Examining perceived land tenure security and dispute resolution pathway preferences among landholders: Implications for land governance reforms in Nigeria

By

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Abstract

Tenure security and efficient dispute resolution mechanism are critical components of land reform initiatives in Nigeria. Yet, there is little understanding of these components, especially their drivers. This study uses ordered and multinomial logit models to examine perceived tenure security and dispute resolution pathway preferences among landholders, respectively. The results indicate variations in the level of perceived tenure security across the various indicators, and different option mix for dispute resolution preferences. Household socio-demographic and plot variables have a significant influence on both perceived tenure security and landholder preferences for dispute resolution pathway.

Keywords: Perceived land tenure security, land dispute, resolution pathway preferences, land governance reforms, Nigeria.

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1. Introduction

In recent years, countries in sub-Saharan Africa have focused on land reform as a development strategy to enhance security of property rights, promote investment opportunities, increase land productivity, ensure efficient land markets, and reduce land-related conflicts (Ghebru *et al*, 2014). However, these social and economic benefits have not been significantly achieved in most economies where land reforms have been implemented, especially in sub-Saharan African economies (Barry and Whittal, 2016). Nigeria is one of the African countries currently developing reforms in its land governance processes. To achieve this, an eight-person Presidential Technical Committee on Land Reform (PTCLR) was inaugurated on April 2, 2009 with a clear seven-point mandate, including the mandate to encourage and assist State and Local Governments to establish an arbitration/adjudication mechanism for land ownership conflict resolution. This entails understanding of the prevailing land-related disputes and their resolution mechanisms across spatial contexts. In addition, there is a need to understand the probable resolution choices/pathways landholders make in the face of land-related disputes, and what drives these choices. The choice of resolution option by disputants, especially in the first instance of the dispute, is very crucial particularly in the African environment. Often, this has a profound influence on the degree of socio-cultural and religious cohesion of the disputants in the post-conflict periods. Also, such information can inform decisions on better land governance at local and national levels. However, limited empirical studies that specifically address land-related disputes exist (Deininger and Castagnini, 2006), particularly those involving *ex-ante* analysis. This paper contributes to this knowledge gap by highlighting the heterogeneities of perceived land tenure (in)security and the dispute resolution pathway preferences among landholders in Nigeria.

The rest of paper is structured as follows: The next section provides an overview of land tenure security, land disputes and resolution mechanisms, while section 3 discusses issues related to the estimation procedure and data used for the analysis; in section 4 we discuss the empirical results emanating from the analysis, with conclusions and tentative policy recommendations are presented in the final section.

2. Land Tenure Security, Disputes and Resolution Mechanisms: An Overview

Land is central to the social, political and economic life in most African economies because of their heavy reliance on agriculture and natural resources for a significant share of GDP, national food needs, employment and export revenue (Toulmin, 2008). Several scholars (Deininger and Castagnini, 2006; Jacoby and Minten, 2007; Ghebru *et al*, 2016) argue that the tenure security of this asset, defined as the certainty that a person's land rights including use, control, and transfer rights, are recognized by others and protected in cases of specific challenges, is very important. It provides an assurance that a given plot has an identifiable owner, legally or customarily recognized, who has the authority to administer such land. In Nigeria, land rights are mainly secured through recognition by the local authorities, including institutions and people. As at 2014 for instance, less than three percent of the land in Nigeria was formally registered with a proof of certificate of occupancy (Hosaena et al, 2014) yet, land has been continuously administered over the years. Securing land rights can also be through the state or legal recognition of individuals' land rights. This confers ownership and use rights that are officially documented and verifiable, and is considered formal tenure security. This, however, does not count where local institutions are efficient, and when land is not under pressure. In practice, these two conditions rarely exist as land is constantly under increasing pressure and competition (Toulmin, 2008), often resulting in conflicting interests and consequently, disputes.

Disputes over land are becoming frequent across the world, particularly due to its defining characteristics such as finite size, continuously upward valuation, and competitive use (Ayling and Kelly, 1997; Deininger and Castagnini, 2006). Adapting Wehrmann (2008), land-related disputes are those resulting from divergent interests on ownership, use and control of land and its resources. When unresolved and unexplained over time, non-violent disputes evolve into violent conflicts in which social tensions involving the destruction of life and properties become manifest among contending parties, and can only be reverted through intervention (Burton, 1990; Van Leeuwen and Van der Haar, 2016). In Africa, land-related disputes have been attributed mainly to those related to inheritance and encroachment on boundaries (Deininger and Castagnini, 2006; Yamano and Deininger, 2005), and disagreements over tenancy, land use, and appropriation of benefits (Bob, 2010).

