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# Estimating the premium for titled agricultural land in Uganda

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## Abstract

**This study investigates the value for titled agricultural land in Uganda using data on 9,185 parcels of land from the 2005/2006 Uganda National Household Survey. Data were analysed using regression techniques. The results showed that land titles had a positive influence on agricultural land prices although the premium was significant for leasehold title as opposed to other forms of title; that except for current agricultural use, traditional determinants of land value such as soil quality, presence of perennials and proximity to the homestead are not significant for agricultural land in Uganda; and that per acre price of agricultural land in peri-urban locations was significantly higher than in rural areas by about 87%. The overlap in land ownership rights for mailo land where two people have claims to the same piece of land, the *mailo* title holder and the *kibanja* tenant, placing constraints on its transfer was not reflected in its perceived market price. It was concluded that the current land policy should promote the leasehold system in upcoming cities and peri-urban areas, since this type of tenure opens land to a wide range of users and use-options. The land policy also needs to address the double ownership structure under the mailo tenure which constrains its transferability to make the positive effects of having such titles more significant in the land market.**

**Key words:** Land tenure, premium, Uganda, regression analysis, *mailo* land

## Introduction

Land is an important consumption good, a popular vehicle for wealth holding, and highly acceptable collateral for securing loans (Randall, 1987). The value of land is a measure of wealth in the agricultural sectorand is considereda major determinant of net worth. Therefore, a shift in land value affects a farmer's net worth and credit-worthiness. An accurate assessment of the value of agricultural land is essential because many individuals and institutions rely on the estimates to guide investment, tax, and other decisions. Also, viable agricultural land is finite and heterogeneous, making pricing competitive andinvolving many potential buyers other than agricultural producers. Land is also one of the primary sources of property tax revenues which makes both private and public parties interested in its value (Tsoodle *et al.*, 2003).

Land has enormous socio-economic significance as a key productive asset and source of livelihood in Uganda (Deininger *et al.*, 2006). The Government of Uganda (GoU) has widely recognised the centrality of land in sustainable development, and tenure security is now increasingly stressed as a prerequisite for better natural resource

management and sustainable development (NDA, 2010). The management and control of land is regulated by the Land Act of 1998 which recognises four tenure systems, namely; *Customary, Mailo, Freehold* and *Leasehold* tenure systems.The Act recognises different titles to land, namely; certificate of title for land owned in freehold, leasehold and *mailo*; certificate of occupancy for bonafide occupants on *mailo* land; and customary certificates for customary land owners.

*Customary* land tenure system is governed by unwritten traditional rules and administered by traditional leaders. Active occupation or usage of a piece of land is the main evidence of ownership or an existing interest on the land and land is not alienable from the community trust (Tukahirwa, 2002). Most of the land in Uganda is still held on customary rights and is usually subject to restrictions such as transfer outside the family and clan (NDA, 2010). A customary tenant can be issued a customary certificate of ownership to recognise and guarantee his/her interest in the land, and the Land Act permits holders of land in customary tenure to convert it to freehold, with or without the certificate of customary ownership.

*Mailo land tenure*, largely found in Buganda, is a feudal system of land ownership originating from an agreement between the King of Buganda and the British colonial government in 1900. The Land Act provides for tenants on *mailo* land to obtain a certificate of occupancy from a registered *mailo* owner which recognises and protects their interest in the land. The tenant's rights are also guaranteed by the 1995 constitution which recognizes a bonafide tenant as anyone who has occupied a piece of land for twelve or more years without having been evicted by the land owner. Today, *mailo* land tenure is treated more or less as freehold land tenure (MLHUD, 2011).

*Freehold land tenure* is where registered land is held in perpetuity subject to statutory and common law qualifications. The grantee of land in freehold is entitled to a certificate of title which offers exclusive rights to the owner, and hence guarantees land tenure security. The tenure system derives its legality from the constitution and is the prescribed system for registered interests outside *mailo* land (Bashaasha *et al.*, 2008).

