EFFECT OF LAND TENURE SECURITY ON FOOD PRODUCTIVITY AMONG ARABLE CROP FARMERS IN ISUIKWUATO LOCAL GOVERNMENT AREA OF ABIA STATE, NIGERIA

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ABSTRACT

The study was conducted in Isuikwuato Local Government Area of Abia State, Nigeria. The study evaluated farmers mode of land acquisition, estimated productivity of inputs used by the farmers; and determined the effect of tenure security and other factors affecting food productivity in the study area. Multi-staged sampling technique was used in the selection of 100 arable crop farmers. Data were collected through primary sources with the administration of questionnaire. The collected data were analysed with the use of descriptive statistics, partial and total factor productivity indices and multiple regression analysis. The findings of the study showed that fair proportion (41%) of the respondents acquired their land through lease, while only 4% of them got their own land through purchase. The result further indicated that only 23% of the farmers had land tenure security while 77% was land insecure. The inputs of land, labour and material inputs had partial indices of 8.8, 9.77 and 14.6 while the total factor productivity was 3.46 respectively. From the study, the productivity indices of inheritance (5.32) and purchase (4.66) were highest among modes of land acquisition, indicating that the respondents invest more in land development in these two aspects than other modes of land acquisition because their land is secure. The findings also showed that tenure security status, income, crop diversification and farm size positively and significantly affected food productivity at 1% and 5% levels while age, access to credit and household size inversely affected food productivity at 1% and 5% levels respectively. Based on the findings, it is deduced that secured tenure is a critical factor in the achievement of increased productivity of arable crop farmers. Therefore, Federal Government should aim at full implementation of Land Use Act of 1978 by abolishing existing freehold system and then re-allocate available land to existing and intending farmers for large scale agriculture, which will help to boost high food productivity, production and hence increase the farmers' income, livelihood and help to facilitate poverty reduction.

Keywords: Land tenure, Tenure security, Food productivity and Arable crop farmers

Introduction

In Nigeria, agriculture still remains the largest and most important sector of the economy, notwithstanding the enviable position of oil sector in the Nigerian economy over the past three decades. In Nigeria agriculture provides food for the teeming population, employs over 70% of the population, provides raw materials for industries, helps in reducing poverty in the rural areas etc (World Bank, 2008; National Technical Working Group, 2009; Oluwandal *et al*., 2009). Almost all the agricultural and its related activities are carried out on land depicting that land is a significant factor in agriculture. Land is a gift of nature, fixed and scarce resource, very important factor of production and development. The importance of land lies in the fact that all man's activities either directly or indirectly depend on it. Hence, its availability, distribution, acquisition, utilization, affordability and stability determine man's degree of success in feeding his family and maintaining his home (Luka and Yahaya, 2012). In Nigeria, the acquisition and utilization of land is based on land tenure system, which is the way land is held and owned by individuals and groups. According to Ben-Chendo and Joseph (2014), land tenure is the system of land ownership or acquisition by individual, family, community or government agency either temporary or permanent use. It involves a system of right duties and responsibilities concerning the use, transfer, alienation and ownership security of the land and its resource (Adams, 2001).

