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An Evaluation of Off-farm Work and Household Income among Small-scale Farmers in North Central Nigeria

Ogbanje, Elaigwu Christopher[1]; Chidebelu, S.A.N.D.[2] and Nweze, Noble Jackson[2]

[1]Department of Agribusiness, University of Agriculture, Makurdi, Nigeria

[2] Department of Agricultural Economics, University of Nigeria, Nsukka, Nigeria

Corresponding author: Ogbanje, Elaigwu Christopher, Department of Agribusiness, University of Agriculture, Makurdi, Nigeria. cogbanje@gmail.com

Abstract: The study evaluated off-farm work and household income among small-scale farmers in North Central Nigeria. Multistage sampling technique was used to select 180 farm households from 12 Local Government Areas spread across Benue, Kogi and Niger States. Primary data for the study were obtained with the aid of structured and pretested questionnaire. The data were analysed using simple descriptive statistics. Findings revealed that majority (42.78%) of the respondents were in self-employment of off-farm work. Similarly, households where only the husband (40.00%), combination of husband and wife (71.40%), matured children (71.40%), and the combination of husband, wife and matured children (45.80%) participated in off-farm work were predominantly in self-employment category. Households, where only the wife worked off-farm, were dominant in agricultural wage employment (51.60%). In addition, full-time participants in off-farm work were mainly (38.50%) in agricultural wage employment, while part-time participants were mainly (44.00%) in self-employment. Furthermore, while younger farmers were in self-employment, older farmers were in agricultural wage employment. Average household income and off-farm income's share of farm household income were ₦648,774.91 and ₦231,394.00, respectively. It was concluded that self-employment was the dominant off-farm work type in the study area. This denotes gradual drift from the core farm production sector. Also, since off-farm income accounted for significant portion (50.28%) of household income among the respondents, increasing reliance on off-farm work and consequently, further drift from farm work is anticipated. Therefore, farmer education by extension agents and IFAD's rural finance capacity building should focus on the need to reinvest off-farm income in farm production so that off-farm work does not endanger food production.

Keywords: Off-farm work, typology, off-farm income, household income, off-farm income's share, small-scale farmers, North Central Nigeria.

Introduction

Off-farm income has become an important component of livelihood strategies among rural households in most developing countries (Babatunde, Olagunju, Fakayode & Adejobi, 2010). Declining farm income and the desire to insure against agricultural production and market risk have been advanced as the reasons for participating in off-farm employment. For instance, when farming becomes less profitable and more risky due to population pressure as well as crop and market failures, farm households would be pushed into off-farm activities (a case of distress-push diversification). On the other hand, when returns to off-farm employment become higher and less risky than on-farm employment, farm households would be pulled into off-farm work (a case of demand-pull diversification) (Reardon, 1997; Ellis & Freeman, 2004).

Both scenarios of distress-push and demand-pull diversification have been recognised by researchers. However, some studies have assumed that distress-push effects were dominant, citing shrinking per capita land availability as the major reason for increasing off-farm activities (Reardon, Berdegue & Escobar, 2001; Van den Berg & Kumbi, 2006). Babatunde *et al.* (2010), in contrast, held that land was not the most limiting factor. In any case, off-farm income had been found to contribute significantly to total household income (Bjornsen & Mishra, 2012) of especially resource-poor farm households in developing countries. These findings indicated that complementary relationship existed between farm income and off-farm income.

According to Reardon (1997), the traditional image of farm households in developing countries has been that they focused almost exclusively on farming and undertook little rural non-farm (RNF) activity. This image persisted and was widespread. Policy debate still tended to equate farm income with rural incomes, and rural-urban relations with farm-non-farm relations. There has been a tendency even among agriculturalists and those interested in rural development to neglect the RNF sector. Nevertheless, there is

mounting evidence that RNF income is an important resource for farm and other rural households, including the landless poor as well as rural and urban residents.

There are four basic reasons why the promotion of RNF activity could be of great interest to developing country policy-makers. First, available evidence showed that RNF income is an important factor in household economies and, therefore, in food security, since it allowed greater access to food. This source of income might also prevent rapid or excessive urbanisation as well as natural resource degradation through overexploitation. Second, in the face of credit constraints, RNF activity enhances the performance of agriculture by providing farmers with capital to invest in productivity-enhancing inputs.