*Leasehold land tenure* is a system of owning land on contract and the grantee of a lease for a period of 3 years or more is entitled to a certificate of title. A grant of land is made by an owner of freehold or *mailo* or by the government to another person for a specified period of time and on certain conditions, including payment of rent. MLHUD (2011) report that, since independence, leaseholds have been granted from public land vested in the government by the Uganda Land Commision, until the promulgation of the 1995 constitution when the role was taken over by District Land Boards.

Amidst several debates, the GoU has recently passed a National Land Policy in order to clarify tenure rights to guarantee land access and tenure security. The policy recognises unregistered customary tenure as being equal to other tenure systems and provides for the establishment of a customary land registry to grant titles to customary land owners. Additionally, it aims to disentangle the multiple, overlapping and conflicting interests and rights on mailo tenure (MLHUD, 2011). The policy was formulated in response to previous unsuccessful attempts by the 1995 constitution and the Land Act 1998 to formalise customary tenure and to resolve the overlapping rights structure under mailo tenure.

The attempts to enhance tenure securitythrough formalisation provided for land owners under customary tenure to obtain customary certificates, and for tenants on *mailo* land to obtain certificates of occupancy. However, these certificates have not been widely adopted largely because they are inadmissible as collateral by financial institutions (Bashaasha, 2011).

It is not clear whether land titles are important factors influencing land prices in Uganda or whether there is a premium for having a land title, and if so whether different

forms of title attract different premiums. The case of overlapping land ownership rights for mailo land where two people have claims to the same piece of land – the *mailo* title holder and the *kibanja* tenant – is unique to Uganda. *The rights of the tenant can almost be equated to those of the landowner and land sales cannot be made without the consent of the two parties. Land markets especially in central Uganda are affected by this impasse created on land use and transfer*. This renders the country a good case to analyse how institutional factors such as land titles manifest themselves in a sub-Saharan African context with a unique set of land tenure systems and use rights.

Tenure is characterised by a multiplicity of influences: legal; socio-cultural; ecological/ climatic; socio-economic; the formal, semi-formal and informal institutional arrangements. Theoretically, the value of land is determined by its production possibilities, which are negatively related to spatial factors such as location and is positively related to productivity factors such as the inherent soil quality, water availability and land-specific investments (Alston *et al.*, 1996). Generally, land prices are driven by a host of demand, supply and institutional factors, which include competing uses for land, agricultural productivity, hedging against inflation or amenity values (William *et al.*, 2000). Supply factors play a role by determining the quantity of land put up for sale and demand factors include population density, agricultural productivity and the nature of property rights to the land. However, the existence of informal modes of property rights enforcement can also modify the value of a formal title.

Many studies relating to land tenure and land rights formalisation have mostly been undertaken in developed countries and in Asia with different land tenure and ownership systems. For instance, Elad *et al.* (1994) and Vitaliano and Hill (1994) treated land as a differentiated factor of production and they identified implicit prices of constituent characteristics using the Hedonic method of Rosen (1974). In their study, land values were the observed prices for traded parcels and explanatory variables included characteristics such as size, buyer and seller characteristics. Terry *et al.* (1982) showed that bordering roads, year sold, soil capability class, grain yield and percent cropland had the greatest influence on sale price. Reinsborough (2003) included socio-economic variables such as income per capita, and population density as explanatory variables. The socio-economic variables were meant to reflect the potential of the land for alternate uses.

Similar studies in Uganda include; Deininger and Mpuga (2003) who tested for differences in the performance of rental compared to sales markets. They found that land markets were very active and that efficient producers who are poor and landless could better access land through rental markets compared to sales markets. While Baland *et al.* (2007) on land-market transactions in central Uganda report that these markets tend to mitigate initial inequality in land endowments in favour of farmers with smaller endowments of inherited land.