In Nigeria, there are three types of land tenure, namely; communal, individual (private), and public (state). Communal land tenure is a system in which the ownership is by community or family. The land is communally owned and every member of the family or community has the right of use of the land. This type of land tenure is mostly practiced in the southern part of Nigeria. Individual land tenure is a system in which the property right is assigned to individual. He has the full ownership and right of use of the land while in public tenure system, the property right to the urban land is vested on the governor of each state while the non-urban land is vested on the Local Government Authority. This type of tenure system emanated from Land Use Act of 1998. Land tenure issues are increasingly becoming significant in rural development and are emerging as the most serious agrarian issues in the 21st Century (Obunde *et al.*, 2004). Land tenure plays one of the vital roles in shaping land use decision. The accessibility of most agricultural lands especially in the south eastern part of Nigeria depends largely on land tenure system and the extent of competition by non-agricultural land uses (Udo, 2000). This is because the land tenure system determines the tenure security of the land by the farmers. Hence, tenure security according to Odoemelam *et al.*, (2013) is the perception of having secured rights to land and property on the continual basis, free from unreasonable interference from outsiders, as well as the ability to reap the benefits of labour and capital invested either in use or rented to another. If farmers do not have secure land rights, they will have few incentives to engage in sustainable agricultural production or to consider the long-term environmental impact of over-exploitation of land's nutrients (Oyekala, 2012). It is natural that without secured property rights farmers do not feel emotional attachment to the land they cultivate, do not invest in land development and will not use inputs efficiently. Tenure security to a farmer encourages investment on a land, facilitates access to credit, reduces gender bias in land ownership, minimizes land dispute, positively influences tree planting, removal of tree stumps, application of farm yard manure and fertilizer, mulching and among others. The outcome of this is efficient and sustainable crop and livestock productions with increase in productivity, output, income, better livelihood and poverty reduction. Tenure security eliminates the anxiety and uncertainty of expropriation that encourage the farmers to make long investment decision, adopt better cropping system thereby boosting agricultural productivity (Plateau, 1993).

In the South eastern Nigeria, most of the arable farmers are smallholder farmers. These farmers are characterized by use of small land that is not more than two hectares and they are involved in the production of arable crops such as cassava, yam, maize, rice, melon etc (Awoke and Okorji, 2004 and Eze, 2007). Most of these farmers cultivate their crops in insecure and fragmented land with low soil fertility. The effect of this is low production and productivity. In the zone, women are the main producers of food crops, but these women are not allowed to own land due to custom of the people which forbids women to inherit land in the area, hence the land these women often use do not belong to them. Also in the zone, communal land tenure dominates land tenure system. This system does not permit individual ownership of land especially in the rural areas where farming is practiced majorly. In this system, farmers cannot use the land as collateral for credit access or sell the land to strangers who may likely develop it, or use the land for tree cropping. At times conflicts arise among the family or community members over the use of the land. These and other factors seem to constrain the arable crop farmers from making appropriate and effective use of land. Hence this study was conducted to evaluate the mode of land acquisition, estimate the productivity of inputs used by the farmers and determine the effect of land tenure security and other factors affecting the food productivity in the study area.

Methodology
Study Area
The study was conducted in Isuikwuato Local Government Area of Abia State. The LGA is located within the coordinates 5° 32′ N and 7° 29′ E. It has a population of 115,794 people with land mass of 394Km². The LGA is entirely marked by two distinctive seasons, the dry season which occurs between November and March and the wet season which comes between April and October. The average rainfall is 2000mm with annual temperature range of 27°C and 28°C (https://en.wikipedia.org/wiki//Isuikwuato). The area lies within the tropic zone. The main occupation of the people is farming. The major crops grown by the people are yam, cassava, melon, maize, rice and oil palm. They rear livestock such as poultry, goats, and sheep.

Sampling Procedure
A multi-stage sampling technique was used in the selection of the respondents. Firstly, 5 communities were randomly selected from the LGA. Secondly, from the chosen communities, two villages were selected randomly from each community, making it 10 villages that were used. Lastly, from the 10 villages chosen, 10 farming household heads were selected randomly from each village, making it a total of 100 respondents that were used for the study.

Data Collection
The data for the study were collected from primary sources through the administration of structured questionnaire to the respondents. Extension staff working in the Local Government Area (LGA) assisted the researchers in the administration and collection of the questionnaire. The data collected were socio-economic characteristics of the respondents, mode of land acquisition, factors of production and their values, outputs and value of the arable crops produced as well as tenure security status and other factors affecting food productivity in the study area.