When disputes occur, their resolution processes are very essential in mitigating their violent tendencies. Loodes *et al*. (2009) identify a variety of responses to dispute situations including interest-based responses (negotiation and mediation), right-based responses (litigation), and power-based responses (use of force, threats, violence, etc). Under the mediation framework, a range of methods and techniques including unassisted negotiation, non-bidding third-party intervention (conciliation or mediation), and binding arbitration, provide the platform for improved communication between disputants to resolve their differences based on a win-win arrangement, mutual understanding and agreement, and control of outcomes. These for instance play a significant role as alternative dispute resolution (ADR) mechanisms in dealing with land-related disputes in the Volta region of Ghana (Midodzi and Jaha, 2011). Right-based responses are usually formal including police, courts, land tribunals and other government institutions which have been utilized in land dispute resolution in Central and Western Kenya and Southwestern Nigeria in addition to the dominant informal mechanisms involving community elders or committees, farmer groups and village/family heads (Yamano and Deininger, 2005; Alawode, 2013). Again, land dispute resolution could be in sequence, with disputants going from informal options to the formal option, which is sought only when the informal options fail to resolve or manage the disputes (Turner *et al*., 2012).

The choice of resolution options and institutions would depend on institutional and disputants' characteristics. For instance, disputants would seek to redress from an institution which they perceive to be appropriate within a given socio-cultural setting, and which is readily accessible and affordable, and can dispense justice within a reasonable period. In addition, the socioeconomic attributes of the landholders and plot characteristics could significantly contribute to the choice of dispute resolution mechanism (Adams *et al*., 2015).

3. Data and Methodology

3.1. Data

Data for this study come from the 2012/2013 World Bank-sponsored Living Standards Measurement Study-Integrated Surveys Agriculture (LSMS-ISA), which is collected by the National Bureau of Statistics across the 36 states in Nigeria and the Federal Capital Territory (FCT). Plot-level data including disputes and preferred resolution options and perceived land tenure insecurity were extracted from the post-planting agriculture module, and the household-level data of the respondents were obtained from the post-planting household module.

3.2. Model Specification and Estimation Procedure

Two empirical estimations were employed: the drivers of level of perceived tenure security based on dispute – plot loss perception indicator, and the determinants of respondents' preference for land-related dispute resolution options. Level of perceived tenure security was measured with two indicators, namely, the respondent's perception of the likelihood of occurrence of ownership dispute on a given plot, and perceived confidence that the respondent will not lose the plot. A combination of these indicators rather than either indicator is used to assess the degree of tenure (in)security of each plot. This is considered more adequate because ownership dispute can occur on a well-documented plot and would only require the loss of such plot to the dispute to make it insecure. In this study therefore, a tenure secured plot is the one that meets two conditions: a much-reduced likelihood of ownership dispute and a perception of high level of confidence that the plot will not be lost in any dispute event.

These two indicators are measured on an ordinal scale with their indications of tenure (in)security in the reversed order. For instance, the perception on dispute occurrence is measured from "extremely likely (1)" indicating high level of tenure insecurity to "not at all likely (6)", which shows low level of tenure insecurity. Conversely, the second indicator is measured from "extremely confident (1)" indicating a low level of tenure insecurity to "not at all confident (6)", which represents a high level of tenure insecurity. Plots that satisfy the same tenure insecurity levels in both indicators are grouped together. For instance, plots with "extremely likely (1)" and "very likely (2)" measures for ownership dispute occurrence indicator, and a "not at all confident (6)" and "slightly confident (5)" for the second indicator are grouped as "severe insecure" plots and assigned the value of 1. Other categories of tenure insecurity created from these combinations include, "moderately insecure (2)", "moderately secure (3)", and "highly secure (4)". Following this, an ordered probit model is considered adequate to assess the drivers of plot level perceived tenure (in)security.

The perceived tenure security level, *TSdl*, for each plot, *j*, can take any of the different values as reported by household, *i*:

$$TSdl_{ij} = \begin{cases} 1 \\ 2 \\ . \\ . \\ j \end{cases}, \qquad j = 1, 2, \ 3, and \ 4. \tag{1}$$

The perceived tenure security response level, $TSdl_{ij}$, is assumed to be generated by a latent continuous variable $TSdl_{ij}^{*}$, which is a linear combination of some predictors, X, and a disturbance term, ε, with a standard normal distribution, such that:

$$TSdl_{ij}^{*} = X_{ij}\beta + \varepsilon_{ij}, \quad \varepsilon_{ij} \sim N(0,1), \ \forall i = 1, \ldots, N. \tag{2}$$

Where, X_{ij} represents the plot and household factors affecting the level of perceived tenure security of a household head on a given plot; and ε_{ij} represents the disturbance term. Following Greene (2004) and the assumption that ε_{ij} is normally distributed with mean and variance of zero and one, respectively across observations, the probability models for the above ordered responses can be presented as follows:

$$Prob\left(TSdl_{ij} = 1 \middle| X_{ij}\right) = \Phi(\mu_1 - X'\beta) \tag{3}$$
$$Prob\left(TSdl_{ij} = 2 \middle| X_{ij}\right) = \Phi(\mu_2 - X'\beta) - \Phi(\mu_1 - X'\beta)$$

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$$Prob\left(TSdl_{ij} = J\middle|X_{ij}\right) = \Phi\left(\mu_{J-1} - X'\beta\right) - \Phi\left(\mu_{j-1} - X'\beta\right), j = 1, \ldots\ldots\ldots, j-1$$

For all the probabilities to be positive:
$0 < \mu_1 < \mu_2 < \cdots < \mu_{J-1}$.

Where,
$Prob\ (TSdl_{ij})$ is the probability that household, *i*, would report a given tenure security on plot, *j*.