Deininger *et al.* (2006), on the other hand, examined the impact of households' knowledge of the provisions of the 1998 Land Act on investment, productivity, andself-assessed land values. Their results showed that households' awareness of their land rights as a proxy for tenure security had a large potential impact on land values. Additionally, parcel size, location, quality, slope gradient, number of trees, access to electricity, transfer rights and education level of the parcel owner were important land value determinants.

Bashaasha *et al.* (2008) on tenure system and the value of agricultural land found that farm size, rent and freehold land tenure were the key determinants of agricultural land values in rural Uganda. It is noteworthy that none of these studies investigated the impact of institutional variables such as land titleson land prices. The present study contributes to this literature by analysing important dimensions (largely locational; rural/peri-urban and regional) not examined by

Bashaasha *et al*. (2008) on tenure system and quantifies the effect of different titles on agricultural land prices in Uganda.

The research hypotheses are: (i) institutional factors such as land titles are important determinants of agricultural land prices in Uganda; (ii) the premium for agricultural land with a freehold title is significantly higher than that for other titles.

## Methodology

### *Data and sources*

Data were obtained from the Agricultural Module of the 2005/2006 Uganda National Household Survey (UNHS III) which was conducted by the Uganda Bureau of Statistics (UBOS). The Bureau covered a total of 7,417 households, of which 5,877 were agricultural households across all the districts, in the Central, Eastern, Northern and Western regions of Uganda. The cross-sectional data were obtained from a wide range of social, economic, cultural, physical and geographical conditions across the different regions.

Data were collected at household and land parcel levels for two seasons beginning with the second season of 2004 (July – December 2004) and the first season of 2005 (January – June 2005). For each household, parcel level data were obtained for every parcel of land owned by the household resulting in a total of 9,230 parcel level observations. Data were collected on how much a parcel of land sells (with investments), and on the soil type or quality of parcels. Owner perceptions of the quality and worth of land, rather than net revenue or actual sale values were used as a proxy variable for the current market price of agricultural land.

Although early studies in developed countries also used such data to explore the value of agricultural land, there are issues related to whether perceptions provide an accurate measure of market value. Farmers' suspicion about the interviewers' motives may have caused them to withhold or deliberately distort their responses. Some farmers may have overestimated or underestimated their land values; therefore, some caution is warranted in the interpretationof the results. However, they are not necessarily a cause for concern as the study uses a large data set and econometrics handles them well. While there is no way of confirming the validity of the data, the study noted that Roka and Palmquist (1997) found some evidence that self-reported agricultural land values closely approximate market data.

### *Model specification and analysis*

The theory of land rents is well articulated by the Ricardian and Thünen approaches. Ricardo (1815) was the first to observe that land rents reflect the net value of farmland. Ricardo's approach attempts to explain land rents and land use patterns as resulting from differential land productivity. Farm value consequently reflects the present value of future net productivity. Von Thünen (1826) on the other hand emphasizes land rents based on the organising principle of distance from some crucial location, a central market, in his particular case. Locational rent, a term used by Von Thünen in his argument, is to be understood as the equivalent to land value.

The present study draws on the Ricardian theoretical model of land rents to guide the selection of proxy measures for the value of agricultural land. The study uses the Ricardian approach to estimate the importance of land titles and other variables in determining farmland value. According to Ricardo (1815), land values are the expected present value of future rents. The value of agricultural land (Y) consequently reflects the present value of future net productivity. This principle is captured in equations 1 and 2 as follows:

$$Y = \int_0^{\infty} Ae^{-rt}dt \quad \text{.....(1)}$$

$$Y = \left[\sum P_i Q_i(W, X, F, Z) - \sum RX\right] e^{-rt}dt \quad \text{.....(2)}$$

Where A is the net revenue per hectare, $P_i$ is the market price of crop i, $Q_i$ is the output of crop i, W is water availability, X is a vector of purchased inputs other than land, F is a vector of land tenure and institutional

variables including land titling, Z is a vector of soil variables that capture the physical characteristics of the land such as the soil quality. R is a vector of purchased input prices, t is time, and r is the discount rate (Mendelsohn *et al.*, 1994).