Data Analysis
The data collected were analysed with descriptive statistics, partial and total factor productivity and multiple regressions. Mode of land acquisition was analysed with descriptive statistics. Food productivity of the arable crop farmers was measured with partial and total factor productivity. Productivity is an index that measures output (goods and services) relative to inputs (land, labour and materials) used to produce the output. Productivity is usually expressed in terms of partial and total. Partial factor productivity is the ratio of a measure of output quantity or the value of the output to a single input or value of the single input while total factor productivity is the ratio of the measure of total output quantity or gross value of the total output to the measure of the quantity of inputs or value of total inputs used (Zepeda, 2001; Idiong et al., 2009). Therefore, to estimate the partial factor productivity (PFP), and total factor productivity (TFP) of the factors used in the production of the arable crops, the productivity indices were estimated thus:

$$TFP = \frac{Gross\ Value\ of\ Output\ (\text{₦})}{Gross\ Value\ of\ Inputs\ ((\text{₦})} \qquad (1)$$

$$PFP = \frac{Value\ of\ Output\ ((\text{₦})}{Value\ of\ a\ particular\ input\ (\text{₦})} \qquad (2)$$

The tenure security status and other factors affecting food productivity was analysed with multiple regressions analysis. The implicit form of the model is expressed thus:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9) + u \qquad (3)$$

Where Y = TFP (Total Factor Productivity), X_1 = Land/Tenure security status (Dummy, Ownership = 1, O = Otherwise), X_2 = Age (Years), X_3 = Farm size (Ha), X_4 = Level of education (Years), X_5 = Crop diversification (Number of arable crops grown), X_6 = Household size (Number), X_7 = Gender (Dummy, Male = 1, Female = 0), X_8 = Credit ((₦), X_9 = Income ((₦), u = Error term.

Results and Discussion
Mode of Land Acquisition in the Study Area
Table 1 shows the mode of land acquisition of the arable crop farmers in the study area. The Table shows that fair proportion (41%) of the farmers acquired their land for farming activities through lease while the least number of them (4%) got theirs through outright purchase. On the other hand, 31%, 19% and 5% of the respondents acquired theirs through communal, inheritance, and gift respectively. This result implies that only 23% of the farmers had tenure security since theirs were through purchase and inheritance. This depicts that 77% of the farmers was land insecure since they were not outright owners of the land. This result is in tandem with Okorie (1998) who reported that most people especially in the rural areas do not have clear title to their land. This then had a serious implication on the land and crop productivity as the farmers may not have durable investment on the land.

Food Productivity among the Arable Crop Farmers in the Study Area
The productivity was estimated using partial and total factor productivity. The gross value of output from various crop enterprises of the farmers embarked on in the study area alongside the values of each production factor are presented in Table 2a while the respective productivity indices of the production factors are presented in Table 2b. The Table 2a shows the selected crop enterprises together with their respective values. The Table depicts that on the average, the arable crop farmers realized ₦64,402.26, from cassava, while ₦46,568.31; ₦31,245.36; ₦101,200.03, and ₦28,401.20 were realized from yam, maize, rice and melon respectively giving a total of ₦271,817.56 from the combination of the food crop enterprises under study. On the other hand, Table 2b shows that land had partial productivity indices of 8.8, labour 9.37 while material inputs (fertilizer, seeds and agro-chemicals) had 14.6. The result showed that the three factors were productive as each one of them was more than one. The findings further indicate that land had the least productivity index among the three factors with a value of 8.8. This result further confirms the finding in Table 1 which indicated that 77% of the respondents were land insecure showing that the farmers might not invest much on the land development. However, the total factor productivity was 3.46. This still shows that the total factors were productive.

The Productivity Level of Land Acquisition Status in the Study Area
Table 3 shows the productivity level of land acquisition status in the study area. The Table shows the output of the respondents that acquire their land through purchase, lease, inheritance and communal with their respective values of ₦210,100, ₦150,000,

₦271,817.56, and ₦80,500. The gross value of land for the different land operations were ₦45, 100, ₦320,000, ₦51,000 and ₦27,500 respectively. The productivity indices of purchase, lease, inheritance and communal were 4.66, 3.28, 5.32 and 2.92 respectively. From the Table, it could be observed that productivity indices of inheritance and purchase were the highest which implies that these two modes of land acquisition were the most productive than others. This result is in agreement with Chirwa (2008) who noted that mode of land acquisition through inheritance and purchase offers the highest security of tenure which encourages more investment on the land. The investment tends to increase the productivity of the farmers.

