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Land Governance and Agricultural Sustainability in Nigeria

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ABSTRACT

This paper analysed land governance and crop commercialization in Nigeria. General Household Survey (Living Standard Measurement Survey) panel data for the post-planting and post-harvest periods of 2015 and 2016 cropping seasons were used. Descriptive statistics, Crop Commercialization Index (CCI) and Tobit regression model were used to analyse data. The semi-subsistence farmers constitute the highest proportion (62.4%), out of which almost one-quarter (24.6%) of the farmers sold less than a quarter (<25.0%) of their crop produce, except South West, where mean CCI of 63.71 (±30.48) indicates that more than half of farmers' crop produce were sold, implying that the zone driving commercialization in Nigeria is the South West. Access to land through rent had positive significant effect on CCI at 1% level, contributing to agricultural sustainability and economic development. The emerging dynamic land markets will complement the Government based land allocation which are oftentimes characterized by inconsistency in land accessibility..

Keywords:

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1. INTRODUCTION

Land governance, according to Enemark et al. (2009), can be explained in terms of policies, structure and institutions through which land and other natural resources are managed. It involves decisions made on the accessibility of land rights from the bundle of land rights access, use, development and disposal. Land governance is not only used to control land use and development, but it is also used to evaluate both the economic and social outcomes used for sustainable livelihood (Enemark et al., 2010). It can be taken as an instrument to measure the degree of satisfaction perceived on access to land, tenure security, land use and land development (FAO, 2012).

The subject of land governance has gained prominence for two reasons; the first reason being that many countries in Africa are not realizing their agricultural potentials, while the second reason is that high demand for land, together with evidence on failure to realize the expected gains in productivity has raised concern about large scale loss of local livelihoods through alienation of large amounts of communal land rights which are weakly protected in ways that often do not involve local users (Deininger et al., 2014). Land tenure has long been viewed as a central element of development efforts as it affects productivity through at least three channels; the likelihood of owners making land-attached investments, the scope for transferring land to more productive users and the ability to use land as collateral for credit (Deininger et al., 2014).

Agricultural growth has been viewed as a means of poverty alleviation and development in Africa (Place, 2009) and with that, there is an interest in the factors that promote or inhibit agricultural investment, including land tenure and tenure security. The study of tenure and its effects on agricultural productivity is not new but is particularly challenging given that there are quite a lot of dynamics to land tenure, especially considering tenure security in Africa (Place, 2009). In Nigeria, land are acquired by farmers through non- market based and market based methods (Idowu and Alawode, 2007). The acquisition of land through market based methods is expected to allocate land from less efficient producers to more efficient producers in order to increase production capacity and market orientation for produce (Alawode et al., 2016).

The transition from subsistence to commercial agriculture is often referred to as the commercialization of agriculture, and this has long been considered an important part of the agrarian transformation of low income economies and a means of ensuring food security, enhanced nutrition, and enhanced incomes (Kurosaki, 2003). According to Pradhan et al., (2010), agricultural commercialization refers to the process of increasing the proportion of agricultural production that is sold by farmers. Agricultural commercialization can broadly be looked at from two perspectives; a rise in the share of marketed output or of purchased inputs per unit of output (Jaleta et al., 2009). On the output side of production, agricultural commercialization can occur with increased marketed surplus, or on the input side, with increased use of purchased inputs. On the output side, commercialization is measured as a ratio of the value of agricultural sales to the value of agricultural production while it is measured as a ratio of the value of inputs acquired from market to the value of agricultural production on the input side (Von Braun et al., 1994).

As explained by Jaleta et al. (2009), commercialization among farmers is assumed to lead towards more specialized production systems, which are based on comparative advantages in resource use, leading to higher productivity through scale economies, greater learning by doing, regular interaction and exposure to new ideas through trade, and better incentives in the form of higher income, which can achieve welfare gains for smallholders.

It has been found that migrant farmers acquired land through rent and outright purchase in Southwestern Nigeria (Idowu et al., 2007). For sustainable agricultural production, land is the most important resource-input in Nigeria and policies affecting it affect the farming population more than other members of the community. Also, there is strong empirical evidence that increasing the participation of farmers in the market enhances economic development (Jaleta et al., 2009). It is on this background that this study attempts to establish the link between land governance and agricultural sustainability using agricultural commercialization as a proxy for agricultural sustainability. This paper answers the following questions:

i. What are the means of acquisition of agricultural lands in Nigeria ?
ii. What is the extent of participation of crop farmers in land market in Nigeria?
iii. What is the extent of crop commercialization among farmers in Nigeria? And
iv. Does farmers' participation in land market enhance crop commercialization, thereby leading agricultural sustainability in Nigeria.

