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The KENYA INSTITUTE for PUBLIC
POLICY RESEARCH and ANALYSIS

Effects of Land Titling on Poverty in Kenya

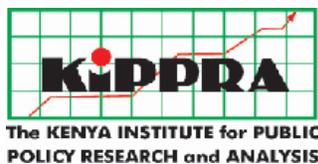*Joseph Kieyah*
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**THE KENYA INSTITUTE FOR PUBLIC POLICY
RESEARCH AND ANALYSIS (KIPPRA)**

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Abstract

Kenya has a 50 year history of ongoing land reform. However, with multiple land tenure systems, including customary and statutory systems, past tenure reforms have not resolved inherent land ownership problems. These problems include weak land administration, inaccurate recording of established occupancy rights, landlessness and land disputes, and disempowerment of women and children through denial of their land rights. Various aspects of land reform have been studied previously, but not in the context of the relationship between security of land tenure and the poverty situation. Poverty levels remain high despite economic progress, owing to various factors, among them weak land rights. Since land is a critical factor of production, prevailing land rights may affect household production and economic welfare. This study examines the potential link between ownership of a title deed as a proxy for land rights and consumption expenditures or poverty. Using a recent household survey data, the effect of ownership of titled land and household poverty as represented by consumption expenditure is tested, while controlling potential endogeneity of the tenure variable. The study assumes that historical weaknesses in management of land allocations, transfers, and registration are expressed in the prevailing challenges such as landlessness and the limited land titling. The results show that ownership of titled land is positively related with higher levels of per adult equivalent household consumption expenditure or equivalently, weak land property rights are positively correlated with poverty. The key finding is that holding a secure title to land helps reduce poverty at the household level. This study holds that by strengthening titling mechanisms and increasing title registrations, one confers real rights for productive use of land in Kenya, and this helps reduce poverty. Specifically, this indicates the importance of hastening the process of title registration through, in some cases, removing or subsidizing the cost of title registration. With the evidence of historical infringement of land ownership rights and related land disputes, the registration reforms ought to be scaled up in conjunction with legal reforms to further protect legitimate rights to land expressed in holding a title deed.

Abbreviations and Acronyms

GoK	Government of Kenya
KIHBS	Kenya Integrated Household Budget Survey
LAA	Land Adjudication Act
LTA	Title Act
RLA	Registered Land Act
RTA	Registered Title Act
SFT	Settlement Fund Trustees

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1.   Introduction

Land is an important factor of production and a fulcrum of Kenya's development as recognized by Vision 2030 and the National Land Policy. The Vision 2030, a blueprint of Kenya's future development, acknowledges land reform as a critical ingredient for socio-economic transformation of the country by 2030 (Government of Kenya, 2007a and 2007b). Thus, land is intricately linked to the three pillars of development, namely the economic, social, and political pillar. Land also provides the vital carrier function by providing space for habitation, transport, and location of investment projects.

The Vision 2030 also recognizes land as a factor of production, which also has aesthetic, cultural, and traditional significance in Kenya given the typical attachment to land by Kenyan communities. Some of these factors have made land to remain the harbinger for inter-ethnic disputes and conflicts. The land problems are partly traced to the continuation of the structure of colonial land policies and laws, which failed to fully address pre-independence land inequities. This system overtly maintained significant aspects of the colonial economic relationships, notably: the dual existence of a small settler economy alongside large peasant and smallholder agriculture.

Subsequent land reforms under multiple legal systems, and lack of a guiding land policy led to increased bureaucracy in land administration, inaccurate recording of established occupancy rights, landlessness, declining agricultural productivity, environmental degradation, the proliferation of informal settlements, emergence of land hoarding and speculative activities, disempowerment of women and children through denial of their land rights, and persistence of land-related conflicts (Government of Kenya, 1995 and 2007b).

Following the 2007 post-election violence, land problems became more aggravated. To address these problems including unequal distribution of land and past land injustices, the government recently adopted a National Land Policy. The policy's main objective is to secure rights over land so as to provide for sustainable growth, investment and poverty reduction. It provides a policy and legal framework for an efficient system of land administration and management to allow all Kenyans access and use of land, ensure equitable and environmentally sustainable allocation and use of land, proper operation of land markets, and efficient and transparent land dispute resolution system (Government of Kenya, 2007b). The policy

concisely addresses the issues of land tenure and related land use rights.

The strength of the rights to use land, dispose off land, and exclude others from use of land varies according to different tenure systems. The rights are exercised according to freehold tenure, which provides unlimited rights of use but is subject to regulation, and leasehold tenure, which allows the right to use of land for a defined period of time with some obligations. Once people acquire land, either through allocation of public land, land adjudication, land market operations, or inheritance of land, the security of tenure is critical in productive use of land. In many cases, land titles embody these rights, as the rights to use land are administered through registration of land acquired.

Land registration through issuance of title deeds provides legal evidence for tenure rights over land.[1] In this sense, protection of land rights through legal documents aids in land use planning and also facilitates land market transactions. Further, titling of land draws strength from the need to ensure well defined property rights and to improve investor confidence. Reliable security of tenure, as reflected through land titles, strengthens land property rights and, where land markets are developed, land may serve as collateral for credit (Syagga, 2006).

Economic literature clearly recognizes land as an important factor of production, a tradable asset, a safety net, and for residence and cultural affinity (Holden, Otsuka and Place, 2009a). Further, Otsuka and Place (2001) and Benin and Pender (2009) note that the type of land tenure systems and related land rights affect land use, investments and management practices.

It can therefore be argued that the stronger the tenure rights regime, as expressed through legal documents such as a title deed or in a lower degree a claim of ownership, the higher the chance that the owners of land will use the conferred rights to make economic investment in the resource. Secure land ownership rights may therefore promote long term production planning and entrepreneurship, which is essential for economic growth and poverty alleviation, particularly in rural Kenya. On the contrary, weaknesses in land rights can lead to sub-optimal use of land, lower incomes and poverty at the household level. In some cases, access to land may not always guarantee productive utilization by a household.

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[1] Land tenure rights are commonly protected under private land, which is governed by the Registered Land Act. As noted by some authors, individualization of land aided excessive acquisition of huge tracts of land by individuals and infringement of communal lands rights, especially among the pastoral communities.

