaving and laundry are the highest with 30.8 per-

cent respondents. More so, 4.2 percent have private salary jobs, 8.3 percent were factory staff, while the remaining ten percent does not engage in any off-farm activity. This summarily implies that majority (90%) of the farmers has another source of income as a backup or precautionary motive since off-farm income is an important factor in rural households' economy.

Table 2: Respondents categories of off-farm activities practiced

<i>Off-farm activities</i>	<i>Frequency</i>	<i>Percentage</i>
Transport	11	9.2
Trading	5	4.2
Civil servant	17	14.2
Services	23	19.1
Artisan	37	30.8
Private salary job	5	4.2
Factory staff	10	8.3
No off-Farm	12	10
Total	120	100

Source: Field survey, 2013

The distribution of respondents by income level is shown in Table 3 that the surveyed farmers make an average of ₦ 601,064.39k per annum (from both on and off-farm activities), which is equivalent to ₦ 50,000.00k per month and ₦185 per capita income (using the mean household of 9 for farming households that falls into this category). Meanwhile, households with farming alone as source of income earn an annual mean income of ₦ 378,798.39k, that is 31,566.53k per month and ₦117 per capita income. The distribution generally indicates that the income level of respondents is low considering the average household size of 9. Thus income per capita (a measure of the level of wellbeing) is also very low especially in households without off-farm source of income, going by the USD 1.25 (₦ 200) a day as the minimum for subsistence for households in developing countries.

Table 3: Distribution according to mean income from on- and off- farm activities

<i>Income category</i>	<i>Annual mean income per farming household (N)</i>
On- farm income	378,798.39k
Off- farm income	222,266.00k

Source: Field survey, 2013

The distribution of respondents by income level is shown in Table 4 that over half (61.67

percent) of those surveyed earn less than ₦ 500,000 per annum. The average household income was ₦ 601,064.39k per annum, which means that juxtaposing this with their household size, there is need to improve on household income in order to alleviate poverty in the study area. Those earning above ₦501,000 constitute about 38.33 percent. The distribution generally indicates that the income level of respondents is poorly low considering the average household size of 9. Thus income per capita (a measure of the level of poverty) is also very low going by the USD 1.25 (₦ 200) per day.

Table 4: Respondents' income class

<i>Income level (N)</i>	<i>Frequency</i>	<i>Percentage</i>
≤ 100,000	5	4.17
101,000-200,000	9	7.50
201,000-300,000	16	13.33
301,000-400,000	15	12.50
401,000-500,000	29	24.12
>501,000	46	38.33
Total	120	100

Source: Field survey, 2013.

Poverty Status of Respondents

The study revealed a high degree of effectiveness by showing the severity, depth and incidence of poverty among the respondents' on and off-farm income using the World Bank reference line as the major determinant of poverty level in the study area. Households that have off-farm sources of income are on a better path of getting out of poverty than those that do not have other source(s) of income outside farming. FGT poverty index was used to show the extent of poverty among the farming households in the study area, the poverty line was set to be USD 1.25 (that is, ₦ 200) per day for each household member. The poverty aversion parameters employed were θ_0 , θ_1 and θ_2 , which mean poverty incidence (headcount), depth and severity respectively. The incidence of poverty (θ_0) in this study was 0.523 indicating that exactly 52.3 percent of the sampled farming households were actually poor based on the current World Bank poverty line for developing nations.

The value θ_1 (that is, poverty depth) among the rural farming households was 0.264, meaning that each household member would require 26.4 percent of the poverty line (₦200, that is,

USD 1.25) per day to get out of poverty. The value θ_2 (poverty severity) among the sampled farming households was 0.251, indicating that the poverty severity of poor farming households was 25.1 percent. Also, an average core poor household would require about 25.1 percent of USD 1.25 (₦ 200) per day in addition to what is currently available for each of the household members to at least be relieved of severe poverty. From the findings, it could be inferred that the existence of poverty abounds among the rural farming households in the study area and it is high time that one proffered adequate measures to alleviate poverty in the rural settlements.

Table 5 shows the empirical estimation of the regression analysis, which revealed a coefficient of determination (adjusted $R^2=0.71888$) showing that 71.88 percent of the variations in the farmers' poverty status were explained by the independent variables. This shows that the model has a good fit since F-value also was statistically significant ($p<0.01$). Seven out of the ten variables in the analysis were significant. The variables that significantly affect the poverty status are year of farming, experience of the household head (X_1), source of labor (X_4), household size (X_5), total off-farm income of household head (X_9) and year of education (X_{10}) ($p<0.01$) while total farm income (X_6) and total revenue (X_8) are significant ($p<0.05$). The remaining three variables, that is, age of respondent (X_2), farm size (X_3) and unearned payment (X_7) were statistically insignificant ($p>0.10$).

In the same vein, X_1 , X_3 , X_6 , X_8 , X_9 and X_{10} have negative coefficients. This simply connotes that increase in the level of any explanatory with

positive sign, X_2 , X_4 , X_5 , and X_7 in this case will have a positive effect on the respondents poverty status, whereas those explanatory variables with negative sign as mentioned earlier will exert a negative relationship on the poverty status. Furthermore, years of farming experience of the household head (X_1) have a negative influence (-1276572) on households' poverty status, meaning that higher years of farming household experience leads to reduction in poverty status of such households. This is in line with theoretical expectation as higher years of experience will enhance the farmers to have more knowledge and understanding of his farming activities, thereby increasing his productivity, income increment and hence reduction in household poverty level.