Equation 1 states that the value of agricultural land equals the summation of discounted agricultural rents. Agricultural rents, A, are the annual net returns to crop, forage, and other farm-related activities on a parcel of land. The farmer is assumed to choose X to maximise net revenues given the characteristics of the farm and market prices. Equation 2 is a reduced form model that examines how a set of exogenous variables such as land tenure, land titling and others affect agricultural land value, and it gives the reduced-form expression for the price of agricultural land presented in equation 3.

$$Y = b_0 + b_1W + b_2F + b_3Z + e \quad \text{..... (3)}$$

Equation 3 is the basis for the econometric model that was estimated in this study with all variables as earlier defined and e as the error term. Based on land value theory and results from previous studies on agricultural land values (for example Alston *et al.,* 1996; William *et al.,* 2000; Deininger *et al.,* 2006; Bashaasha *et al.,* 2008), the selected explanatory variables ($x_1$ to $x_{11}$) included in the empirical model are specified in equation 4.

$$y = \alpha + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + \beta_6x_6 + \beta_7x_7 + \beta_8x_8 + \beta_9x_9 + \beta_{10}x_{10} + \beta_{11}x_{11} \quad \text{..... (4)}$$

Where;

y = Log Land value (log transformed price of agricultural land in Uganda Shillings per acre);

$x_1$ = Dummy variable for Eastern region (1 = Eastern, 0 = otherwise);

$x_2$ = Dummy variable for Northern region (1 = Northern, 0 = otherwise);

$x_3$ = Dummy variable for Western region (1 = Western, 0 = otherwise);

$x_4$ = Dummy variable for location of parcel (1 = peri-urban, 0 = rural);

$x_5$ = Dummy variable for freehold title (1 = parcel with freehold title and 0 = otherwise);

$x_6$ = Dummy variable for leaseholdtitle (1 = parcel with leasehold title and 0 = otherwise);

$x_7$ = Dummy variable for mailo title (1 = parcel with mailo title and 0 = otherwise);

$x_8$ = Distance of parcel from homestead (km)

$x_9$ = Dummy variable for primary use of parcel during first and second cropping seasons of 2004/05 crop year (1 = parcel is primarily used for own crops/livestock production, 0 = otherwise);

$x_{10}$ = Dummy variable for whether parcel has tree plantation/perennials (1 = yes, 0 = no);

$x_{11}$ = Dummy variable for soil / quality of the parcel of land (1 = good, 0 = otherwise)

$\alpha$ = intercept; and

$\beta_1$ to $\beta_{11}$ = coefficients estimated.

Multiple Linear Regression techniques using STATA version 9 were used to estimate the land price equation to investigate the determinants of agricultural land values in Uganda. The model specified in equation 4 was estimated by the Ordinary Least Squares (OLS) method and the natural logarithm of per-acre value of an agricultural parcel of land in Uganda Shillings was used as the dependent variable. OLS was preferred for the analysis because it is one of the most commonly used methods in estimating econometric relationships and it gives fairly satisfactory results about a wide range of relationships (Koutsoyiannis, 1977) and no endogenous variables are included in the model.

Autocorrelation was assumed not to arise in a cross-sectional study and normality of the error term was assumed.The model was tested for multicollinearity using the Variance Inflation Factor (VIF) test. All values of VIF for the explanatory variables were less than 3 and the mean VIF was 1.3, indicating absence of multicollinearity. The differences in

agricultural land values across the four regions of Uganda were investigated by including three regional dummy variables in the regression model. This was done to avoid a dummy variable trap or perfect multi-collinearity (Gujarati, 2006). The central region was used as the base/reference category. Also differences in premiums for different land titles (freehold, leasehold and mailo) were investigated by including three title dummy variables in the regression model to avoid a dummy variable trap or perfect multi-collinearity (Gujarati, 2006). The unregistered customary parcels were treated as the reference category.