In the second empirical estimation, the determinants of respondents' preference for a resolution pathway for perceived dispute on plot of household were assessed. A multinomial logit model which has the advantage of allowing the analysis of decisions across more than two categories is used in this case. The multinomial logit has *J* possible categories, *J* = 1, 2, 3, ….., J that are exclusive, exhaustive (Nkamleu and Coulibaly, 2000), and unordered with arbitrary labeling (Wooldridge, 2002). This is appropriate in this analysis where four categories of resolution pathways are possible without any continuous order: 1) Informal – informal (**I – I**) pathway in which landholder would prefer to seek resolution from an informal institution/person only; 2) Informal – formal (**I – F**) pathway where the landholder would prefer to first seek mediation from an informal institution and proceed to a formal institution in the event the dispute is not resolved; 3) formal – informal (**F – I**) pathway is where the landholder would prefer to approach a formal institution and subsequently, an informal institution to resolve land-related disputes; and 4) formal – formal (**F – F**) pathway in which landholder would prefer to resolve all land related disputes through formal institution (litigation). In the event of dispute, landholder *i* makes a choice among the four pathways such that the utility derived from choice alternative *j, j* =1, 2, 3, 4 is:

$$\boldsymbol{U_{ij}} = X_j'\beta_j + \varepsilon_i \qquad (4)$$

Where the X_j' is the vector of explanatory (conditioning) variables that can be divided into $\boldsymbol{P_i}$ (set of plot characteristics), $\boldsymbol{H_i}$ (set of landholder and household characteristics), and $\boldsymbol{S_i}$ (sector and regional dummies that capture location characteristics of both the plot and the landholder). $\boldsymbol{\varepsilon_i}$ represent the error term that is assumed to be independent and normally distributed across the *J* alternatives.

Following Wooldridge (2002) and Greene (2012), the choice/preference probability is defined by the multinomial logit framework:

$$Pr(y = j|x) = \frac{\exp(x\beta_j)}{\sum_{h=1}^{j}\exp(x\beta_h)}\ , \quad \text{for } j = 1, \ldots, J. \qquad (5)$$

The multinomial logit model in (5) when estimated provides a set of probabilities for the *J* + 1 preferences for a landholder with characteristics x. Since the response probabilities must sum to unity and imposing the usual identifying restriction β_1=0, then:

$$Pr(y = 1|x) = \frac{1}{1 + \sum_{h=2}^{j}\exp(x\beta_h)}\text{, for } j = 2, \ldots, J. \qquad (6)$$

The model in (6) can best be estimated through a maximum log-likelihood function:

$$\ln L = \sum_{i=1}^{n}\sum_{j=0}^{J} 1(y_i = j)\ln Pr(y_i = j|x_i), \qquad (7)$$

where $1(y_i = j)$ is the indicator function of the landholder preference which takes 1 if $y_i = j$, 0 otherwise.

For easy interpretation, the marginal effects of the explanatory variables on the individual probabilities are estimated. These variables can either be continuous or dummies with different marginal estimation procedure. For a continuous variable $\boldsymbol{X_k}$, the marginal effect is given by:

$$\frac{\partial \Pr(y = j|x)}{\partial X_k} = \Pr(y = j|x)\left\{\beta_{jk} - \left[\sum_{h=1}^{J} \beta_{hk} \exp(x\beta_h)\right] / \ g(x, \beta)\right\}$$

Where β_{hk} is the kth element of β_h and $g(x, \beta) = 1 + \sum_{h=1}^{j} \exp(x\beta_h)$

For the dummy variables, the computation is quite different such that the marginal effect is defined by the discrete change in individual probabilities evaluated at the alternative values of the dummy (0 and 1) (Nguyen-van et al., 2017).

4. Results and Discussion

4.1. Households' Socio-economic and plot characteristics

Table 1 presents plot level summary statistics for the variables used in the estimation of tenure security and dispute resolution preference equations. On average, the age and years of schooling of the household head is about 53 and 5 years, respectively. The average household size is 7 persons with an average of two (2) male own child. These variables differ significantly across resolution pathways. Most households are monogamous and headship is male-dominated with no significant differences across the identified pathways.

The distribution of the households by wealth category tailspins toward the wealthiest group. Most (52%) of the poor households have preference for the informal resolution pathways as compared to wealthier households. On average, households own two (2) plots of about 0.5 ha in size with an average per capita land holding of 0.09 indicating land-scarce households. Sixty-four percent of the plots are perceived to be clearly demarcated, and only 6% of the total plots was acquired through outright purchase, indicating prevalence of non-market land transactions.

The most perceived disputes are border-related disputes, unauthorized livestock grazing, and encroachment by neighbours, respectively. The choice of resolution pathway for perceived disputes could vary by nature of dispute. Generally, there is a statistically significant difference in the choice of possible resolution pathway across all the perceived dispute causes except for encroachment by private business. Major threats to tenure land security are family members with large owners considered least threat.