The Effect of Tenure Security Status and other factors on Food Productivity of the Respondents in the Study Area

To determine the effect of tenure security and other factors on land productivity of arable crop farmers in the study area, multiple regression analysis was used. The result of the findings is presented in Table 4. The result showed that double-log was chosen as the lead equation based on the number of explanatory variables as well as the value of the coefficient of multiple determinations (R^2). The coefficient of multiple determinations was 0.952 implying that 95.2% of total variations in food productivity was explained by the independent variables included in the model while remaining 4.8% was due to error of estimation and other factors outside the scope of the study. It also implies that the model gives the good fit. The F-value was statistically significant at 1% level which implies that the independent variables included in the model best explained the dependent variables as such confirmed the overall significance of the regression model.

The result in the Table showed that seven factors were significant at 5% and 1% levels respectively. The coefficients of land tenure security (0.348), income (0.44), crop diversification (0.0227) and farm size (0.260) were positively signed and significant at 1% and 5% levels respectively. The positive sign and significance for land tenure security imply that as the security of the land increases, food productivity of the arable crop farmers also increases because the farmers invest more resources in their land and vice versa. This finding is in tandem with that of Iheke (2010) who found that insecure property rights over land reduces sharply the level of activity on land as it serves as a disincentive to farmers from investing meaningfully on land since the land goes back to the owner after planting season. Also the positive sign and significance of income implies that as the farmers' income increases so would his food productivity

increase because the farmer can even purchase land of his own, improved input materials, adopt improved technologies for increased food productivity. The result corroborates with Bohacek (2006) who inferred that wealth possessed by individuals provides a degree of security of land which enables him to likely diversify in cropping activities, adopt more improved technologies that will in turn improve crop productivity. The crop diversification and farm size being positive and significant at 5% level implies that as the farm size increases, the farmer will be able to diversify in his crop production, because large land holding gives way for farm mechanization thereby leading to increase in food productivity.

Conversely, the coefficient of age (-5.271) and access to credit (-0.392) were negatively signed and significant at 1% level while household size coefficient was also negative at 5% level. The negative signs and significance of these variables imply that as age, access to credit and household size increase by one unit, food productivity would decrease by 5.27, 0.392 and 0.046 respectively. With regard to age, it is in line with *a priori* expectation because as the farmer advances in age, he may not be willing to adopt improved technologies for food crop productivity. In terms of household size being negative and significant suggests that as more of extended family members join the family lineage which is usually obtained in rural areas of South East Nigeria, there will be pressure on the family land. This leads to land fragmentation thereby leading to small farm sizes and low output and productivity. On the contrary to *a priori* expectation, access to credit was negative (-0.392) and significant at 1% level. The negative sign of the variable is at variance with normal expectation. The result is not in line with Barret *et al* (2001) who reported that households with access to credit facilities would more likely diversify in agricultural production to reduce risk. The negative of this result could be that the farmers must have spent most of their accessed credit on consumption and invested it in non-farm related activities rather than investing it on their farming activities.

Conclusion

The findings of the study showed that fair proportion (41%) of the respondents acquired their land through lease while the least number of them (4%) got theirs through outright purchase. The result further indicated that only 23% of the farmers had land tenure security while 77% of them were land insecure. The result also showed that land, labour and material inputs had partial productivity indices of 8.8, 9.77 and 14.6 while the total factor productivity index was 3.46 respectively thereby indicating that all the factors were productive. From the study, it was found that

productivity indices of purchase (5.35) and inheritance (4.66) were highest among different modes of land acquisition, depicting that the respondents could invest more in land development in the purchase and inheritance because the farmers are land secured here than in lease and communal. Also the findings of the study showed that tenure security status, income, crop diversification and farm size positively and significantly affected food productivity at 1% and 5% levels while age, access to credit and household size negatively and significantly affected food productivity respectively. Based on the findings, it is deduced that secured tenure is a critical factor in the achievement of increased productivity of arable crop farmers. Therefore, Federal Government should aim at re-allocation of available land to existing and intending farmers for large scale agriculture which will help to boost high food productivity, production and hence increase the farmers' income, livelihood and facilities poverty reduction. Government should endeavour to act on full implementation of Land Use Act of 1978 by abolishing existing freehold system and make a provision for a nationwide leasehold system whereby leases are granted for a maximum of 99 years as stipulated by the act.