Aspects such as proper land use planning, optimization of land sizes for maximum productivity, and related land administration processes may also affect land use. Weak management of land reforms may encourage excessive individualization of land rights, which may worsen inequalities and related conflicts. These factors may occasionally challenge the implied benefits of stronger land rights. Similarly, a claim to ownership under customary tenure systems or through inheritance may not always confer adequate land use rights in many areas in Kenya, especially where there is increased chance for infringement of tenure rights and dispossession of land. Though important, these factors are assumed not to have significantly eroded land use rights embodied in title ownership.

Thus, we can assume that the strength of land property rights as embodied in title ownership may affect household production, incomes and poverty. While the land policy has diagnosed the land problem extensively, there is need to assess the empirical link between land tenure security and poverty, which lacks in existing empirical literature. This study, using the Kenya Integrated Household Budget Survey data, explores this complex link between security of land tenure using appropriate security of land tenure proxies and poverty. The key hypothesis of the study is that security of tenure has an impact on economic welfare as measured either through poverty incidence or household consumption expenditures.

This study is important considering that Kenya is the only African country with over 50 years history of ongoing land reforms. At the same time, the country still has about 46 per cent of its population living below the poverty line (Government of Kenya, 2007c). In addition, anecdotal views show that the regions with high poverty index are those with land tenure systems associated with weak protection of land rights and where land reform is incomplete. This analysis will serve as a source of policy advice with regard to ongoing land reforms and poverty alleviation in Kenya.

The rest of the study is organized as follows: Section 2 traces the history of land reform, and Kenya's effort to deal with poverty in general. Section 3 provides the theoretical and methodological approach and Section 4 covers data description, including the summary statistics. While Section 5 presents the regression results, Section 6 concludes and provides policy recommendations.

2.   Background and Literature Review

2.1   Colonial Land Reform

Kenya inherited colonial land laws that are a hybrid of English and African customary law. The colonial government viewed African customary land tenure as an impediment to greater agricultural production and proper land use practices. The newcomers therefore proposed replacing the customary system with an English-style system based on individual land rights. Implementation of this remedy became a stated part of the colonial government's land policy in 1933 through the recommendation of the Report of the Kenya Land Commission. The inability of the colonial government to meet domestic food demand after the World War II, coupled with Mau Mau revolt of the early 1950s, created an urgent need for land reform (Okoth-Ogendo, 1976).

In the wake of the revolt, an appointed Royal Commission published the East Africa Royal Commission Report 1953-1955, which became the blueprint for subsequent land reform policy. At the same time, the colonial government published the Swynnerton Plan, which called for intensified development of agriculture among Africans (Swynnerton, 1954). Both reports recommended the replacement of customary land tenure with private, titled property as a means of increasing agricultural productivity and redistributing land to efficient farmers (Kiamba, 1989). Upon the recommendations of the two reports, the colonial government embarked on a major social engineering agenda to facilitate formalization of African land tenure and institute a land title registration framework in the natives 'reserves' (Government of Kenya, 1965 and Coldham, 1979).

Following the publication of the Swynnerton Plan, the colonial government established a commission to consider specific legislation to implement the recommendations of the plan. This led to the enactment of the Native Land Tenure Rules in 1956. Three years later, two more comprehensive statutes, the Native Land Registration Ordinance and Land Control Ordinances were passed. These three pieces of legislation established the legal framework of formalizing the African land tenure system.

2.2   Post-Independence Land Reform

To entrench the inherited land tenure reform, the newly elected government enacted the Registered Land Act and reclassified land into three categories: private, trust and private land. In addition, to address the competing interests between Kenyan Africans and the European settlers, the Kenya government instituted land redistribution through land settlement schemes. The government also adopted group ranches approach to cater for the special interest of pastoralist communities such as the Maasai. The areas that were classified as native reservation and non-scheduled were reclassified as Trust land.

While a small part of the country underwent the title registration process, most of the Trust land remained un-adjudicated. The ownership of the Trust land became constitutionally vested on the local government on behalf of residents within its jurisdiction. Likewise, after independence, former Crown land was renamed government land. Whereas some of the original land was retained as public land, another was reserved for railway and allocated to private owners. Land previously owned by Europeans through grants became private land.

All aspects of land tenure were to be brought under the new Registered Land Act (RLA) to achieve two sets of objectives (Kagagi, 1992). First, the Act set to unify the multifarious systems of land registration in Kenya. This process entailed voluntarily bringing previous registration laws in compliance with RLA (Jackson, 1988). Specifically, land titles privately held under Government Land Act, Land Title Act (LTA) and Registered Title Act (RTA) were to be converted and transferred to a new register in compliance with RLA (Kagagi, 1992 and Jackson, 1988). The second objective was to formalize African land tenure system through adjudication, consolidation and registration.

Under adjudication, existing land rights and interests under the African customary law in a particular parcel are finally and authoritatively ascertained under the Land Adjudication Act (LAA). Once the ownership is determined, consolidation of the landholdings is allowed whenever appropriate according to the Land Consolidation Act. It entails owners giving up ownership of their adjudicated fragmented plots, in exchange of a single plot with same acreage of the fragmented plots (Onalo, 1986). The final step includes recording the interest of the land in the public register and issuance of land title deed.

2.3   Settlement Schemes

At independence, the Kenyan government adopted a market-based land distribution strategy to address landlessness and to stimulate agricultural production (Government of Kenya, 2004). The struggle for independence was waged mainly on widespread discontent among Africans about the colonial occupation on their land. Thus, the new government embarked on settling its citizens who had been displaced from their ancestral land through discriminatory colonial policies of land alienation. The strategy called for transfer of large scale European farms to Africans through settlement schemes.

To start with, the Kenya government financed the settlement through loans and grants from the British government and other international agencies. Upon acquisition of European farms based on willing seller and buyer principle, the government would then sub-divide the land into economic units and mortgage them to Africans.

The Settlement Fund Trustees (SFT) was established to execute the programme. The beneficiaries would purchase land on mortgage from SFT by paying periodically until the purchase price was paid in full. One of the notable land redistribution programmes during the transition from colonial to self rule was the Million Acre Settlement Scheme. Even though the programme was expected to create an African farming middle class to replace the European settlers, this did not turn out to be the case. The programme resulted in skewed distribution of land towards a few, while the majority landless either remained landless or could only access the land through land buying companies (Syagga, 2006).

Apparent mismanagement of the resettlement process in those early years hardly resolved the land question; Africans who had been displaced by European settlers either remained landless (coastal region) or were resettled away from their ancestral areas (central areas), heralding one of the most complex and persistent land problem in Kenya.