Table 1: Plot characteristics by preferred dispute resolution pathway

Variable	Mean	Land dispute resolution pathway preference				
		Pathway 1 **(N=2,620)**	Pathway 2 **(N=1,115)**	Pathway 3 **(N=106)**	Pathway4 (N=100)	X^2 *Prob.*
Household characteristics						
Number of male own child	2.21 (1.93)	2.21 (1.94)	2.22 (1.90)	1.49 (1.43)	2.88 (2.08)	0.00
Household size	6.63 (3.37)	6.69 (3.47)	6.62 (3.17)	4.76 (2.34)	7.39 (3.25)	0.00
Own child male proportion per household	0.29 (0.20)	0.29 (0.20)	0.30 (0.20)	0.27 (0.22)	0.35 (0.18)	0.00
Years of schooling of household head	5.40 (6.03)	5.05(5.78)	5.78 (6.40)	8.18 (5.94)	7.48 (7.03)	0.00
Gender of household head (male=1)	0.88 (0.32)	0.88 (0.32)	0.89 (0.32)	0.83 (0.38)	0.93 (0.26)	0.15
Age of the household head (years)	52.54 (14.98)	52.39 (15.28)	53.11 (14.19)	53.61 (16.60)	48.66 (13.46)	0.01
Household head is a widow (yes =1)	0.10 (0.31)	0.11 (0.31)	0.09 (0.29)	0.17 (0.38)	0.07 (0.26)	0.04
Nature of household (Monogamous =1)	0.63 (0.48)	0.62 (0.49)	0.65 (0.48)	0.66 (0.04)	0.60 (0.05)	0.12
Nature of household (Polygamous =1)	0.23 (0.42)	0.24 (0.43)	0.21 (0.41)	0.08 (0.27)	0.26 (0.44)	0.00
Household distance to nearest major road (km)	7.81(8.03)	8.12 (8.11)	7.16 (7.82)	5.40 (6.77)	9.32 (8.64)	0.00
Household distance to the nearest market (km)	68.24 (37.99)	67.06 (38.43)	69.72 (36.06)	77.05 (43.71)	73.61 (39.24)	0.00
Household distance to capital of state (km)	72.62 (50.09)	71.43 (48.90)	76.39 (53.62)	71.47 (49.30)	62.85 (37.13)	0.16
Wealth indicators (Quintile)						
Poorest	0.26 (0.44)	0.27 (0.44)	0.25 (0.43)	0.10 (0.31)	0.22 (0.42)	0.00
Poorer	0.26 (0.44)	0.24 (0.43)	0.29 (0.45)	0.28 (0.45)	0.17 (0.38)	0.01
Moderate	0.22 (0.41)	0.22 (0.41)	0.21 (0.41)	0.25 (0.44)	0.24 (0.43)	0.62
Wealthier	0.15 (0.36)	0.16 (0.37)	0.13 (0.34)	0.14 (0.35)	0.15 (0.36)	0.15
Wealthiest	0.11 (0.32)	0.10 (0.30)	0.12 (0.33)	0.22 (0.41)	0.22 (0.42)	0.00
Number of plots per households	2.47 (1.17)	2.39 (1.13)	2.62 (1.20)	2.42 (1.00)	2.98 (1.70)	0.00
Per capita land holding	0.09 (0.17)	0.09 (0.18)	0.08 (0.15)	0.17 (0.28)	0.11 (0.15)	0.00
Plot characteristics						
Farm size (Ha)	0.50 (0.83)	0.51 (0.82)	0.43 (0.88)	0.60 (0.91)	0.63 (0.51)	0.00
Plot distance to household (km)	1.51 (10.65)	1.48 (7.09)	1.60 (16.73)	1.71(4.99)	1.15 (2.76)	0.11
Plot clearly demarcated (yes=1)	0.64 (0.48)	0.65 (0.48)	0.63 (0.48)	0.64 (0.48)	0.56 (0.50)	0.21
Outright purchase (yes=1)	0.06 (0.23)	0.05 (0.22)	0.07 (0.25)	0.12 (0.33)	0.06 (0.24)	0.00
Plot location (North Central=1)	0.20 (0.40)	0.17 (0.38)	0.26 (0.44)	0.27 (0.48)	0.28 (0.45)	0.00
Plot location (North East=1)	0.25 (0.43)	0.27 (0.45)	0.19 (0.39)	0.16 (0.37)	0.47 (0.50)	0.00
Plot location (North West=1)	0.22 (0.41)	0.22 (0.42)	0.23 (0.42)	0.03 (0.17)	0.05 (0.22)	0.00