Third, the development of RNF activity in the food system (including agro-processing, distribution and the provision of farm inputs) might increase the profitability of farming by increasing the availability of inputs and improving access to market outlets. In turn, better performance of the food system would increase rural incomes and lower urban food prices. Fourth, the nature and performance of agriculture, affected by agricultural policies, could have important effects on the dynamism of the RNF sector to the extent that the latter is linked to agriculture. The RNF sector grows fastest and most equitably where agriculture is dynamic – where farm output is available for processing and distribution, where there are inputs to be sold and equipment repaired and where farm cash incomes were spent on local goods and services (Reardon, 1997).

Lagerkvist, Larsen & Olson (2006) noted that analyses of off-farm labour supply included proxies for personal and household characteristics to estimate structural farm household models in a reduced methodology. Ahituv and Kimhi (2002), McNamara and Weiss (2005) and Benjamin and Kimhi (2006) have reported that younger farmers were more likely to work off-farm. Mishra and Goodwin (1997) and Mishra and Holthausen (2002) also reported that farming experience was negatively related to off-farm work, and that farm households with younger children were more inclined to

seeking off-farm work. Lagerkvist *et al.* (2006) opined that a larger farm household might be more likely to rely on off-farm income because the family could operate the farm as well as have one or more family members left to work off-farm. This could be induced by higher living expenses associated with large household size.

Ahituv and Kimhi (2002) and Benjamin and Kimhi (2006) found negative relationship between farm size and off-farm labour decisions. Goodwin and Bruer (2003) explained that farm households operating larger farms might be less likely to seek off-farm income as the time required to operate large farms could be enormous. Mishra and Holthausen (2002) found that off-farm work participation was negatively related to the degree of farm ownership. Furthermore, Ahearn, El-Osta and Dwebre (2006) found negative relationship between government payments and off-farm employment. Lagerkvist *et al.* (2006) remarked that many part-time farm households operating smaller farm units, to a large extent, relied on off-farm income compared to full-time operators or larger farm units.

In a study of off-farm employment in Austria, Weiss (1997) estimated that on more than 50% of farms, the husband and wife worked less than 50% of their working time on the farm. These findings might seem surprising since it was generally presumed that full-time farm operations were more efficient than part-time farms. Full-time operations had the advantage of scale efficient technology and lower costs of credit.

According to Kwon, Orazem and Otto (2006), farm households faced large fluctuations in farm income due to weather and price shocks. In order to mitigate the effects of these fluctuations, or lessen exposure to such risks, farm households often adopted such principles as futures market, forward contracts, or insurance market. Unfortunately, these approaches were not within the reach of small-scale farmers in rural areas of developing countries. Kwon *et al.* (2006) were also of the view that government intervention in farm gate prices through price supports or loan deficiency payments could moderate the magnitude of the fluctuations. Efficient farm credit administration

has also been suggested as a measure to minimise risks associated with farm production. However, the efficiency of government interventions, supports and credit supplies in Nigeria leaves so much to be desired. Hence, variability in farm-level net income and capital has persisted with attendant consequences.

These scenarios have given rise to sustained or even increased the tempo of farm household diversification into off-farm income activities in order to raise farm capital and stabilise farm income (De Janvry & Sadoulet, 2001; Ruben & Van den Berg, 2001). Mishra and Sandretto (2001) found that off-farm income lowered total variability in household income. In addition, the marginal propensity to consume out of non-farm income is larger than the propensity to consume out of farm income (Carriker, Langemeier, Schroeder & Featherstome, 1993). This is consistent with the potential role of off-farm income as a short-term supplement to farm income, thereby allowing for re-investment or expansion of farm capital base.

Ahituv and Kimhi (2002) reported that off-farm income constituted between 20 percent and 70 percent of total household income, emphasising the role of capital investments in the development process and in the transition from rural to industrial society. According to the Department of Agriculture and Rural Development (DARD) (2012), farm diversification afforded households the following range of benefits: increased revenue, adaptability, food and income security, sustenance in valued farming tradition, and development of new skills that would facilitate the expansion of business networks. Finally, diversification offered considerable scope for improving the economic viability of many farm businesses and, in turn, reducing their dependence on the production of primary agricultural commodities (Department for Environment, Food and Rural Affairs (DEFRA, 2012).

Technological change has been acknowledged as a critical component of productivity and economic growth (Griliches, 1970). The rapid adoption and diffusion of new technologies in U.S. agriculture has sustained growth in agricultural productivity and

ensured abundance of food and fiber (Huffman & Lange, 1989). Technological innovations and their adoption have also changed the way farm households regarded employment choices. Labour-saving technologies, in particular, have allowed farm household members to increase income by seeking off-farm employment (Mishra & Holthausen, 2002). Most studies acknowledged that heterogeneity among farms and farm operators often explained why not all farmers adopted an innovation in the short or long run (Feder & Feeny, 1991).