2.4   Group Ranches

Initially, for political expedience, the government restricted the formalization of African land tenure to areas next to European settlements. However, formalizing Maasai land tenure system posed several challenges to the new government. First, the area was dry with poor soil and bad landscape. Second, the Maasai land tenure was based

on customary law, thus it was impractical to formalize it (Coldham, 1979). Third, development partners pressured the government to induce increasing livestock productivity, while protecting Maasai communal land rights.

The Kenyan government, hence, introduced the concept of the group ranch as a compromise between conflicting communal ownership and private ownership interests. A group ranch consisted of members who hold group land title in common. Elected group representatives would coordinate and implement ranch development projects, including management of resources and community organization (Galaty, 1994). The concept was a hybrid of Maasai customary land tenure and private land tenure that involved setting aside a piece of land, communally owned by a group of people who are recorded and registered as legal owners of that land in a ranch (Rutten, 1992 and Galaty, 1994).

Although the Maasai had previously preferred to retain their traditional way of life, the concept of group ranches was attractive to the educated Maasai, in particular. It offered them security of land title and protected them from land loss to other communities (Government of Kenya, 1965).

2.5   Land Reforms

Recent empirical studies show mixed effects of the security of land tenure on the productivity of land in Africa. Migot-Adholla *et al* (1991) found no significant relationship between land rights and productivity at farm-level based on cross-sectional data from Kenya, Ghana and Rwanda, in their study funded by the World Bank. Place *et al* (1993) reached similar results based on further examination of the same data set. Pinckney and Kimuyu (1994) compared land use practices in two similar coffee-growing communities, one in Kenya where individual land title has been promoted by government, and another in Tanzania where the state owns all the land. Consistent with the above studies, they found that land title had little effect on land investment and use of credit markets. Following detailed re-examination of the World Bank data set, Migot-Adholla and Place (1998) and Besley (1995) essentially reinforced the above conclusion. Using the conceptual model of Feder (1988), Place and Migot-Adholla tested the effects of land title as a function of exogenous factors on productivity and obtained similar results.

However, using district level cross section data set, Miceli, Sirmans and Kieyah (2001) found that demand for land title registration in Kenya is influenced by economic factors, implying a possible connection between secure property rights and agricultural productivity. In contrast, Alston *et al* (1996) found that in Brazilian frontier, more secure titles enhance property values and promote farm-specific investment, though the title benefits diminish with distance from the market centre.

As noted at the beginning, with multiple land tenure systems, including customary and statutory systems, successive land reform initiatives have yielded increased bureaucracy in land administration, inaccurate recording of established occupancy rights, landlessness and persistent land disputes, severe disruptions of social relations and disempowerment of women and children through the denial of their land rights (Government of Kenya, 1995). Further, Holden, Otsuka, and Place (2009a) found that increasing scarcity of land in Africa led to development of land markets, and the intensity of land rights was stronger for purchased land and inherited land, but weak for rented land. Additionally, Yamano *et al* (2009) find that in a sample of households across Kenyan communities, all purchased land was titled while 83 per cent of inherited land was titled.

The findings of an appointed commission show that the execution of the settlement schemes had lived up to its objective of settling the poor and landless Kenyans (Government of Kenya, 2004). The commission found general deviation from the stated objectives of the settlement schemes, including allocation to unqualified beneficiaries (Government of Kenya, 2004). In some cases, settlement schemes were established by the executive branch of government outside the legal framework with no clear guidelines (Government of Kenya, 2004).

The conventional view is that group ranches have failed to meet their intended objectives. Instead, most group ranches near Nairobi have been subjected to ongoing rapid sub-division. The management inefficiency of group representatives, together with government pressure to privatize the ranches, has increased demand for sub-division (Kieyah, 2006). In some cases, consent to sub-divide was granted notwithstanding lack of consensus among the ranch members (Lenaola, 1996). Rutten found cases where original rejections were later approved with or without amendments having been made. In some cases, the boards demand exorbitant fees in order to meet and resolve a land issue. The inefficiencies of the group management are rooted in the original establishment of the

group ranches, which disregarded Maasai customary laws. For instance, the territorial boundaries of these ranches were arbitrarily created and did not correspond with each group's previous settlement.

The institutional weakness of land control system has also contributed to the problem of sub-division. Justice M. Ole Keiwua summed it all, "the part played by the Land Control Boards in land losses tops the list. Undeserved transactions are sanctified by means of illegal special board meetings. These are sessions the consciously dutiful Board members are invariably not called to attend" (Keiwua, 2000). Simel's (1999) findings based on different group ranches reached a similar conclusion. He further recommended electing the members of boards to make them accountable and independent of the political establishment and the local administration. Moreover, a local newspaper reported cases where the appointments of the board members are based on political parties' affiliations. A land commission appointed to inquire into the land law system in Kenya also found that land boards were corrupt and called for amendment of LCA (Government of Kenya, 2002).

2.6   Poverty Reduction Initiatives

Since independence, the Kenya government targeted rapid economic growth as the centerpiece in dealing with poverty. Various development strategies gave poverty reduction varying emphasis, but the desire to reduce it was always implied in the policies. For example, the National Development Plan 1974-78 focused on equity and employment creation, while Sessional Paper No. 1 of 1986 called for rapid growth driven by private sector in partnership with efficient public sector to reduce poverty.

Subsequent development plans have retained growth strategy with various modifications. For instance, the National Development Plan 2002-2008 underscored effective management for sustainable growth and poverty reduction. Poverty reduction took a central place in policy debate, and plans such as the Poverty Reduction Strategy Paper and the 2003 Economic Recovery Strategy. Poverty persists in Kenya despite efforts to eliminate it, as put forth in the PRSP, ERS and the Millennium Development Goals.

The Economic Recovery Strategy for Wealth and Employment Creation emphasized high growth rate and employment creation as a means of alleviating poverty. Implementation of the ERS between 2003 and 2007, however, contributed to the reduction in poverty by

about 20 per cent since 2000. According to the recent Kenya Integrated Household Budget Survey, poverty has declined to 46 per cent (Central Bureau of Statistics, 2007). The Vision 2030 highlights key initiatives to achieve rapid economic growth designed to transform Kenya into a newly industrialized and middle income country by 2030 (Government of Kenya, 2007a). Again, poverty reduction is implied and expected to result from the successful achievement of the policy targets under the three pillars of the Vision 2030. Land reforms form a foundation of interventions that are expected to lay the ground for increased production and economic development, hence poverty reduction.