Plot location (South East=1)	0.22 (0.42)	0.23 (0.42)	0.22 (0.41)	0.27 (0.45)	0.07 (0.26)	0.00
Plot location (South South=1)	0.06 (0.23)	0.05 (0.23)	0.07 (0.25)	0.07 (0.25)	0.01 (0.10)	0.08
Plot location (South West=1)	0.05 (0.21)	0.04 (0.20)	0.04 (0.19)	0.20 (0.40)	0.12 (0.33)	0.00
Land-related dispute characteristics						
Likelihood cause of dispute						
Border (yes =1)	0.54 (0.50)	0.47 (0.50)	0.71 (0.45)	0.37 (0.48)	0.46 (0.50)	0.00
Nature of land use (yes=1)	0.06 (0.24)	0.09 (0.28)	0.02 (0.15)	0.01 (0.10)	0.02 (0.14)	0.00
Outsider squatting (yes =1)	0.06 (0.24)	0.07 (0.25)	0.04 (0.21)	0.08 (0.28)	0.01 (0.10)	0.01
Livestock grazing without permission (yes=1)	0.14 (0.35)	0.17 (0.38)	0.06 (0.24)	0.07 (0.25)	0.32 (0.47)	0.00
Encroachment by neighbor (yes =1)	0.12 (0.33)	0.12 (0.33)	0.09 (0.28)	0.41 (0.49)	0.11 (0.31)	0.00
Encroachment by private business (yes =1)	0.02 (0.14)	0.02 (0.14)	0.02 (0.14)	0.00 (0.00)	0.02 (0.14)	0.53
Previous owner/user returning (yes =1)	0.02 (0.14)	0.03 (0.17)	0.00 (0.00)	0.00 (0.00)	0.02 (0.14)	0.00
Government expropriation (yes =1)	0.03 (0.17)	0.02 (0.14)	0.05 (0.22)	0.06 (0.23)	0.01 (0.10)	0.00
Perceived land disputants						
Government (yes =1)	0.09 (0.29)	0.09 (0.29)	0.05 (0.22)	0.16 (0.37)	0.44 (0.50)	0.00
Family member (yes =1)	0.61 (0.49)	0.62 (0.49)	0.60 (0.49)	0.58 (0.50)	0.49 (0.50)	0.05
Clan/village chief (yes =1)	0.17 (0.36)	0.17 (0.37)	0.20 (0.40)	0.04 (0.19)	0.04 (0.20)	0.00
Same clan/group member (yes =1)	0.08 (0.27)	0.08 (0.27)	0.10 (0.30)	0.13 (0.34)	0.00 (0.00)	0.00
Outsider/migrant (yes =1)	0.03 (0.18)	0.03 (0.17)	0.04 (0.20)	0.06 (0.23)	0.02 (0.14)	0.15
Large landowner/private business (yes =1)	0.01 (0.10)	0.01 (0.10)	0.01 (0.08)	0.04 (0.19)	0.01 (0.10)	0.20

Source: Based on LSMS-ISA survey 2012/2013 data

Note: pathway 1 = Informal options only; pathway 2 = From informal to formal options; pathway 3 = From formal to informal options

Figures in parentheses are standard deviations

4.2. Distribution of plot-based tenure (in)security indicators

Indicators of perceived tenure (in)security as asked in the data are based on perception of occurrence of ownership dispute (**D**), perception of not losing plot if dispute occurs (**L**), and perception of receiving compensation if expropriation/loss occurs (**C**). From these, three relevant indicator combinations: **D + L**, **L + C**, and **D + L + C** were generated. The indicator **D** classified 59% of the plots as very secure, while each of the **L and** C **i**ndicators show that 65% and 67% of the plots is very secure, respectively (Table 2). Across combined indicators, the proportion of the plots perceived to be very secure reduced greatly for **D + L** indicator (41%), **L + C** indicator (11%), and **D + L + C** indicator (8%). Focusing on **D + L** tenure (in)security indicator used for further analysis, about 80% of the total plots are considered secure. This proportion decreases with **L + C** and **D + L + C** with 26.49% and 10.98%, respectively. These narratives are indications that overall, plots with highly or completely secured tenure are limited.

Table 2: Distribution of constituents and levels of perceived tenure (in)security

Level of perceived tenure (in)security	Constituents of perceived land tenure (in)security					
	D	**L**	**C**	**D + L**	**L + C**	**D + L + C**
Very secure	59.15	65.24	67.14	41.28	10.83	7.79
Moderately secure	9.41	17.05	15.02	38.92	15.66	9.16
Moderately insecure	10.99	8.04	4.47	9.87	19.11	49.28
Very insecure	20.45	9.67	13.37	9.92	54.40	33.77
Number of observations	**3,941**	**3,941**	**3,941**	**3,941**	**3,941**	**3,941**

Source: Based on LSMS-ISA survey 2012/2013 data

Note: Figures are percentages; D = Perception of occurrence of ownership dispute; L = Perception of not losing plot; C = Perception of receiving compensation if expropriation occurs.

4.3. Determinants of perceived tenure security: plot – level analysis

The degree of perceived tenure security is measured using the combined indicator of *perception of occurrence of ownership dispute and perception of not losing plot indicators* (**D + L**) on an ordinal scale (4 = very secure and 1 = very insecure), and the result of the ordered logit model is presented in Table 3.

Somehow surprising, the estimate for plot demarcation is negative and significant. It is likely that although the demarcations are seen to be clear, they might be fuzzy and of low quality. It is also likely that the perception of tenure security accounts for demarcations under customary land rights, which tend to reduce plot holder confidence. Polygamous and male-headed households are likely to be more tenure secure than monogamous and female households, supporting the assertion that these households have access to more economic resources and possess higher social standing than others (Hosaena and Lambrecht, 2017). The effect of age indicates that the older the plot holders the higher tenure security perception will be, indicating knowledge of plot history, particularly where non-market land transactions are dominant. Consistent with Matchaya (2009) and in line with human capital theories which emphasize the correlation between education and wealth, and rational decision-making, an increase in years of education of household head positively impacts on the perception of plots tenure security. The parameter estimates of economic wealth indicators (wealth status and number of plots owned) show that wealthy landholders are more likely to perceive their plots as secure as compared to those in the poorest group. This is rather expected since wealthy landholders have sufficient economic resources to claim, formalize and enforce land rights with adequate support from formal state institutions (Broegaard, 2005; Van Gelder, 2007). Divergent from Ma et al. (2015) finding, tenure security perception is likely to decrease with large household size. This reflects the influence of inheritance and use claims which increase dispute possibilities among the already land-scarce households.