The effect of non-farm employment on overall income inequality could be analysed through the relationship between non-farm income, on the one hand, and farm income and or landholdings, on the other. The implicit view was often that the two moved in opposite directions, so that non-farm and farm incomes essentially offset each other. In other words, smaller farms have higher non-farm incomes than large farms, or at least the share of non-farm income in total income declined as total household income increased. RNF activities did not necessarily improve rural income distribution. In reality, however, evidence regarding the relationship between the share of non-farm income in total household income and the level of total income and or the size of landholdings has been very mixed. In the selection of different patterns of relationships between non-farm income shares and levels and total household income or landholdings, the selection tended to be representative of the spectrum of patterns found in different locations. At one extreme, there was evidence of a strong negative and linear relationship between the non-farm share in income and total household income or landholding. At the other extreme, however, there were cases of a strong positive and linear relationship. Reardon (1997) also found that on average, the share of non-farm income in total income was twice as much in upper-income tercile households as in those of lower terciles. Other cases fell between these two extremes.

These results focused on the share of non-farm income among income and landholding classes. Evidence showed that, in many cases, the ratio of the absolute levels of non-

farm earnings between the highest and lowest income strata was much higher (i.e. more skewed) than the ratio of shares. Not only that, there were even cases where declining shares of non-farm income for higher-income levels were nevertheless associated with increasing absolute levels of non-farm incomes. Lagerkvist *et al.* (2006) found that farm size and farm capital had negative impact on the off-farm income's share and that the impact of farm capital was stronger than that of farm size. They also found negative relationship between farming experience and off-farm income's share. Finally, these researchers found that positive and significant relationship existed between off-farm income's share and farm tenure security.

A key factor behind the above findings was likely to be the existence of substantial entry barriers (e.g. licence fees, equipment purchase or rental, skills acquisition) to activities with high returns to labour. Hence, low-asset households could spend a large share of their time in non-farm employment, but the wage (hence, the level of off-farm income) they could receive was low.

Conversely, higher-income households might spend the same or a lower share of their resources in non-farm activities but earn much higher returns per unit of resources invested. It was, indeed, common in situations with this type of pattern to find large differences in the nature and labour returns of the typical set of non-farm activities undertaken by the poor and rich, or by small- and large-scale farmers. Activities that were intensive in skilled labour and or physical capital (e.g. cottage manufacturing, transport requiring the use of a vehicle, shop commerce and salaried jobs) had the highest labour returns, as expected, and were undertaken by the wealthiest household strata. The poor (i.e. those with limited assets and/or skills) tended to undertake activities that were intensive in unskilled labour (such as farm wage labour, market porter jobs, wood gathering and unskilled factory jobs). Between 2002 and 2006, the share of off-farm income rose from 55% to 61.8% in Canada (Nantel, Freshwater, Beaulieu & Katchova, 2010).

Farmers have resorted to off-farm work in search of capital for farm investment. At a time the Federal Government of Nigeria has embarked on Agricultural Transformation Agenda with target on specific commodities and small-scale farmers, the need to examine the characteristics and pattern of off-farm work among small-scale farmers cannot be overemphasised. Furthermore, this work will complement the on-going International Fund for Agricultural Development (IFAD)'s capacity building for rural finance. The objectives of the paper, therefore, were to examine the characteristics of off-farm work and determine off-farm income's share of household income among small-scale farmers in North Central Nigeria.

Methodology

The study was conducted in the North Central geo-political region of Nigeria. The region comprised six states, namely, Benue, Kogi, Nasarawa, Plateau, Kwara and Niger, with a total land mass of 296,898 km^2 and total population of 20.36 million people. Situated between latitudes $6^0$30" N and $11^0$20" N and longitudes 7^0E and 10^0 E, the region has average annual rainfall that ranges from 1,500 mm to 1,800 mm, with average annual temperature varying between 20^0C and 35^0C. North Central Nigeria has 6.6 million hectares of land under cultivation with rain-fed agriculture accounting for about 90 percent of the production systems (Food and Agriculture Organisation (FAO), 2002; National Bureau of Statistics, 2007). Majority of the populace is in agriculture, with farm size ranging from 0.4 to 4.0 ha (FAO, 2002; National Food Reserve Agency, 2008).