Empirically, poverty measurements have dominated most information on poverty followed by studies seeking to map the key covariates of poverty. In 1994, the headcount measure of poverty was 48 per cent, while the poverty gap and severity index were 19 and 10 per cent, respectively (Geda *et al.*, 2001). The incidence of poverty reached 52 per cent in 1997, and was estimated at 56 per cent in 2000 (Mwabu *et al.*, 2002).

On average, poor Kenyans are clustered into social categories, including landless without other assets, the handicapped, female-headed households, households headed by people without formal education, low productive farmers, pastoralists, unskilled labourers, AIDS orphans, street children and beggars (Mwabu *et al.*, 2000; Greer and Thorbecke, 1986; Collier and Lal, 1980 and Government of Kenya, 1998 and 1999). Land holding is considered in several of these studies as a possible determinant of poverty; however, the evidence is weak. For example, Geda *et al* (2001) found that total land holding in acres had no significant effect in predicting the probability of being poor or not poor. The study attributed this to the important differences in the quality of land and agricultural inputs, which were not included in the study. This study, however, did not take into account the role of land rights, which is important in household production decisions.

2.7   National Land Policy

The National Land Policy addresses a range of issues, including constitutional recognition of land issues, land tenure issues, land use management, land administration, and land issues that require special attention such as resolution of historical land injustices. It is notable that the policy suggests direct recognition of land in the constitution, which would allow security of rights to land and equitable access, regulation

of private use of land, and resolution of historical land injustices such as the disinheritance of communities' land, among others. The policy also tackles land use management issues such as determining land sizes, land reclamation, urban and rural land use planning, and environmental management principles, among others.

Thus, apart from furthering the principles of equitable access to land and effective regulation of land development, the draft embraces the important principle of secure land rights. It outlines measures for land taxation, particularly on undeveloped land and capital gains for developed land, and it also makes recommendations on how to deal with land issues of special significance, such as resolving historical land grievances stretching from 1895 to date, land redistribution and restitutions. The peculiar issues of land at the coast blamed on the abuse of the Land Titles Act, which allowed disinheritance of land from indigenous coastal communities are noted. As a result, the Coast region habours the largest number of landless indigenous people, has runaway squatter problems, absentee landlords, idle land and lack of access to the sea.

The policy concisely addresses the issues requiring attention on land tenure. According to the policy, land tenure may be defined as "the terms and conditions under which rights to land and land-based resources are acquired, retained, used, disposed of, or transmitted". In addition, the rights of ownership or the right to use, dispose of, and exclude others from use differs according to different tenure systems. The rights are exercised according to freehold tenure (provides unlimited rights of use but is subject to regulation), and leasehold tenure (which allows the right to use of land for a defined period of time with some obligations). Further, people may access land through allocation of public land, particularly as set out under the Government Lands Act and Trust Land Act, through land adjudication, land market operations (through transfer lease, mortgage, etc) and inheritance of land.

Land tenure rights have been of practical importance in protecting private land under various laws such as Government Land Act (Cap 280), Registration of Titles Act (Cap 281), Land Titles Act (Cap 282), Registered Land Act (Cap 300), Trust Land Act (Cap 288), and Indian Transfer of Property Act (Government of Kenya, 2007). Privatization of land rights, however, encouraged individualization of land and neglected communal land rights, especially among the pastoral communities. The policy makes proposals on various measures to safeguard land and ownership rights. These proposals include keeping inventory in the case of public land,

restitution of illegally acquired trust land to the respective communities, protection and registration of community rights to land, and introduction of taxation of idle land to encourage optimal land utilization and curb speculation. Of course, as proposed in the policy, land registration ought to be supported by well developed land information systems, which should be available to main users. Thus, land registration through titles provides legal documentary evidence for tenure rights over land. Security of these rights as protected through the legal documents aids in land use planning by the owners, and also facilitates land market transactions.

3. Theoretical and Empirical Framework

Many poverty studies provide limited inclusion of the critical role of land rights. The practical role of land tenure security may draw from how the land is used. This means that land rights and land use are closely linked in the determination of productivity and household incomes. Further, the significance of a land title could be measured with regard to land use and the existence of land markets (Holden, Otsuka, and Place, 2009a). This, however, does not mention the use of land as the carrier for other land-based enterprises such as industries, which should also be considered. Some links have also been observed between ownership of land property rights and the intensity of use and preservation of the natural resource.

Weak land property rights may lead to resource degradation. Alternatively, individualization of land rights may lead to inequity in the land resource and incomes through accumulation of land by a few people, particularly if there are significant returns from accumulating land (Otsuka and Place, 2001). This shows that land property rights have important effects on household production choices and the distribution and performance of agricultural and non-agricultural enterprises.

We assume that land is a critical factor of production for agricultural purposes and alternative development such as housing, industrialization and social amenities. Households derive incomes from different uses of land. Besides size, quality of land and other inputs in household based production, security of tenure of the subject land can help predict household incomes and poverty. The key hypothesis is that security of tenure has an impact on a proxy for economic welfare such as poverty incidence. This view draws strength from the need to ensure well defined property rights.

Tenure security is important since it increases credit use and access, improves credit worthiness of the credit seeker, allows market transfers of land to more efficient uses, and may also reduce the incidence of land disputes with clearer definition of land rights. A legitimate title to land provides legal assurance and confidence that allows owners to make more productive investments on land of a permanent nature. It can be argued that the stronger the tenure rights regime as expressed through legal documents, the higher the chance land owners will use it for economic investment. Thus, security of land tenure can also be viewed as an important indicator of business climate, the existence of property rights and their enforcement.

Owning a title deed as an indicator of security of tenure may be the time horizon of investment. For instance, weak security of tenure systems may encourage planting of non-permanent crops among agricultural households. Therefore, weaknesses in land rights can lead to sub-optimal use of land, lower incomes and poverty levels at the household.

Nevertheless, theoretical predictions are affected by factors such as type of land (high potential or low potential), geography of land, and location of land, among other factors. In areas where there is evidence of governance weaknesses, where the potential for infringement of land tenure rights is high, ownership alone may not protect the land owner from losing the right to use it. In this sense, title holding improves the ownership status of the land owner.