Compared with North Central zone (reference zone), plots in Nigeria have higher likelihood of being tenure insecure, indicating higher levels of ownership dispute and plot loss risks. This could be attributed to the high population density and land fragmentation, particularly in the southern zones of Nigeria.

Table 3: Plot-level perceived tenure security ordered logit regression estimates (N=3,941)

Variable	Coef.	Robust Std. Err.
Outright purchase (yes =1)	0.029	0.120
Farm size (Ha)	0.004	0.048
Plot clearly demarcated (yes =1)	-0.192***	0.071
Plot distance to household (km)	0.002	0.002
Nature of household (polygamous =1)	0.187**	0.083
Household head is widow (yes =1)	0.704**	0.286
Age of household head (years)	0.008***	0.002
Gender of head (male =1)	0.728***	0.274
Years of schooling of household head (years)	0.010*	0.006
Own child male proportion per household	-0.286*	0.173
Household size	-0.026**	0.011
Number of plots per household	0.064**	0.028
Wealth status (Base=poorest)		
Poorer	-0.241***	0.081
Moderate	-0.146	0.093
Wealthier	0.202**	0.104
Wealthiest	0.258**	0.124
sector (Base=rural)	-0.172	0.120
Zone (Base = North Central)		
Plot location (North East =1)	-0.372***	0.096
Plot location (North West =1)	-0.188*	0.096
Plot location (South East =1)	-0.751***	0.106
Plot location (South South =1)	-0.136	0.161
Plot location (South West =1)	-0.989***	0.193
Threshold parameters		
1	-1.550	0.311
2	-0.729	0.311
3	1.098	0.312
Log-likelihood	-4570.39	
Chi2 (23)	230.41	
Prob> chi2	0.000	

Note: *Significant at 10%, **Significant at 5%, ***significant at 1%

4.4. Land disputes resolution pathways and determinants of resolution pathway preference

4.4.1. Land dispute resolution pathways

Tables 4a and 4b summarise the preferences for land-related dispute resolution. Six resolution institutions were indicated by the respondents (Table 4a) and are classified into two basic groups: formal and informal mediation options following literature classifications (Alinon, 2010). The courts where dispute resolutions are based on statutory principles are classified as formal option while the other institutions (village chiefs/clan heads, religious authorities, etc.) that would use the customary or local principles are grouped under informal option.

The distribution of preferred pathways (first and follow-up option) in Table 4a indicates the presence of legal pluralism (Mienzen-Dick and Pradhan, 2002) in which disputants use different dispute settlement fora that employ customary and statutory principles to resolve disputes. However, the disputants would want to exhaust every less expensive and mutually satisfying opportunity, as indicated by high preference for pathways beginning with informal options, before proceeding to access the court (litigation) option of dispute resolution considered to be expensive and more adversarial. The dominance of the preference for informal-based pathways reflects not only the features of the informal institutions but also the dominant non-market land acquisition processes in Nigeria. Overall, single pathways (informal – informal and formal – formal) and mixed pathways (informal – formal and formal – informal) are preferred on about 69% and 31% of the plots, respectively.

Table 4a: Plot-level preference for dispute resolution pathways

Pathways	Frequency	Percentage
Informal ⟶ informal	2, 620	66.48
Informal ⟶ formal	1, 115	28.29
Formal ⟶ informal	106	2.69
Formal ⟶ formal	100	2.54
Total	**3, 941**	**100.00**

Source: Authors' calculations from 2012/2013 LSMS-ISA Data.

Table 4b: Plot-level land-related dispute resolution options

Resolution options	Preference options			
	First		Second	
Informal option	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Village chiefs/clan heads	3, 371	85.54	1, 003	25.45
Religious authorities	139	3.53	435	11.04
Local administrators/political authorities	124	3.15	574	14.56
Village/peasant organizations	81	2.06	672	17.05
Others (e.g. Local NGO)	30	0.51	42	1.07
Formal Option				
Courts	206	5.23	1, 215	30.83
Total observations	**3, 941**	**100.00**	**3, 941**	**100.00**

Source: Authors' calculations from 2012/2013 LSMS – ISA Data

4.4.2. Determinants of land dispute resolution preference of landholders

Table 5 presents the plot-level average marginal effects of explanatory variables on the land dispute resolution pathway preferences. The differential wealth status of the households has relatively complex effects on landholders' choice of dispute resolution pathway. Compared with the poorest category, wealthy households are more likely to take either the formal – informal or formal – formal pathway (j = 4) to resolve land-related disputes, whereas poorer and moderately wealthy households tend to prefer the formal – informal (j = 3) pathway. It is evident, therefore, that approaching a formal institution as a first step to resolving land disputes will increase with adequate economic resources among landholders. However, possible out-of-court settlement could be sought when the first step does not yield the desired resolution outcome. These observations tend to be in line with Shestowsky (2007).