Multistage sampling technique was used to select respondents for the study. In the first stage, three states namely, Benue, Kogi and Niger, were selected randomly from the region. In the second stage, two agricultural zones were randomly selected from each state, making a total of six agricultural zones. In the third stage, two Local Government Areas (LGAs) were randomly selected from each agricultural zone, amounting to 12

LGAs. In the fourth stage, three farming communities were randomly selected from each LGA, amounting to 36 farming communities. Finally, five small-scale farmers in off-farm work were randomly selected from each farming community. Thus, the sample size for the study was 180.

Data for the study were collected from primary source with the aid of structured and pretested questionnaire designed in a way to generate data that would adequately achieve the objectives and hypotheses of the study. The data collected were analysed using simple descriptive statistics such as frequency, percentages, and mean.

Results and Discussion

Characteristics of Off-Farm Work in relation to main Typology

The characteristics of off-farm work according to main typology are presented in table 1. The main typology of off-farm work included agricultural wage employment, non-agricultural wage employment, and self-employment. The characteristics examined were main typology of off-farm work, household members in off-farm work, off-farm work pattern, years of off-farm work, and off-farm work specification,

Main typology of off-farm work

Findings showed that many of the respondents (42.78%) were in self-employment category of off-farm work. Self-employment activities in rural areas were non-farm in nature and generated steadier income; the activities did not require high technical competence. It is, thus, appropriate that, due to low level of literacy in rural areas (Olusola & Adenegan, 2011), most respondents were in this off-farm work typology. Participation in off-farm work was necessary so as to provide insurance against agricultural production risks. This finding is in line with Babatunde *et al.* (2011) that most small-holder farm households (49.5%) were in self-employment category of off-farm work.

Household members in off-farm work

The result also showed that households where only the husband (40.0%), combination of husband and wife (71.4%), matured children (71.4%), and the combination of husband, wife and matured children (45.8%) participated in off-farm work were predominantly in self-employment category. Households, where only the wife worked off-farm, were dominant in agricultural wage employment (51.6%). These results showed that men participated less in core agricultural activities than women. This participation pattern was further supported by the fact that while men searched for income to lower variability in farm household income, women were more concerned about household chores and food production. For instance, Skoufias and Parker (2002) found that negative shocks to household income induced increased market labour supply by adult women. This finding is consistent with Kwon *et al.* (2006) that 71.0% of farm households with a husband and a wife had, at least, one spouse working off-farm and 43.0% had both spouses working off-farm.

Off-farm work pattern

Findings further showed that full-time participants in off-farm work were in agricultural wage employment (38.5%). This is the dominant and traditional employment in rural areas among small-scale farmers due to their peculiar characteristics. On the other hand, part-time participants were dominantly in self-employment (44.0%). Self-employment off-farm work typology is farther away from farm operations than agricultural wage category. Therefore, this finding was indicative of gradual departure from farm employment. According to Harris, Blank, Erickson and Hallahan (2010), the transition from full-time to part-time farming is often perceived as a first step out of farming. Glauben, Tietje and Weiss (2004) noted that this category of farmers had lower expectations of continuing with farm business; they are also less

likely to have a successor. This is a pointer to the adverse effect of the emerging dual farm structure on food crop production.

Years of off-farm work

In addition, the result showed that 39.2%, 47.8% and 55.2% of farmers with off-farm work experience from two to seven, eight to 13, and 14 – 19 years, respectively were in self-employment. These were relatively young farmers who were eager to raise additional income to boost farm investment. On the other hand, 45.0% and 61.5% of farmers with off-farm work experience of 20 – 25 and 26 – 33 years, respectively, were in agricultural wage employment. These latter farmers were relatively older and expected to have settled down in farm business. This finding supported off-farm work reliance in line with Ahituv and Kimhi (2002) that those who have previously worked off-farm had higher probability of continuity.

Off-farm work specification

Analysis of off-farm work specification showed that self-employment typology comprised salon work (100.0%), private sector employers (70.8%), health work (84.6%), trading (60.7%), iron work (50.0%), sale of cosmetics/perfumes (40.0%), transportation (37.5%). Civil service (76.7%), carpenters (51.4%), masons (64.3%), and electricians (43.5%) fell under non-agricultural wage as the major typology of off-farm work. Agricultural wage employment had those in lumbering (100.0%), livestock and crop farmers (83.3%), sellers of farm produce (53.3%), food processors (53.8%), and grinding engine owners (53.8%). These were the arrays of off-farm activities from which small-scale farmers raised additional income. This is an extension of the sources identified by Olusola and Adenegan (2011).