2. METHODOLOGY

This study covered farming households in Nigeria. Nigeria comprises 36 states and the Federal Capital Territory (FCT) of Abuja, which are divided into six geopolitical zones. In 2012, Nigeria was rated the most populous country in Africa and the seventh most populous with an estimated population of 170 million. General Household Survey (Living Standard Measurement Survey) panel data for the post-planting and postharvest periods of 2015 and 2016 cropping seasons were used for this study. A multi-stage stratified sample design was used for the GHS and the Panel Survey. The GHS sample comprised 60 Primary Sampling Units (PSUs) or Enumeration Areas (EAs) chosen from each of the 37 states in Nigeria (including the FCT), and a total of 2,743 farming households was used for analysis.

Descriptive statistics such as frequency counts and mean were used to identify the means of acquisition of agricultural lands, and the results are presented in frequency distribution tables.

The participation of crop farmers in land market was assessed by the involvement of farmers in land transactions. From the various means of land acquisition identified, farmers that acquired at least one of the plots of land he cultivates through transaction participates in land market.

Crop Commercialization Index

The extent of crop commercialization among farmers in Nigeria was assessed using the Crop commercialization model to generate the crop commercialization index (CCI)

$$\frac{\text{Gross value of crops sold}}{\text{Gross value of all crops produced}} \times 100 = \text{CCI}$$

This index measures the extent to which household crop production is oriented towards the market. It ranges between 0 and 100. A value of 0 signifies pure subsistence farming. The higher the value of CCI, the more the household tends towards market oriented production. Also, the more sustainable agricultural production is for overall economic development.

Tobit Regression Model

The Tobit censored regression was used to estimate the effect of farmers' participation in land market on crop commercialization for agricultural sustainability in Nigeria.

The Tobit model takes the following form:

$$Y^* = \beta_0 + \sum_{j-1}^{n} \beta j X j + \varepsilon_i$$

$$Y_i = Y_i^* \; if \; Y_i^* > 0$$

$$Y_i = 0 \; if \; y_i^* \leq 0$$

Where:

Yi denotes the observed dependent variable
Yi* denotes the latent which is not observable
Xj denotes vectors of factors influencing land market in Nigeria
βj denotes vector of unknown parameters
εi denotes residuals that are independently and normally distributed with mean zero and a common variance σ2.

The empirical Tobit model is as follows:

CCI = β0+β1X1+β2 X2+β3 X3+β4 X4+β5X5+….. + β16X16 + εi

Where:

CCI = Crop commercialization Index (0≤CCI≤100)

X1 = Size of farmland cultivated (Hectares)

X2 = Number of household members

X3 = Use of improved seed (1=Yes, 0 if otherwise)

X4 = Access to extension services (1=Yes, 0 if otherwise)

X5 = Land purchased (1=Yes, 0 if otherwise)

X6 = Land rented (1=Yes, 0 if otherwise)

X7 = Land given free of charge (1=Yes, 0 if otherwise)

X8 = Land allocated by community (1=Yes, 0 if otherwise)

X9 = Sex of household head (1=female, 0 otherwise)

X10 = Household head literacy (1=literate, 0 if otherwise)

X11 = Age of household head (years)

X12 = North Central (1=Yes, 0 if otherwise)

X13 = North East (1=Yes, 0 if otherwise)

X14 = North West (1=Yes, 0 if otherwise)

X15 = South East (1=Yes, 0 if otherwise)

X16 = South South (1=Yes, 0 if otherwise)

βi - Parameters.

εi - Error term

3. RESULTS

3.1 Means of Acquisition of Agricultural Lands in Nigeria

Different means of land acquisition by farmers in Nigeria are presented in Table 1. From the results, majority (70.3%) of the farmers acquired land through inheritance while fewer percentages used their farmlands free of charge, that is, no rent payment (8.8%), got farmlands allocated by community/family (8.4%), rented land for cash or kind (7.0%), and the least proportion (5.5%) acquired farmland through outright purchase. The results indicate that family inheritance is still the dominant means of land acquisition in Nigeria. However, it points to the fact that farmers acquire land through transactions in Nigeria.