Disputes on plots in a polygamous household have significantly high probability of being resolved via the informal – informal (j = 1) pathway. Polygamous households would have more social networks especially family lineage than for instance monogamous ones, and, therefore, might prefer to use them to save cost, strengthen ties, and permanently resolve disputes related to land. The proportion of male children in the household has a significantly positive effect on the use of formal –formal pathway (j = 4), indicating that customary principles of informal institutions could be having negative consequences on the authority to resolve land-related disputes. The customary inheritance system in most parts of Nigeria confers more advantage to male elder child/children. Informal institutions are more likely to recognize these provisions which do not appeal to other male children in a land-scarce household. Years of education of the household head tend to encourage the preference for mixed than single pathways, being positively significant for informal – formal (j =2) and formal – informal pathways. This could be an indication of legal capital among landholders which aids their knowledge of both customary and state laws, and consequently, resolution preferences. The choice of formal options either as a first or follow-up option is similar to the study by Lugo and Searing (2014) which argues that education teaches people how the state justice system works, and to prefer it over traditional means, or those with high levels of education become personally connected to elites in the state justice system via their networks.

The age of household head has a significantly negative effect on the preference for informal – informal (j = 1) pathway, whereas it is significantly positive for the probability of informal – formal pathway. Hence, younger people are more likely to prefer the informal – informal pathway (j = 1) as compared to older plot holders, who have higher probability to prefer the informal – formal pathway (j = 2). Since the major probable causes of land disputes are border, unauthorized livestock grazing and encroachment-related issues, with family members and clan/village chiefs as perceived major disputants, the young plot holders would consider institutions with family interconnectivity and in-depth local knowledge of the plots for effective resolution. This is provided by the informal – informal pathway. Though the older plot holders would seek resolution first via the informal options, their experiences could have shown that some of the assumptions of the younger ones do not necessarily hold. Hence, the preference for formal option if this first option fails.

The closer the plot holder to the administrative seat of government, usually the state capital, the higher the probability to prefer formal – informal pathway and the lower the preference for formal – formal pathway. Administrative seats of government, usually cosmopolitan have tendency for weak and poorly functioning traditional institutions that do not foster social networks but formal litigation institutions tend

to be readily available and accessible. These would encourage patronage of formal institutions and informal ones as last resort.

The sign of the estimate of distance of household to the nearest major road influences positively and in a significant way landholders' preference for single (informal – informal and formal – formal) resolution pathways but tends to discourage the choice of mixed pathways. However, the preference for informal – informal single pathway is higher; an indication that the further away the household is to major roads, the higher the probability that informal resolution pathways (j = 1) would be. This is rather expected following that these households would be in remote areas with high degree of local social cohesion but with limited information and access to formal institutions. Again, the consideration for cost of resolution (transportation cost, for instance) could be paramount among the disputants.

The preference for formal – informal pathway would likely increase by 0.7% points with a percentage increase in plot size. Ownership of large plots is usually a mark of wealth and societal influence which can be advantageous in the pursuit of land dispute resolution through the formal processes. Although this observation deviates from the observation of Yamano and Deigniger (2005) that informal institutions are the first conflict resolution options, it agrees with their conclusion that the choice of formal institution for land dispute resolution is dependent on complainant's resources, usually financial resources. Further, if plots are acquired through outright purchase decreases the probability for informal – informal (j = 1) preference, but increases the preference for informal – formal (j = 2) and formal – informal (j = 3) pathways. The preference is, however, higher for informal – formal pathway by 6.6% as compared to 2.7% for the formal – informal pathway. Though informal dispute resolution processes, especially in the rural areas, provide less protection to purchased parcels compared to formal option (Ghebru et al., 2014), their use at any point of land dispute resolution shows they still play a significant mediation role.

Among the factors that are perceived to cause land dispute, border-related dispute increases significantly the preference for mixed (informal – formal) and decreases the probability for the preference for single (informal – informal and formal – formal) resolution pathways, while the return of previous owner/user significantly increases the preference for single (informal – informal and formal – formal) pathways. The probable incidence of Illegal/improper uses of land, outsider squatting, or encroachment by neighbor significantly decreases the preference for formal – formal pathway. The incidence of expropriation significantly increases the probability preference for mixed (informal – formal) pathway but decreases single (informal – informal) pathway preference. When compared with the reference zone (North Central), the informal – informal (j = 1) pathway would be most preferred to resolve disputes on plots located in all zones except the Southwest zone where formal – informal pathway is preferred.