Despite evidence of disregard of land rights and abuse of title in Kenya, the dependencies between title ownership and poverty can be isolated. Further, non-systemic abuse of land rights does not remove the inherent importance of a title as a critical indicator of land rights in most parcels of land in Kenya. Another consideration in this analysis is that communal types of land tenure are not directly identifiable in empirical data, and analysis may also be problematic in urban areas, where it can be expected that most land is titled and there could be small variation in data. On average, the argument is that if land is important in production, so is the related security of tenure or title an important correlate for household incomes.

The empirical implementation of this study assumes that land is a factor of production both for agriculture and alternative development such as housing, industrialization, and social amenities. The main hypothesis is that security of tenure has an impact on a proxy for economic welfare, such as poverty incidence or household consumption expenditure. Thus, while controlling individual and household characteristics and a few policy relevant variables such as access to credit, this study assesses the impact of possession of land title deed as a proxy of land tenure security on poverty status, which may also be represented by household consumption expenditure.

The study further assumes that a claim of ownership alone may not capture the full strength of tenure especially in Kenya's environment, where infringement on land ownership rights and dispossession of land has widely been reported. Thus, a title deed provides greater level of tenure rights and related exclusivity that may inform greater productive use of title land relative to untitled land. In many areas in Kenya, a claim

to ownership through customary tenure systems or inheritance may have some degree of tenure rights, though not as strong as titled land.

Previous analytical work on determinants of poverty and household welfare can be adapted to assess the impact of status of land tenure on household level poverty. These models use either continuous income and expenditure data or discrete choice models with poverty represented as binary or ordered variables (Geda *et al.*, 2001). Each of these methods presents some weaknesses. As Geda *et al* (2001) note, the assessment of the determinants of poverty using continuous household level expenditure as dependent variable (unlike models based on discrete variables), do not yield probabilities about poverty. Such models also generally assume that a rise in household expenditure improves welfare at all expenditure levels.

Discrete analysis typically begins with identifying the poor and the non-poor in a sample and then using discrete choice models such as probit, logit or their ordered variants to estimate the probability of being poor. The use of discrete models, for example with poverty represented by a binary variable, leads to loss of information in categorizing continuous expenditure data into binary variables. For instance, households with high consumption expenditures and those clearly vulnerable, in the margins of the poverty line, are broadly considered as non-poor.

The continuous variable approach usually uses ordinary least squares regression to estimate the determinants of a measure of household income or consumption expenditures. Owing to the nature of the problem and to avoid losing information by creating the poverty dummy, the continuous variable approach is preferred. A discrete analysis of poverty may be useful if the prime concern of public policies is to reduce the proportion of the poor with reference to a predetermined poverty line. However, poverty is often seen as a relative concept, which presents challenges when constructing an agreeable poverty line.

The continuous variable approach dispenses with this problem by giving an indication on the direction of impact of the various variables (such as increased land tenure rights) on household incomes, with an added advantage that the results can also be used to inform policy in successive periods regardless of the level of prevailing poverty lines. We expect that the land tenure variable is potentially endogenous in the income model, meaning that the error terms correlated with the tenure variable and the ordinary least-squares parameter estimators will be biased and inconsistent. The estimated coefficients will not equal

the population parameter in the probability limit or, equivalently, the ordinary least squares approach will overestimate the true value of the model parameters (Pindyck and Rubinfeld, 1991).

Consistent structural parameter estimates in presence of simultaneity can be obtained mainly through the instrumental variables estimation and the two stage least-squares (2SLS). The 2SLS involves the use of available predetermined variables to instrument the endogenous variables, in the model, or to construct the reduced form of the model in the first stage. This stage generates the predicted values of the endogenous variables, which are by construction uncorrelated with the error terms, but are linearly related to the predetermined variables. The predicted values, together with other exogenous variables, are used as instrumental variables in the second stage to obtain consistent structural parameters of the model. For a single equation with several endogenous variables as regressors there is:

$$y = \beta_o + \beta_1 x_1 + \beta_2 x_2 + ... + \beta_k x_k + u \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

Where $E(u) = 0$, and since the endogenous x_k is correlated with the error term u, then we have $Cov(x_j, u) = 0$ for $j=1,2,...,k-1$. The ordinary least squares estimation of equation (1) would lead to inconsistent estimators of the equation parameters if x_k is endogenous or $Cov(x_j, u) \neq 0$ (Pindyck and Rubinfeld, 1991). The instrumental variable 2SLS can be used in this situation. We can find a vector of instruments z_j, for $j=1,2,...,m$, for x_k which are exogenous in (1), or equivalently, $Cov(z_j, u) = 0$. Further, the relationship between the endogenous variable and x_k the instruments and the other exogenous variables is captured in the linear projection of x_k on all exogenous variables and instruments (the reduced form for x_k);

$$x_k = \alpha_o + \alpha_1 x_1 + ... + \alpha_{k-1} x_{k-1} + \varphi_1 z_1 + ... + \varphi_m z_m + \upsilon \dots\dots\dots\dots\dots\dots\dots (2)$$

Where $E(\upsilon) = 0$, the disturbance term υ is uncorrelated with the exogenous variables, and $Cov(x_j, z_j) \neq 0$. Writing $x_i = (1, x_{i1}, x_{i2}, ... x_{ik})$ as the vector of exogenous variables, and

$$\hat{x}_i = (1, x_{i1}, x_{i2}, \cdots, x_{ik-1}, \hat{x}_{ik})$$

for sample observations $i=1,2,...,N$, and using $\hat{x}_i$ as instruments[2], then

$$\hat{\beta} = \frac{\sum_{i=1}^{N} \hat{x}_i' y_i}{\sum_{i=1}^{N} \hat{x}_i' x_i} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3)$$

[2] The exogenous variables $x_{i1}, x_{i2}, ... x_{ik-1}$ are their own instruments, while x_k is instrumented by z_j.