## Results and discussion

The descriptive statistics (Table 1) show that customary ownership of land was the most prevalent system of land ownership. This was followed by mailo, freehold and lastly leasehold ownership systems. Customary tenure was generally prevalent across all regions with the exception of the central region where mailo tenure was more dominant. *Mailo* tenure was non-existent in the northern region, and other forms of tenure such as freehold and leasehold seemed less prevalent across all regions. Only 5.3% of agricultural parcels in the pooled sample collected by

**Table 1. Descriptive characteristics**

| Categorical variables | National | Central | Eastern | Northern | Western |
|---|---|---|---|---|---|
| % parcels under freehold tenure | 4.5 | 1.8 | 4.2 | 1.2 | 8.6 |
| % parcels under leasehold tenure | 1.3 | 3.5 | 0.6 | 0.6 | 1.4 |
| % parcels under mailotenure | 14.8 | 87.0 | 0.5 | 0.0 | 0.8 |
| % parcels under customary tenure | 79.4 | 5.0 | 94.6 | 98.2 | 89.2 |
| % parcels with titles/certificates | 5.4 | 5.1 | 5.6 | 6.3 | 4.7 |
| % parcels located in rural areas | 90.1 | 94.2 | 93.2 | 85.8 | 88.1 |
| % parcels with trees/perennials | 58.8 | 62.4 | 57.6 | 59.0 | 57.9 |
| % parcels under crops/livestock | 88.7 | 94.7 | 92.5 | 73.5 | 93.3 |
| % parcels with good quality | 89.8 | 90.9 | 88.3 | 90.3 | 90.4 |
| Total number of parcels | 9,230 | 1,497 | 2,766 | 2,129 | 2,838 |
| **Continuous variables:** | **National** | **Central** | **Eastern** | **Northern** | **Western** |
| Mean distance of parcel from homestead (km) | 1.6 | 1.4 | 1.6 | 1.6 | 1.7 |
| ***Mean Land values by region:** | | | | | |
| Farmer reported land values (Million Ug. Shs. Per acre) | 1.9 (9.7) | 2.8(17.1) | 1.7(8.6) | 1.1(4.2) | 2.5(8.3) |
| ***Mean Land values by tenure:** | **Freehold** | **Leasehold** | **Mailo** | **Customary** | |
| Farmer reported land values (Million Ug. Shs. Per acre) | 3.5(12.0) | 7.3(38.7) | 2.9(18.1) | 1.6(5.2) | |

*Standard deviations for land values are in parenthesis. Where Ug.Shs. denotes Uganda Shillings

Source: Own calculations from 2005/06 Uganda National Household Survey (UNHS) III

UBOS had any formal documentation such as formal certificate of title, customary certificate or certificate of occupancy as proof of registration and ownership of land. This indicates the small percentage of farmland that is actually registered nationally. This can be attributed to the slow and costly land registration process which prevents most agricultural land owners from acquiring titles/ certificates unless the expected benefits are unusually large. The situation is similar to many African countries where formal land registration and titling has never been undertaken at a large scale by the government, other than putting the machinery in place for farmers to register their parcels at their cost (Place and Otsuka, 2002).

Nationally, the majority of agricultural parcels surveyed by UBOS were located in the rural areas (90%), and 58.8% of them had tree plantations and/ or perennials. On average more tree plantations and/or perennials were found on agricultural parcels in the central region compared to the other regions. This was attributed to the mailo tenure system which is dominant in the central region where tenants tend to invest on the land by planting trees or perennial crops to enhance their land rights and reduce the possibility of eviction by landlords. There is a tendency of mailo land to be planted to perennial rather than annual crops (Pender *et al.*, 2003). And tree planting is generally perceived to strengthen land rights and ownership, and to raise land values (Place and Otsuka, 2002).