Table 1: Means of Land Acquisition by Farmers in Nigeria

Land acquisition Method	No of Farmers	Percentage
Outright purchase	151	5.5
Rented for cash or kind	193	7.0
Used free of charge	242	8.8
Allocated by community/family	229	8.4
Family inheritance	1,928	70.3
Total	2,743	100.0

Source: Computed from GHS-Panel Survey Data, 2016

3.2 Extent of Land Market Participation by Crop Farmers in Nigeria

Land market is expected to allocate land from land owners that are either not putting the land to productive use or less efficient producers to more efficient producers. Results from Table 2 show that only a small proportion (12.5%) of the farmers participated in land market, that is, acquired land through transactions.

Also, from the results, only 10.5% of the farmers owned plots with certificates. This is not good enough for the farmers as any land acquisition for government or public use may not attract compensations, and such lands may be sources of conflicts in the future.

Table 2: Farmers' Participation in Land Market in Nigeria

Farmers' Participation in Land Market	No of Farmers	Percentage
Yes	344	12.5
No	2,399	87.5
Total	2,743	100.0
Number of plots owned with certificate	No of Farmers	Percentage
No	2,454	89.5
Yes	289	10.5
Total	2,743	100.0

Source: Computed from GHS-Panel Survey Data, 2016

3.3 Extent of Crop Commercialization among Farmers in Nigeria

The results on the extent of crop commercialization by farmers are presented in Table 3. More than one-quarter (36.4%) of the farmers had CCI of 0%, implying pure subsistence; they had no marketable surplus and did not participate at all in the crop market. On the other hand, only 1.2% of the farmers had CCI of 100%, implying pure market orientation. The semi-subsistence farmers constitute the highest proportion (62.4%), out of which almost one-quarter (24.6%) of the farmers sold less than a quarter (<25.0%) of their crop produce.

Across Nigeria, on the average, farmers sold just about a quarter (24.8%) of their farm produce and this was the case in all geopolitical zones except South West, where mean CCI of 63.71 (±30.48) indicate that more than half of farmers' produce were sold. This implies that the zone driving commercialization (enhancing agricultural sustainability) in Nigeria is the South West.

Table 3: Crop Commercialization by Farmers in Nigeria

Crop Commercialization Index (CCI) (%)	No of Farmers	%
0.0	997	36.4
≤25.0	674	24.6
25.01 – 50.0	515	18.8
50.01 - 75.0	351	12.8

75.01 – <100	171	6.2
100	32	1.2
Total	2,740	100.0
CCI (Geopolitical Zones)	Mean(±S.D)	
North Central	26.30(±28.54)	
North East	16.43(±20.93)	
North West	18.22(±24.16)	
South East	27.26(±26.54)	
South South	23.18(±27.55)	
South West	63.71(±30.48)	
Pooled	24.8(±28.2)	

Source: GHS-Panel Survey Data, 2016

3.4 Effect of Land Market Participation on Crop Commercialization in Nigeria

Table 4 shows the tobit regression results on the effect of land market participation on crop commercialization in Nigeria. The diagnostic results show that the model is significant at 1% level. The variables that were found to significantly influence crop commercialization in Nigeria are discussed.

Land Market Variables

The land market variables include access to land by purchase and access to land by rent. Access to land by purchase had no significant effect on crop commercialization though it positively influenced it. But access to land through rent had positive significant effect at 1% level. Improved access to land through rent could increase the level of commercialization of crops by farmers. It is expected that farmers that acquired land through market will be efficient in the use of land and participate very well in crop market. The results obtained for access to land by purchase could be explained by low participation of farmers in land market.

Other Land Acquisition Variables

Other significant variable include land given free of charge and land allocated by community. Land used for free had negative significant effect on crop commercialization at 1% level. Land allocated by the On the other hand, land allocated by the community attracts certain obligations on the land and the community expects the efficient use of such farmland. This had positive significant effect on commercialization at 5% level.

Farmers' Characteristics

Significant farmers' characteristics include farmland cultivated, use of improved seeds by farmers, access to extension services, and sex of household head.

Size of farmland cultivated expectedly had positive significant influence on crop commercialization at 1% level. This is even more important because most of the farmers operate on small scale. This

underscores the importance of vibrant agricultural land market. Also, Use of improved seeds significantly and positively influenced crop commercialization at 5%. This highlights the importance of access to and effective use of improved seeds by farmers.