The 2SLS involves obtaining the fitted values $\hat{x}_i$ from regression (2) and in the second stage, running an OLS regression of y on the constant, all exogenous variables $x_1, x_2, ... x_{k-1}$, and $\hat{x}_i$ to obtain consistent estimates for $\hat{\beta}$ (Woodridge, 2001 and Pindyck and Rubinfeld, 1991). In the estimation process, we need to be concerned whether $Cov(z_j, u) = 0$, or if there is endogeneity, and if the model is identified. Since the assumption $Cov(z_j, u) = 0$ implies that the set of instrumental variable is not correlated with u, then x_k is endogenous if and only if $E(uv) \neq 0$. This test can be carried out using the regression based Hausman test under the null of exogeneity. We test the rank condition (using F statistic) by assessing if at least one $\emptyset_j$, for $j=1,2,...m$ is different from zero under the null that all $\emptyset_j = 0$. A clearly over-identified model is specified as follows:

$$C_i = \alpha_1 + \alpha_2 Titled_i + \alpha_3 Credit_i + \emptyset X_i + \mu_i \ \text{.. (4)}$$

The related linear projection of the endogenous variable *Titled* on all the instruments and the other exogenous variables is expressed as follows:

$$Titled_i = \beta_1 + \beta_2 X_i + \beta_3 Credit_i + \beta_4 Dist_i + \delta D_i + v_i \text{................................ (5)}$$

Where C_i is the natural logarithm of the household consumption expenditure in adult equivalent terms for household i, is *Titled* the proportion of total land size in the household with a title deed, *Credit* is a dummy for credit access, which is thought to be correlated with *Titled*, and x_i is a set of exogenous variables such as household size, employment and education attainment. Distance to a water source is denoted by *Dist* and a set of regional dummies by *D*. The proxy for land tenure security is defined as the proportion of total land size with a title deed, though a dummy to represent the titling status of all parcels of land owned by a household may be used. This variable is truncated [0, 100%] and relative to a binary variable, it affords more variability thus reducing the potential loss of information in creating a dummy. This variable also reduces the need to include the land size variable in the model. The time taken to obtain water, which is used as an instrument for land tenure variable and may be seen as a unique variable, which could closely predict the status of land title ownership is exogenous to all households, and is not correlated with the disturbances u or the omitted variables in the model of interest.

With the title variable assumed to be endogenous in the model, and further holding that the first equation is over-identified, the first structural equation or the first equation of the model in equation 1 can

be estimated using instrumental variables 2SLS if the rank condition for identification is met.

A Hausman specification test is used to test for endogeneity. Clearly, the choice of the 2SLS using a continuous dependent variable is primarily informed by its appeal relative to the binary instrumental variables approach. Notably, since binary variable approach depends on how the poverty line and the dummy variables are defined, the results could potentially vary with changes on the poverty measure. For instance, the results may differ as the poverty line is changed from, say, absolute poverty, food poverty, or hard core poverty. Continuous data is unaffected by such changes and is neutral to the choice of poverty measure since it only provides the direction of impact and poverty reduction can be deduced.

In fitting the 2SLS, we trade off the rather appealing binary poverty analysis for robustness and neutrality of the results. If the dependent variable is a binary poverty variable (if 1 represents poor, and 0, otherwise), then we can use the instrumental variables probit approach. For comparison and to complement the main results, an instrumental variables probit model is also estimated.

4. Data and Summary Statistics

This study uses the comprehensive 2005/06 Kenya Integrated Household Budget Survey (KIHBS) with a total sample of 13,430 households in 1,343 clusters. The survey collected information on demographics, education attainment, health and fertility, employment, water and sanitation, consumption expenditures, agricultural holdings and access to credit, among other aspects. This study uses part of this information, particularly on household economic welfare, demographics and land holdings for analysis. The status of land holdings is an important household level covariate for household welfare outcomes. Information on whether an individual held a job, type of occupation, ownership of a parcel of land with a title deed, time taken to obtain water for drinking, and demographics such as age, sex, marital status, household size, and province of residence are important variables in the analysis.

The analysis uses two related measures of land tenure: the proportion of titled land, which is continuous, but truncated at 100 per cent; and a dummy of whether the household possessed a title deed for the parcel of land. Ownership of land on its own may not amount to secure tenure. This issue is of little significance in this analysis, since majority of households who reported owning a piece of land also possessed title deeds.

Table 4.1 presents the main sample statistics for various variables used in the regressions. The average absolute poverty rate in adult equivalent terms in Kenya was 46 per cent, meaning that they had levels of consumption expenditure that were insufficient to meet the basic food and non-food requirements. Further, the average consumption expenditure in the country is about Ksh 32,381 in adult equivalent terms.

The summary statistics in Table 4.1 also report other variables used in the analysis, such as percentage of household land with a title deed, marital status, distance to a source of water, access to credit, whether a person is employed and their occupations. On average, 39.4 per cent of land holdings are registered and with a title deed, which is consistent with the official figure reported by the government (Government of Kenya, 2007d). The distribution of titling and land holdings varies across the regions as reported in Annex 1. Notably, only about 10 per cent of household land in North Eastern and 22 per cent at the Coast are titled relative to Nyanza's 51 per cent. Other provinces with weak land ownership rights are Eastern and Western provinces with 26 and 34 per cent of titled land, respectively. Nairobi is predominantly urban

and records the highest proportion of titled land at about 70 per cent compared with the national average of 39.4 per cent. Central Province and Rift Valley Province report 48 and 46 per cent of titled land, respectively. Owing to land sub-divisions in Nyanza and Central provinces, title ownership is low despite previous high rates of land registration.

Table 4.1 further shows that about 33 per cent of the population accessed some form of credit, 10 per cent of the population was in paid employment, while about 21 per cent of those employed worked in the agricultural sector. An average household spent about 15 minutes to obtain water for drinking. Finally, about 71 per cent of the population resided in rural areas, while the average household size was about 5.1 individuals.

Table 4.1: Summary statistics

Variable	Mean	Standard deviation	Observations
Consumption expenditure	32,381.37	45,140.47	13158
Literacy	0.671	0.47	12951
Gender dummy	0.491	0.5	13158
Titled land	0.394	0.489	8038
Age	22.95	19.207	13158
Time to a water source	15.362	23.348	10193
Household size	5.135	2.809	13158
Access to credit	0.333	0.471	13158
Employed	0.384	0.486	11630
Region (rural or urban)	0.71	0.454	13104
If recently sick	0.27	0.444	12855
Poverty (poor or non poor)	0.466	0.499	13158
Paid employment	0.102	0.303	11630
Ownership of business	0.065	0.247	11630
Work ing agricultural sector	0.213	0.41	11630

5.   Regression Results

The analysis takes into account the possibility that land tenure variable is endogenous in the model or the variable may be correlated with errors in equation (4). The OLS estimation of (4) without correcting for endogeneity would be inconsistent and potentially biased. Although the instrumental variables or 2SLS approach is not truly unbiased even in large samples, the parameter estimates are consistent and efficient. The study's analysis is centred on fitting the model of continuous adult equivalent consumption expenditure as the dependent variable (Table 5.1 and Table 5.2), while for comparisons sake and to complement the 2SLS results, an instrumental variable probit is also reported in Annex 2.