Over 80% of agricultural parcels were used for own crops/livestock production during the two cropping seasons in 2004/2005 crop year. This reaffirms that agriculture is the major economic activity in the rural and peri-urban areas of Uganda (NDA, 2010). Agricultural land owners surveyed nationally by UBOS generally reported having good quality soils (85%) and this was consistent across all the regions. Generally mean distance from parcels to homesteads averaged about 1.6km nationally.

Mean land valuesacross the regions ranged between Uganda Shillings 1.1 and 2.8 million per acre. Mean land values were highest in the central region, followed by the western and eastern, and were lowest in the northern region. A description of land values by tenuresystem shows that reported land values were highest for leasehold parcels, followed by freehold, *mailo* and lastly customary parcels. This finding is probably because the majority of leasehold parcels are located in the central region (Table 1) hence the higher land prices are probably linked to the influence of Kampala capital city.

Regression results in Table 2 show that the dummy variables for northern and western regions were both highly significant ($p \leq 0.01$), while the dummy for the eastern region was not significant. A change in location from the central to northern region would significantly lower themean per acre price of agricultural land by almost 80%. While a change in location from the central tothe western region would significantly increase the mean per acre price of agricultural land by about 18%.

These results are consistent with findings of Deininger and Ayalew (2007) that self-assessed land values were lowest in the northern region when compared to the other regions. Deininger and Mpuga (2003) also found that per acre land prices were highest in central and western Uganda, as compared to northern and eastern Uganda between 1992 and 1999. Their study found that self-reported land values were about 3 times annual profits in the north, about 12 times annual profits in the east, and were more than 20 times the annual profits in the central and the western region.

The significant differences in agricultural land prices between the central and western regionsare probably related to urbanisation and demographic factors that serve to bid up the land prices. The central region is more urbanised because of the capital city Kampala and agricultural land owners have better access to market information to access land through the purchase market unlike those in other regions. According to the Uganda Human Development Report (2007), the central region had more than half of the urban

**Table 2. Regression results of the determinants of the Value of Agricultural Land in Uganda**

| Log land value per acre | Coefficients | Std. Error | t-value | p-value |
|---|---|---|---|---|
| Parcel in Eastern region (1=Eastern, 0=Otherwise) | (0.019) | 0.040 | (0.480) | 0.631 |
| Parcel in Northern region (1=Northern, 0= Otherwise) | (0.795) | 0.043 | (18.600) | 0.000 |
| Parcel in Western region (1=Western, 0= Otherwise) | 0.175 | 0.040 | 4.420 | 0.000 |
| Location (1=peri-urban, 0=rural) | 0.868 | 0.042 | 20.450 | 0.000 |
| Parcel has freehold title (1=freehold title, 0= Otherwise) | 0.277 | 0.261 | 1.060 | 0.289 |
| Parcel has leasehold title (1=leasehold title, 0= Otherwise) | 2.099 | 0.706 | 2.970 | 0.003 |
| Parcel has mailo title (1=mailo title, 0= Otherwise) | 0.021 | 0.174 | 0.120 | 0.902 |
| Soil quality (1=good, 0=otherwise) | (0.030) | 0.042 | (0.720) | 0.473 |
| Parcel has trees/perennials (1=yes, 0=no) | 0.002 | 0.026 | 0.070 | 0.942 |
| Primary use of parcel (1= own crops/livestock production, 0= otherwise) | 0.184 | 0.042 | 4.430 | 0.000 |
| Distance of parcel from homestead | (0.003) | 0.002 | (1.170) | 0.241 |
| Intercept | (0.019) | 0.040 | (0.480) | 0.631 |

N = 9,185 Adjusted $R^2$ = 0.122 F( 11, 9173) = 117.49

population in Uganda (56.6%), followed by the northern and western (14.5%), and lastly the eastern (14.2%) region. In the western region, however, high population density and a high prevalence of internally displaced people have led to land scarcity especially in the highland areas. The western highlands which occupy around 25 percent of the Uganda's land area contain 40 percent of the country's population (MWLE, 2003). Most of the internal population movements in the western region have been mainly in search of land from districts where there is extreme land shortageto districts where land is relatively abundant (Uganda Human Development Report, 2007).