References

Adams, A. (2001). Tenure Security, Livelihoods and Sustainable Land use in Southern Africa. Unpublished Paper presented at the Conference on Land Reform and Poverty Alleviation in Southern Africa, convened by the Southern African Regional Poverty Network, Human Sciences Research Council, Pretoria, South Africa.

Awoke, M. U. and Okorji E. C. (2004). The Determination and Analysis of Constraints in Resource use Efficiency in Multiple Cropping Systems by Smallholder farmers in Ebonyi State, Nigeria. *Journal of African Development,* 39(3): 58-69, August.

Barrett, C. B., Reardon, T. and Webb, P. (2001). Non-farm Income Diversification and Household Livelihood Strategies in Rural Africa: Concepts, Dynamics, and Policy Implication. *Food Policy*, 26(2): 3-15.

Ben-Chendo, G. N. and Joseph, V. N. (2014). Comparative analysis of rice productivity of farmers on difference land tenure system in Imo State. *International Journal of Small Business and Entrepreneurship Research*, 2(3): 23-31

Bohacek, R. (2006). Financial Constraints and Entrepreneurial Investment. *Journal of Monetary Economics*, 53(8): 2195 - 2212

Chirwa, E. W. (2008). Land tenure, farm investments and food production in Malawi. Department for International Development (DFID) discussion paper series No.18, Pp10 -14.

Eze, C. I. (2007). The Multiplier Effect of Agriculture Development Programme's (ADP) Small Plot Adoption Technique (SPAT) in Smallholder Farmers in Abia State, Nigeria. *Journal of Agriculture and Food Science*, 5(1): 41-51

Idiong, I. C., Agom, E. O., Effiong and Ohen, S. B. (2009). Analysis of Technical and Economic Efficiency in Rice Production System in Niger Delta Region of Nigeria in Sustaining Agricultural Growth to Meet National Economic Development Goal. Proceedings of the 23rd Annual Conference of Farm Management Association of Nigeria.

Iheke, O. R. (2010). Impact of Migrant Remittances on Efficiency and Welfare of Rural Small holder Arable Crop Farm Households in South Eastern Nigeria. Ph.D Dissertation, Michael Okpara University of Agriculture, Umudike.

Luka, G. E. and Yahaya, H. (2012). Analysis of Land Tenure System among Rice Farmers in Awe Local Government Area of Nasarawa State, Nigeria

National Technical Working Group (2009). Agriculture and Food Security Report of Vision 2020 National Technical Working Group, Nigerian Vision 20: 2020, July, P.115

Obunde, P.O., Mbogo, C. M., Oluoch-Kosura, W. and Kamani (2004). Effect of Land Tenure on Agricultural Productivity and the Environment. International Food Policy Research Institute, Eastern Africa Food Policy Network, April.

Odoemelam, L. E., Osahon, E. and Nechedo, E. (2013). Effect of Tenure Security on Livelihood Activities of Women Farmers in Anambra State, Nigeria. *Journal of Agriculture and Social Research,* 3(2)

Okorie, A. (1998). Management of Risk and Default in Agricultural Lending: In Ijere M. and Okorie, A. (eds), Reading in Agricultural Finance, Longman Plc, Lagos, Nigeria.

Oyekale, A. S. (2012). Intensive land use, land management and efficiency of food production in Niger-Delta region of Nigeria. *Electronic Journal of Environment, Agricultural and Food Chemistry*, 11(3): 188 – 204.

Plateau, J. P. (1993). The evolutionary theory of land rights as applied to Sub-Sahara Africa: A critical assessment. Faculties Universitaries Notre Dame de ia Paix, Faculte des Sciencies Economiques et Sociales, Belgium.