The analysis uses standard poverty covariates such as age, dummies for literacy and education attainment, sex of the individual, marital status, household size, region of residence and credit. It can be expected that household size, age, and rural residence are correlated with poverty, while being in paid employment, literacy level, and male headship are positively correlated with improved economic welfare. The time taken to obtain water, which is used to identify the estimated models, is a unique variable that could closely predict the status of land holding title ownership, but is not correlated with the disturbances in the model of interest.

Levels of household welfare vary by regions, hence dummies representing the eight Kenyan provinces (Central, Coast, Eastern, Nairobi, North Eastern, Nyanza, Rift Valley and Western Province) are used to capture these regional variations in one of the models. Four models are estimated: the first uses the proportion of titled land holding, a variable truncated at 100 per cent as the proxy for secure land rights; the second uses a dummy for title holding; the third model includes the regional dummies in the estimation of the first model and the fourth is an instrumental variable probit model, which uses a binary poverty variable as the dependent variable.

To test for endogeneity of the tenure variable, we first regress *Titled* on *Credit*, x_i, *Dist*, and a set of regional dummies *D* to obtain the residuals. Equation (4) is then estimated using OLS, including $\hat{v}_i$. The results show that the coefficient on $\hat{v}_i$ was positive and significant at 1 per cent level (with a *t*-statistic of 3.46). This leads to the reflection of the null hypothesis that is *Titled* exogenous (coefficient of *Titled* is different from zero). The tenure variable is therefore endogenous and the 2SLS results

in Table 5.1 are consistent and efficient. Next, from the specification of the model (4) and (5), the order condition of identification is also met, since there is one instrument in the model system. Further, the rank condition is fulfilled since the instruments are partially correlated with the instrumented variable *Titled*. Specifically, from equation (5), the model is identified since β_3 and β_4 are non-zero using the F test. The fact that so many variables are significant (that the standard errors are not overly large which would be the case if the instruments were very weak) shows that the choice of instruments was well done.

Further, the validity of the instruments used in the estimation (Table 5.1) under the null using Sargan and Basmann tests of over-identifying restrictions are tested. With a test statistic of 0.253 and p-value of about 0.614, the over-identifying restrictions are not rejected at any of the standard significance levels. The use of good instruments, with strong partial correlation with endogenous explanatory variable, should improve the results. Similarly, Table 5.2 reports the results where the land tenure variable is a binary variable. The specification tests for this comparable model also authenticate the fitting of a 2SLS model on the data instead of the OLS. The model is also identified under the order and rank conditions, and the instruments used are valid restrictions as indicated by the corresponding Sargan and Basmann test statistic of 0.254 and p-value of about 0.614.

Tables 5.1 and 5.2 provide overall estimations at national level. The model coefficients in both tables are jointly significant as shown by the Wald X^2 test. Individually, Table 5.1 reports a strong relationship between proportion of titled land and household consumption expenditure in adult equivalent terms. A t=2.81 for the variable shows that there is a statistically significant impact of ownership of tilted land on the household consumption expenditure. This is important evidence which has received limited attention in previous studies.

Consistent with past studies on the determinants of poverty, age, household size and employment status are significant in the model. The age of the household head negatively affects the level of welfare of the household as indicated by average consumption expenditures in the household. Household size is not solidly negative as we would expect, but this could be the case where household labour is used in production. Nevertheless, participation in paid employment and in paid agricultural work boosts the welfare of households. The two variables are positive and significant at 1 per cent and 5 per cent level, respectively. When the

Table 5.1: Two stage-least squares model: Proportion of household land with title deed and household consumption expenditure as dependent

	Coefficient	Standard errors	t-statistics	p-value
Proportion of titled land	1.494	0.532	2.81	0.005
Age	-0.005	0.002	-2.18	0.029
Age squared	0.000	0.000	1.96	0.049
Household size	0.011	0.007	1.74	0.083
Literacy dummy	-0.053	0.034	1.58	0.113
Sex dummy	0.016	0.031	0.52	0.606
Paid employee	0.236	0.082	2.88	0.004
Work in own business	0.086	0.063	1.36	0.173
Agricultural worker	0.091	0.040	2.27	0.023
Region (rural or urban)	-0.087	0.140	-0.62	0.533
Constant	9.622	0.335	28.76	0.000
N	3914			
Wald (10)	39.51			

land tenure variable is replaced with a dummy (Table 5.2), the results do not seem to differ much.

Apart from the size of the household, which loses its significance in this model, the titled land dummy, age, paid employment dummy and agricultural work dummy are all important covariates for average household consumption expenditures. The results of the two models are reasonably comparable to past welfare studies such as the one by Geda *et al* (2001) that uses discrete poverty variable, but can be contrasted since factors such as gender and literacy show limited impact on household welfare in this model.

We have already noted differences in the percentage of land with title deed across Kenya's eight provinces. Whereas Nairobi, Central, Nyanza and Rift Valley have more than 40 per cent of household-owned parcels of land under a title deed, Coast and North Eastern provinces have the lowest proportions of their populations holding a title deed. Thus, the impact of a title deed on welfare may vary according to these differences.

However, though household consumption expenditures and security of land property rights are not uniform across all the administrative regions in Kenya, hence the need for the province level analysis, the

Table 5.2: Two stage-least squares model: Ownership of land title deed and household consumption expenditure as dependent

	Coefficient	Standard errors	t-statistics	p-value
Titled land dummy	1.319	0.450	2.93	0.003
Age	-0.005	0.002	-2.34	0.019
Age squared	0.000	0.000	2.14	0.033
Household size	0.006	0.005	1.19	0.235
Literacy dummy	-0.049	0.032	-1.52	0.129
Sex dummy	0.025	0.030	0.85	0.397
Paid employee	0.243	0.081	3.01	0.003
Work in own business	0.096	0.061	1.57	0.116
Agricultural worker	0.090	0.039	2.35	0.019
Region (rural or urban)	-0.126	0.125	-1.01	0.312
Constant	9.710	0.293	33.17	0
N	3922			
Wald X^2 (10)	42.6			

potential loss of asymptotic efficiency of 2SLS in using smaller regional samples may not be traded for the implied benefit of some measure of regional homogeneity in such disaggregated analysis. Thus, to conserve the consistency of the 2SLS, larger full sample needs to be used (the regional dummies are included as exogenous variables in Annex 2).