Access to extension services had significant positive effect on crop commercialization at 5% level. This is expected since it gives farmers information on improved seeds, improved technologies, and market information. These increase output, and hence, commercialization. Sex of household head had negative effect on commercialization implying that being female reduces the level of commercialization. It is believed that women augment family supplies and will take care of household members before thinking of the market. Also, women may not be able to cope with rigours of farming for large output.

Geopolitical Zones in Nigeria

The effects of all the geopolitical zones in Nigeria (excluding southwest) were significantly negative at 1% level. This can be explained by the high level of conflicts between cattle herdsmen and crop farmers leading to displacement on the farm, disruption of farming activities, and even loss of lives. The displaced populations can only think of subsistence at the time of such conflicts and displacement.

Table 4: Effect of Land Market Participation on Crop Commercialization in Nigeria

Variable	Coefficient	t value	P value
Farmland cultivated	.065867***	2.53	0.005
Number of household members	-.1532474	-0.97	0.332
Use of improved seed	3.06415**	2.31	0.021
Access to extension services	3.598023**	2.25	0.025
Land purchased	0.2998913	0.14	0.892
Land rented	7.381348***	3.69	0.000
Land given free of charge	-4.953678***	-2.78	0.005
Land allocated by community	3.973727**	2.17	0.030
Sex of household head	-2.897543*	-1.64	0.100
Household head literacy	-.8352942	-0.81	0.420
Age of household head	-.0488441	-1.23	0.221
North Central	-37.67439***	-16.10	0.000
North East	-47.82823***	-20.13	0.000
North West	-45.65578***	-19.89	0.000
South East	-34.82179***	-14.65	0.000
South South	-39.80754***	-15.98	0.000
Constant	65.55058	19.50	0.000

Source: Computed from GHS-Panel Survey Data, 2016

***, **, * *Significant at 1%, 5% and 10% respectively.*

4. CONCLUSIONS

Family inheritance is still the dominant means of land acquisition in Nigeria, but farmers acquired land through transactions and participated in land market. Majority of farmers in Nigeria operate on small scale and are semi-subsistence. Participation of farmers in crop market is also low as almost one-quarter of the farmers sold less than a quarter of their crop produce, except South West, where more than half of farmers' produce were sold; the zone driving commercialization in Nigeria is the South West. Improved access to land through rent increases the level of commercialization of crops by farmers. The effects of all the six geopolitical zones in Nigeria were significantly negative, explained by the high level of conflicts between cattle herdsmen and crop farmers, leading to displacement on the farm, disruption of farming activities, and even loss of farmers' lives. This study establishes significant positive linkage land governance and agricultural sustainability.

The emergence of dynamic land markets would complement the Government based land allocation which are often times characterized by inconsistency in land accessibility. Also, provision of adequate security to facilitate re-settlement of displaced farming population and peace of mind to farmers across the geopolitical zones will make farmers stay on the farm. This will facilitate higher level of commercialization to support the economy diversification bid of the Federal Government of Nigeria.

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7. KEY TERMS AND DEFINITIONS

Land Governance : Policies, structure and institutions through which land and other natural resources are managed. It involves decisions made on the accessibility of land rights from the bundle of land rights access, use, development and disposal (Enemark et al., 2009). In Nigeria, farmers gain access to productive land through transaction (land market) and non-transaction means.

Crop Commercialization : The process of increasing the proportion of crop production that is sold by farmers. Agricultural commercialization can broadly be looked at from two perspectives; a rise in the share of marketed output or of purchased inputs per unit of output (Jaleta *et al.*, 2009)

Agricultural Sustainability : This is explained in terms of meeting the food needs of the present generation while preserving the environment for future generation. Since Nigeria depends more on the marketable surplus of the semi-subsistence farmers, the level of crop production made available to the market determines, to a large extent, the self-sufficiency in food for her teeming population. There is need to orientate the farmers towards increasing production to increase their marketable surplus. This enhances crop market participation (crop commercialization)

Land Market : This is acquisition of land through transaction means. Rights in agricultural land are being transferred from a landowner to another on a temporary basis (use-right) or permanent basis (ownership right). Temporary transfer of rights is acquired through lease and rental contracts in which the land reverts back to the owner at the expiration of the contract, while permanent transfer of rights is acquired through outright purchase. Land market is expected to transfer land from less efficient users to more productive users. This ultimately results in higher level of production, thereby enhancing marketable surplus,