However, the significant price differences for agricultural land between the central and the northern region can mainly be attributed to past armed conflict in the latter region. The rebel activity in the northern region over the past few decades led to instability both in land market transactions as well as a reduction in agricultural production in the region as noted by NDA (2010). A vast amount of farmland in the region has been left uncultivated for nearly two decades because insecurity (IFPRI, 2008).

In addition, the dominance of customary tenure in the northern region(over 90%) as shown in Table 1, may also have contributed to the lower agricultural land values in these two regionscompared to the central by probably hindering the development of land markets. This is because a land sale is quite complicated for owners of customary land because they need the family and clan approval.

According to Pender *et al*. (2003), although owners of customary land generally have secure rights to use, lease and bequeath land, the sales are subject to approval of clan leaders and family members. More generally, a piece of land could be sold but only with the explicit approval of the village elders (or the lineage heads) who ensure that no member of the local community (the lineage) wants to acquire the land before authorising the sale (Platteau, 2005). While *mailo* land which is dominant in the central region is comparatively easier to sell because *mailo* tenants only need approval of the actual land owners (*mailo* title holders) to sell the land. According to Baland *et al*. (2007), the possibility of *mailo* tenants selling their occupancy rights is subject to very limited rights of refusal by the landlord. These results also support findings of other studies (Deininger and Mpuga, 2003; Deininger and Ayalew, 2007) that land values were higher in Central Uganda compared to the other regions. Baland *et al.* (2007), in a study on land markets in Uganda concluded that land-sale markets in the central region have been active for a long time, since the average date of acquisition of purchased parcels was 1975 (more than 20 years before the time of their survey). Moreover, according to this study, farmers tended to purchase land at an early age, as the mean age of the buyer at the time of acquisition was only 27 years.

Results further showed that location of agricultural land in the peri-urban area as opposed to the rural area positively and significantly ($p<0.01$) increased its value. A change in location from rural to peri-urban would significantly increase the mean per acre price of agricultural land byabout 87%. This difference was probably because agricultural lands in peri-urban areas face very high competition from other urban uses. There is high competition in peri-urban areas to convert agricultural land to more profitable alternative uses such as settlement, industry and other non agricultural uses, thereby bidding up the prices of such parcels.

These results suggest that there is some pressure on agricultural land in the peri-urban areas. For instance, the Uganda Human Development Report (2007) showed that Uganda's urban population had risen from 6.7% in 1989 to 15.4% in 2006. The same report revealed that population density per square km was 2,095 in the urban areas as opposed to 118 in the rural areas of Uganda. This high population in search of land for settlement, agriculture and other economic uses puts pressure on available land in peri-urban areas thereby bidding up even the price

of agricultural land. The results corroborate findings by other researchers in the United States and Europe. Vining *et al.* (1977) found that urban expansion was predominantly on land that was ideal for agriculture. Scharlach and Schuh (1962) found that increasing non-farm demand for farmland near larger urban areas led to bidding up of land values in such areas. Shonkwiler and Reynolds (1986) found that conversion from agriculture use to urban commercial use explained most (71%) of the variation in land sale price. Broomhall (1995) found that farmland prices near urban areas were sensitive to macro economic factors such as population density probably because land is sometimes used as a "store of value" by potential investors and when ordinary instruments indicate an unstable economy, land is a haven for many investors seeking high, stable rates of return.