Annex 2 shows that the expected variation with the inclusion of the regional dummies does not arise; instead, the results mimic models with land tenure variable, age, household size, paid employment and agricultural type employment significant at the 5 per cent level. The signs of the variables are also similar to results in Table 5.1, but the regional dummies have limited significance in explaining the variation in household consumption expenditures.

The model reported in Annex 3 uses a binary poverty variable in place of the continuous consumption expenditure based variable used in the other three models. The model was estimated using maximum likelihood method. The necessary tests were carried out. For instance, the null of exogeneity of the tenure variable was rejected using the Rivers-Vuong test approach, and the rank and identification tests were also satisfactory at a reasonable level of significance. As expected, the sign of the tenure variable is negative, implying that it helps reduce the probability of

poverty. Similarly, other exogenous variables also take the opposite signs in this model, relative to those already reported.

The instrumental variables probit estimates in Annex 2 provide complementary evidence on the robustness of the tenure variable as a determinant of poverty. The results of the four models, therefore, provide strong evidence that the ownership of a titled land, which captures land tenure rights, may affect household production with significant impact on household welfare and poverty as represented by the level of consumption expenditure. The results show that the higher the proportion of land with title deeds, the higher the level of per adult equivalent household consumption expenditure in Kenya, across all the models. Jointly looking at the regression estimates and the summary statistics in Annex 1 implies that variations in titling and other factors could significantly show up in region specific studies.

6.   Conclusion

Ownership of titled land is an important factor that may explain poverty outcomes through improved household incomes and consumption expenditure. But this has received limited attention in empirical literature on household and individual welfare in Kenya. Using the Kenya Integrated Household Budget Survey, this study tested the hypothesis of whether ownership of titled land, which captures land tenure rights, affects household poverty as represented by consumption expenditure.

The results show that ownership of titled land is positively associated with higher levels of per adult equivalent household consumption expenditure. This means that weak land property rights are positively correlated with poverty. The key finding is that holding a secure title to land helps reduce poverty at the household level. Security of tenure therefore allows owners of parcels of land to plan well, cultivate or use their land for productive purposes.

Clearly, past weaknesses relating to land adjudication and registration are expressed in limited titling, landlessness, land-related conflicts and persistence of poverty in various regions. This study calls for policy interventions to address the underlying problems to achieve greater poverty alleviation.

It is recommended that the process of title registration, which has remained intractable and slow, needs to be scaled up. One approach could be for government to subsidize title registration or lower the administrative costs. This would help in strengthening the land property rights so as to unlock the productive potential inherent in the use of this productive asset. The results of this study fit into the land reform strategies and poverty alleviation efforts put forward by Government and articulated in the Vision 2030 and the National Land Policy.

As part of future research, regional variations of titling, historical land issues and economic and social characteristics of the provinces will inform the land reform processes. For example, part of the effect of land tenure may be affected by the specific conditions of each province, which may stem from the nature of household occupations, other household characteristics including entrepreneurship, and productivity of land in the rural regions as opposed to urban regions. Micro level analysis could more precisely untangle issues relating to low titling at the Coast, a province well known for land ownership problems and high prevalence of squatters. It would also be interesting to understand the subtle issues

in Rift Valley, a diverse region with some of the most productive lands in agriculture and also large arid and semi-arid parts and a hot bed of land-related conflicts, or address issues now prevalent in Central and Nyanza, where there is anecdotal evidence of intense sub-division of land without concomitant title registrations. These issues can form the subject of a future study.

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Annex

Annex 1: Distribution of titled land holdings in Kenya

Province	Mean	Standard deviation	N	Weight
Nairobi	0.699	0.481	11	6,612.10
Central	0.483	0.500	870	678,082.40
Coast	0.221	0.415	490	257,186.40
Eastern	0.256	0.437	1872	1,147,571.61
North Eastern	0.100	0.305	30	17,496.20
Nyanza	0.508	0.500	1901	1,046,939.90
Rift Valley	0.464	0.499	1622	867,482.70
Western	0.338	0.473	1242	750,123.60
Total	0.392	0.488	8038	4,771,494.90

Annex 2: Two stage least squares model: Proportion of household land with title deed and household consumption expenditure as dependent

	Coefficient	Standard errors	t-statistic	p-value
Proportion of titled land	1.482	0.630	2.35	0.019
Sex dummy	0.011	0.032	0.34	0.733
Literacy	-0.020	0.034	-0.59	0.557
Age	-0.005	0.002	-2.35	0.019
Age squared	0.000	0.000	2	0.045
Household size	0.011	0.006	1.98	0.048
Region (rural or urban)	-0.089	0.150	-0.59	0.553
Work in own business	0.072	0.063	1.13	0.257
Paid employee	0.113	0.043	2.65	0.008
Agricultural worker	0.257	0.088	2.91	0.004
Central	0.358	0.317	1.13	0.259
Coast	0.177	0.260	0.68	0.496
Eastern	0.199	0.258	0.77	0.441
Nyanza	0.078	0.300	0.26	0.794
Rift Valley	0.152	0.301	0.51	0.613
Western	0.316	0.270	1.17	0.242
Constant	9.410	0.354	26.6	0.000
N	3914			
WaldX^2 (9)	129.66			

Annex 3: Instrumental variables probit: Proportion of household land with poverty dummy as dependent

	Coefficient	Standard errors	t-statistic	p-value
Titled land dummy	-1.510	0.281	-5.38	0
Age	0.002	0.003	0.77	0.443
Age squared	0.000	0.000	-0.72	0.471
Household size	-0.004	0.008	-0.53	0.595
Literacy dummy	0.000	0.040	0.01	0.996
Sex dummy	0.000	0.038	0.01	0.991
Paid employee	-0.123	0.068	-1.8	0.072
Agricultural worker	-0.079	0.048	-1.66	0.097
Region (rural or urban)	-0.207	0.082	-2.52	0.012
Constant	0.522	0.217	2.41	0.016
N	3799			
Wald X^2 (9)	47.05			
Wald test: H0: Titled is exogenous	(1)=11.13 (P=0.0008)			