Table 5: Marginal effects

Variables	Dispute resolution pathway preference			
	Informal – informal (*j = 1*)	Informal – formal (*j = 2*)	Formal – informal (*j = 3*)	Formal – formal (*j = 4*)
Landholder characteristics				
Wealth category (Base=Poorest)				
Poorer	-0.034*	0.028	0.014**	-0.007
	(0.020)	(0.020)	(0.007)	(0.006)
Moderate	-0.011	-0.010	0.015**	0.005
	(0.022)	(0.021)	(0.007)	(0.008)
Wealthier	0.025	-0.039*	0.008	0.007
	(0.026)	(0.024)	(0.007)	(0.010)
Wealthiest	0.010	-0.003	0.017*	0.034**
	(0.032)	(0.029)	(0.009)	(0.014)
Household head is widow (yes =1)	-0.006	-0.035	0.012	0.018
	(0.027)	(0.026)	(0.008)	(0.012)
Nature of household (polygamous =1)	0.040**	-0.007	-0.022**	-0.011*
	(0.020)	(0.019)	(0.010)	(0.006)
Own child male proportion per household	0.003	0.003	-0.004**	0.004***
	(0.004)	(0.004)	(0.002)	(0.001)
Years of schooling of household head (years)	-0.004***	0.002*	0.002***	0.0004
	(0.001)	(0.001)	(0.000)	(0.0005)
Age of household head (years)	-0.001*	0.001**	0.000	-0.0002
	(0.0005)	(0.0005)	(0.000)	(0.0002)
Log of household distance to the capital of the state (km)	-0.003	-0.004	0.012**	-0.012***
	(0.013)	(0.013)	(0.005)	(0.004)
Log of household distance to the nearest major road (km)	0.014***	-0.012***	-0.004***	0.003*
	(0.004)	(0.004)	(0.001)	(0.002)
Log of household distance to the nearest market (km)	0.003	-0.008	0.004	0.001
	(0.011)	(0.011)	(0.005)	(0.003)

Plot characteristics				
Farm size (Ha)	0.012	-0.017	0.007***	-0.002
	(0.012)	(0.013)	(0.002)	(0.002)
Outright purchase (yes =1)	-0.091***	0.066**	0.027***	-0.002
	(0.031)	(0.029)	(0.010)	(0.012)
Border dispute (yes = 1)	-0.200**	0.259**	-0.027	-0.031**
	(0.097)	(0.099)	(0.026)	(0.015)
Illegal/improper use uses of land (yes = 1)	0.156	-0.048	-0.048	-0.059**
	(0.106)	(0.108)	(0.035)	(0.024)
Outsider squatting (yes = 1)	-0.023	-0.110	-0.010	-0.077***
	(0.103)	(0.105)	(0.027)	(0.029)
Livestock grazing without permission (yes = 1)	0.065	-0.019	-0.030	-0.016
	(0.100)	(0.103)	(0.028)	(0.016)
Encroachment by neighbor (yes =1)	0.097	0.116	-0.012	-0.031*
	(0.099)	(0.102)	(0.025)	(0.017)
Encroachment by private business (yes =1)	0.116	0.287***	-0.392***	-0.021
	(0.111)	(0.110)	(0.044)	(0.024)
Previous owner/user returning (yes = 1)	3.060***	-2.859***	-0.281***	0.079***
	(0.115)	(0.117)	(0.039)	(0.024)
Government expropriation (yes = 1)	-0.295***	0.315***	-0.017	-0.037
	(0.105)	(0.105)	(0.029)	(0.029)
Plot locations				
Sector (Base=Rural)	0.024	-0.028	0.004	-0.000
	(0.027)	(0.026)	(0.009)	(0.010)
Zone (Base=North Central)				
Plot location (North East =1)	0.117***	-0.130***	-0.007	0.020*
	(0.024)	(0.022)	(0.009)	(0.013)
Plot location (North West =1)	0.113***	-0.051**	-0.026***	-0.036***
	(0.025)	(0.025)	(0.007)	(0.011)
Plot location (South East =1)	0.168***	-0.131***	0.002	-0.039***
	(0.029)	(0.029)	(0.010)	(0.010)

Plot location (South South =1)	0.140***	-0.086**	-0.014	-0.041***
	(0.035)	(0.034)	(0.010)	(0.010)
Plot location (South West =1)	0.091	-0.145***	0.035**	0.018
	(0.040)	(0.035)	(0.018)	(0.021)
Dependent variable	Dispute resolution pathway preferences			
Number of observations	3, 941			
Log-likelihood	-2849.21			
Wald Chi2 (66)	25467.22			
Significance level	0.000			
Pseudo R^2	0.117			

Notes: Robust standard errors in parentheses

, **, and * indicates significant at 10%, 5% and 1% level, respectively.*

5.. Conclusions and Tentative Policy Recommendations

Both perceived land tenure security and dispute resolution preferences of landholders in Nigeria were examined in this study using a nationally representative 2012/2013 World Bank LSMS-ISA dataset. The results show that the level of perceived tenure security of plots vary across the different indicators with decreasing tendencies with indicator combinations. The perception level of tenure security is significantly influenced by households' socio-demographic and plot variables. Similarly, the dispute resolution preference model estimates reveal marked differences along households' socio-demographic and plot characteristics. The study identifies informal institutions as key players in the administration of land justice in Nigeria, though the existence of resolution option mix shows that there are tendencies of disputants using different dispute settlement fora that employ customary and statutory principles to resolve disputes. The informal institutions therefore need to be reformed and mainstreamed into the land reform processes to significantly reduce litigation and perhaps, increase social cohesion and improve development. This is in addition to the identified factors which tend to play significant roles in shaping plot holders' preferences.

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