Source of labor (X_4) has a positive coefficient (181043.8) and implies that the higher the expenses on labor of farming household, the higher the poverty status. This is expected because the higher the farmers spend on labor, the lower the farm return and the higher the poverty level of such households. This is not far from the traditional rationale behind the high number of children by farming households, so that they can maximize profit and minimize cost by using family labor on the farm, which is supported by over seventy percent respondents using family source of labor in the study area.

Also, the parameter of household size (X_5) was with a positive sign (1125282) indicating that poverty status increases with increase in household number. This is explicit because higher household size leads to increase in households' dependency, expenditure and consequently increase in the poverty level as the respon-

Table 5: Factors determining farming households' poverty level

Variable	Coefficient	Std error	Prob t-Statistic
Year of farming experience (X_1)	-1276572	263270.1	0.000
Age (X_2)	5429.672	16386.55	0.741
Farm size (X_3)	-1634.177	5760.487	0.777
Source of labour (X_4)	181043.8	63148.02	0.005
House hold size(X_5)	1125282	242711.5	0.000
Total farm income (X_6)	-5818.176	22361.17	0.011
Un- earned payment (X_7)	52406.32	79497.06	0.512
Total revenue(X_8)	-171169.2	172329.7	0.032
Total off-farm income(X_9)	- 2574.205	46696.79	0.000
Years of education (X_{10})	-11628.24	31573.5	0.002
Constant	-341875	299379.3	0.257
R-squared	0.7810	F-statistics	17.09
Adjusted R-squared	0.7188	Prob (F-statistics)	0.000

Source: Field survey 2013

dents are readily low-income subsistence farmers. Total farm income of household head (X_6) had a negative parameter (-5818.176), which implies an inverse relationship with households' poverty status. In other words, the higher the farm income, the lower the poverty level of the household. This is logical, as increase in farm income enhances households' purchasing power thereby reducing their poverty level. Also, the negative sign of the coefficient of total revenue (X_8) parameter (-171169.2) implies that farming households' poverty level reduces as the respective total revenue increases in the study area. This is line with basic economic principle that higher revenue leads to reduction in households' poverty status.

More so, total off-farm income (X_9) (-2574.205) had negative a coefficient, which implies that the higher the income generated by farming household from their off-farm activities, the lower the poverty status of such households. This is in line with the income results reported in this research as households with off-farm activities stand a better chance of moving out of poverty than their counterparts without off-farm income. Finally, the parameter of years of education (X_{10}) is (-11628.24), which connotes that the higher the respondents year of education, the lower the households poverty status.

This is actually expected as education gives one a better knowledge and understanding of agriculture. Also, access to formal education, enhances ability to acquire lucrative off-farm jobs and promotes human labor productivity, entrepreneurship skills and wages earning ability, which are important to reduction of farming households' poverty. The role of capacity building and human capital development through education in poverty alleviation cannot be over-emphasized. Ruel et al. (1998) opined that education provides people with information and technological innovations that are essential for enhancing activities. Policy that would ensure sustained and improved access to education is inevitably recommended as this will help alleviate poverty, improve households' welfare by reducing the poverty incidence, severity and also close the extreme poverty gap in the study area.

CONCLUSION

The research confirms the existence of poverty in the study area and that poverty was ex-

perienced disproportionately by different agricultural households. The incidence, depth and the severity of poverty were higher among the households' without off-farm source(s) of income, households' with high size, high dependency ratio and the old aged households. Education of household head and household assets reduce poverty while higher dependency ratio widens it. The implications of the above are that improved education, affirmative program toward securing capital as almost seventy percent of the respondent have access to little and unreliable capital while the rest have no source of capital for their farming enterprise, efforts to enhance farming households' income as well as strategies to enhance income earning capacities of the people coupled with efforts to reduce family size would help alleviate poverty in the study area.

The study ascertained serious existence of poverty in the study area with 52.3 percent poor relying on less than USD 1.25 (₦ 200) a day, an indication that most of them are poor. The incidence, gap and the severity of poverty were higher among households without off-farm source of income (mean income of ₦ 378,798.39k per annum) meaning that subsistence agriculture is not enough to deliver farming households from poverty. Also, households with the combination of both on and off-farm sources of income make an average of ₦ 601,064.39k per annum and are closer to the set poverty line. Nevertheless, this study established a symbiotic synergy between on and off-farm income as a means of improving the farming households' welfare and poverty alleviation.

Furthermore, the result of OLS regression analysis explained factors that determine agricultural households' poverty level and shows that the coefficients of source of labor and household size were positive. This indicates that any increase in the value of the coefficients of these variables have a higher likelihood of influencing the estimated poverty status positively. Meanwhile, the parameters of years of farming experience, total farm income, total household revenue, total off-farm income and years of education were negative, meaning that an increase in the value of any of the aforementioned variables will negatively influence the estimated poverty index. More so, the ancient and prominent role of agriculture as the largest employer of labor in the country makes it worth more commitment on

the part of government and the private sector to improve on the status quo in terms of creating an enabling environment for investment because this finding reveals and establishes a fact that farmers make over thirty percent additional income from off-farm activities.

RECOMMENDATIONS

Formulation of appropriate holistic policies that will focus on human capital development through education, reliable source of capital with little or no interest, sensitization of rural households on family planning and child spacing techniques, and social protection services in the form of welfare schemes should as a matter of urgency be put in place in order to alleviate poverty and improve the welfare of farmers in the study area.

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