Off-farm Income's Share of Household Income

In table 2, the average annual household income for respondents was ₦648,774.91. This was higher than the ₦242,000.00 found by Ogbanje (2010) most probably because of their multiple enterprises and the presence of off-farm income. The result was less than ₦1,272,846 found by Ibekwe *et al.* (2010). Average annual off-farm income per household was ₦231,394.00, while the percentage of off-farm income's share of household income was 50.28% on the average. This implied that off-farm income accounted for, at least, half of the income of households in off-farm work. As a measure of reliance of farm household, the result showed that participants highly relied on income from off-farm sources. The off-farm income's share in this study was less than 61.8% for Canada in 2006 (Nantel *et al.*, 2010). It was, however, higher than 32% in Bedemo, Getnet, Kassa and Chaurasia (2013) for Ethipia. This result validated Ibekwe *et al.* (2010) that non-farm activities have become an important component of livelihood strategies among rural households. Increasing share of non-farm income in total household income has been reported by De Janvry and Sadoulet (2001) and Ruben and Van den Berg (2001). The need to mitigate declining farm income and the desire to insure against agricultural production and market risks had been advanced for income diversification (Ellis, 1998; Babatunde *et al.*, 2010). Mishra and Holthausen (2002) found that average farm operator earned much more off-farm income than farm income.

Conclusion and Recommendations

Self-employment was the dominant off-farm work type in the study area. The declining prominence of agricultural wage employment indicates low incentive for continual agricultural production. This denotes gradual drift from the core farm production sector. Also, since off-farm income accounted for significant portion (50.28%) of household income among the respondents, increasing reliance on off-farm work and consequently, further drift from farm work is anticipated. It was recommended that farmer education by extension agents and IFAD's rural finance capacity building should focus on the

need to reinvest off-farm income in farm production so that off-farm work does not endanger food production.

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Table 1: Characteristics of Off-farm Work according to Main Typology (n=180)

Characteristics	Agricultural Wage Employment		Non-agricultural Wage Employment		Self-employment		Total Frequency
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)	
Typology	60	33.33	43	23.89	77	42.78	180
Household member in off-farm work							
Husband	25	26.3	32	33.7	38	40.0	95
Wife	16	51.6	3	9.7	12	38.7	31
Husband and wife	2	28.6	0	0.00	5	71.4	7
Mature children	2	28.6	0	0.00	5	71.4	7
All members	9	37.5	4	16.7	11	45.8	24
Off-farm work pattern							
Full-time	9	23.1	15	38.5	15	38.4	39
Part-time	45	31.9	34	24.1	62	44.0	141
Years of off-farm work							
2 – 7	15	29.4	16	31.4	20	39.2	51
8 – 13	23	34.3	12	17.9	32	47.8	67
14 – 19	5	17.2	8	27.6	16	55.2	29
20 – 25	9	45.0	4	20.0	7	35.0	20
26 – 33	8	61.5	3	23.1	2	15.4	13
Off-farm work specification							
Private sector	13	20.0	6	9.2	46	70.8	65
Salon work	-	-	-	-	4	100.00	4
Carpentry	7	18.9	19	51.4	11	29.7	37
Civil service	4	13.3	23	76.7	3	10.0	30
Masonry	1	3.6	18	64.3	9	32.1	28
Cosmetic	2	20.0	2	20.0	6	40.0	10
Transport	6	25.0	9	37.5	9	37.5	24
Farm produce sale	48	53.3	9	10.0	33	36.7	90
Health work	2	15.4	-	-	11	84.6	13
Livestock/ crop	15	83.3	1	5.6	2	0.1	18
Electrical work	6	26.1	10	43.5	7	30.4	23
Trading	6	21.4	5	17.9	17	60.7	28

Food processing	13	72.2	-	-	5	27.8	18
Grinding engine	7	53.8	4	30.8	2	15.4	13
Hired labour	1	9.1	8	72.7	2	18.2	11
Lumbering	1	100.00	-	-	-	-	1
Iron work	-	-	1	50.0	1	50.0	2

Source: Computed from field survey, 2013

Table 2: Off-Farm Income's Share of Household Income (n=180)

Variables	Minimum	Maximum	Mean
Household income (₦)	102,195.11	2,601,117.96	648,774.91
Off-farm income (₦)	14,000.00	1,300,000.00	231,394.00
Off-farm income's share of household income (%)	2.52	488.97	50.28

Source: Computed from field survey data, 2013