Results also showed that land titles generally had a positive influence on land values as indicated by the positive coefficients on all three dummy variables for different titles (Table 2). However, only the coefficient for leasehold title was significant ($p<0.01$). A change from unregistered customary to leasehold would significantly increase the mean per acre price of agricultural land by almost 200%. This huge elasticity could be attributed to capital city influence on land values that is not investigated in this paper. This however suggests that a greater value is attached to leasehold titles by land owners indicating that they probably offer greater tenure security compared to unregistered customary land. Based on this result we confirm the hypothesis that the institutional factorof leasehold title is an important determinant of the value of agricultural land in Uganda. Leasehold land is easier to market and transfer and the holders generally have long-term leases usually from the state which contributes to greater tenure security (Pender *et al.*, 2003).

When compared to unregistered customary, the effect on the value of agricultural land was positive for both freehold and mailo title although they were not significant. Based on this result we reject our second hypothesis that the premium for agricultural land with a freehold title is significantly higher than that for other titles.This result was unexpected because agricultural land held in freehold is owned in perpetuity as an intergenerational asset. It is perceived to offer agricultural land owners greater tenure security, and is in line withthe goals of the Uganda Land Act 1998and the recent National Land Policy. On the other hand, the overlapping ownership structure under mailo tenure that places constraints on transfer of such agricultural land probably serves to discount its perceived market price when compared to unregistered customary. *Mailo* tenure is a special type of freehold where land can be held in perpetuity as an intergenerational asset. However, the double layered ownership structure where two people have claims to the land – the *mailo* title holder, and the *Kibanja* tenant ensures that neither party can sell or mortgage the land without the consent of the other party. Nevertheless, our results show that even amidst these constraints possession of a mailo title has some positive influence on its perceived market price although the effect is not significant.

Our results also show that current agricultural use as a proxy for agricultural productivity had a positive and significant impact on agricultural land values ($p<0.01$). Agricultural land owners in the study attached an 18% higher price per acre to agricultural land that was currently under crop and livestock production compared to other uses. This finding is consistent with Ricardo's theory of land rents and other studies that single out agricultural productivity as one of the major factors that drive agricultural land prices (Alston *et al.* 1996; William *et al.* 2000). However, the traditional determinants of land value such as soil quality, presence of perennials and proximity to the homestead were not significant.

## Conclusions

Results revealed that locational factors (regional and peri-urban), and leasehold title were the major determinants of the value of agricultural land in Uganda. The importance of locational factors mirrors the high demand for land in some regions and in the peri-urban areas. This is probably because of competing uses where other investment alternatives are available to agricultural producers and it serves to bid up the prices of agricultural land in the peri-urban. Results reflect a higher economic value for leasehold title compared to other forms of titles; and confirm that registered agricultural land is generally perceived to provide more tenure security compared to unregistered land as reflected in the land prices. The double ownership structure under mailo tenure where both the registered mailo owner and the statutory tenant have claims over the same piece of land constrains its transfer and probably serves to discount its perceived market value.

We recommend that the current land policy should promote the leasehold system in upcoming cities or urbanising areas and regions, since it opens land to a wide range of users and use-options to encourage allocation of land to the best alternative uses. Policy initiatives such as the recent national land policy should be strengthened in addressing the double ownership structure under mailo tenure which constrains its transferability so as to make the positive attributes of having such titles more significant in the land market. Policies and programs to enhance agricultural productivity need to be strengthened because they have a positive impact on agricultural land values and by extension can influence access to credit and farm investments. Further research is recommended to explore the benefits of freehold title since it is viewed as the tenure system of the future. More research is also needed on the impact of converting one form of land tenure to another, for instance, on the conversion of customary land to freehold, since customary is the dominant tenure system in Uganda. A regional perspective on the effect of land titles and other land value determinants is recommended toadd more insight after the national land policy has been implemented and there is a sufficient number of registered parcels. Case studies on areas where land titling programs have been implemented are also worthwhile.

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