Udoh, E. J. (2000). Land Management and Resource Use Efficiency among Farmers in South-Eastern Nigeria, Unpublished Ph.D Thesis, University of Ibadan, Ibadan, Nigeria.

World Bank (2008). World Bank Calls for reviewed agriculture for development. http://www.worldbank.org/wdr2008

Zepeda, L. (2001). Agricultural Investment, Production Capacity and Productivity, In (ed)

Zepeda, L: Agricultural Investment in Developing
Countries, FAO, Rome.

Table 1: Mode of Land Acquisition in the Study Area

Mode	Frequency	Percentage
Purchase	4	4
Lease	41	41
Inheritance	19	19
Communal	31	31
Gift	5	5
Total	**100**	**100**

Source: Field Survey data, 2017

Table 2a: Values of Arable Crop Output and Production Factors in the Study Area

		Values of Production Factors (₦)			
Enterprise	Value of Output (₦)	Land (₦)	Labour (₦)	Inputs(Fertilizer, agrochemicals and planting materials	Total (₦)
Cassava	64,402.66				
Yam	46,568.31				
Maize	31,245.36	31,011.42	29,000.00	18,651.03	78,662.45
Rice	101,200.03				
Melon	28,401.20				
Total	**271,817.56**	**31,011.42**	**29,000.00**	**18,651.03**	**78,662.45**

Source: Field Survey data, 2017

Table 2b: Partial Productivity Indices of the Production Factors in the Study Area

Production Factor	Gross Value (₦)	Productivity Index	Remarks
Land	31,011.42	8.77	Productive
Labour	29,000.00	9.37	Productive
Inputs (Fertilizer, planting materials and agrochemicals	18,651.03	14.57	Productive
Total	78,662.45	3.46	Productive

Source: Field Survey data, 2017

Table 3: Partial Productivity Indices of the Land Tenure Status in the Study Area

Land Tenure	Value of Output (₦)	Value of Land under Tenureship	Productivity Index	Remarks
Purchase	210,100.00	45,100.00	4.66	Productive
Lease	105,000.00	32,000.00	3.28	Productive
Inheritance	271,817.76	51,000.00	5.32	Productive
Communal	80,500.00	27,500.00	2.92	Productive

Source: Field Survey data, 2017

Table 4: Multiple Regressions on the Effect of Tenure Security Status and other Factors on Food Productivity in the Study Area

Parameter	Linear	Semi-log	Double-log	Exponential
Constant	9.583	-26.038	1.466	4.104
	(0.3385)	(2.29)**	(0.246)	(6.36)***
Land tenure security status	2.1561	-0.123	0.348	-0.336
	(2.0265)**	(1.08)	(2.872)***	(-1.80)
Age	2.651	-6.321	-5.2711	-0.296
	(0.211)	(-0.354)	(-3.278)***	(-1.274)
Farm size	-0.651	29.941	0.260	0.456
	(-0.0209)	(0.2921)	(2.584)**	(4.17)***
Level of education	0.0522	67.0245	0.356	0.430
	(0.0169)	(4.5022)***	(0.037)	(1.40)
Crop diversification	0.8190	99.3021	0.177	0.205
	(0.0227)	(2.0553)**	(2.687)**	(4.27)***
Household size	0.0917	34.2414	-0.046	0.579
	(0.0308)	(3.5116)***	(-2.455)**	(0.76)
Gender	-1.635	0.135	0.033	0.3305
	(-0.230)	(0.965)	(0.019)	(2.26)**
Access to credit	0.050	9.17e-06	-0.392	8393.398
	(0.710)	(4.50)***	(-3.75)***	(1.04)
Income	6.823	0.01	0.44	0.825
	(0.549)	(5.811)***	(2.68)***	(0.24)
R^2	0.940	0.727	0.952	0.901
Adjusted R^2	0.934	0.704	0.902	0.629
F-ratio	178.43***	30.67***	22.24***	251.86***

Source: Field Survey data, 2017. **,***, Significant at 5% and 1%