Socially Embedded Property Rights in Africa

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Abstract

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These three essays explore the politics of property rights to land in Africa. The first essay asks why some farmers title their land while others do not. I argue that, beyond the costs typically associated with this process, there are social costs to titling as well. These social costs originate from the system of customary law that governs multiple domains of social life, including land. The second essay investigates whether customary land tenure incentivizes ethnic group-based conflict, and if so, how. I propose a mechanism linking land rights and conflict, but also suggest why this relationship should occur rarely in practice. The third essay examines how customary land tenure rules can produce counterintuitive land use decisions, a question of special importance in the context of an oil boom. I also document how the structure and enforcement of land rights can vary within a single customary community. All three essays employ original data collected in Uganda in 2018. These data include a survey of landholders, and several interviews with local officials, clan heads, government bureaucrats, and landholders themselves. I also rely on secondary literature, as well as public opinion data from across the continent. Together, these essays contribute to our understanding of why customary institutions persist in Africa, why ethnic violence over land remains relatively rare, and why some communities thrive in the context of economic change while others struggle.

Preface

This dissertation resides at the intersection of land, identity, conflict, and community. In that sense, it captures aspects of the human condition that have interested me for many years. I can trace the origins of this project to when I was a recent high school graduate, traveling to Guatemala for a short trip put together by my school. We spent one of our days working on an afforestation project, and the man in charge said that he knew the importance of his work because Guatemala was "the lungs of the world." This was, for me, an encounter that set the stage for how I would approach the study of rural landholders in low-income countries years later. That is to say, I have always tried to operate under the assumption that these individuals are strategic, canny, and understand the local incentives they face as well as their role within broader patterns existing outside their communities. I attempt to use this approach in this dissertation.

Later, in 2009, I spent a year living and working in Namibia. This experience solidified my interest in the region, and sparked my interest in ethnicity. I also saw many reminders of the social justice issues I had been introduced to in high school and later studied more seriously in college. Returning to school to complete this degree has been an opportunity for me to try to make my own very small dent in the research on issues that are a matter of life and livelihood for so many people throughout the world. I hope to continue making contributions in this regard bit by bit for as long as I can.

Acknowledgements

I could not have written this dissertation without help. My committee was unfailing in their support, which usually came in the form of pushing me as hard as they could to do my very best work. My chair Victor Menaldo gave me free reign to pursue a project that interested me deeply, and expressed confidence in me at key moments. His skepticism, creativity, and careful eye for detail can be found, I hope, within these pages. Victor also was one of the most excited people to find out I was becoming a father, which I appreciated in an advisor and mentor. Aseem Prakash never let me forget the politics in my cases, and set the highest of standards when it comes to productivity and public scholarship. He also reminded me to enjoy hiking and skiing while doing the hard work. James Long encouraged me to look at the world with an anthropological eye, and then to try to draw out the politics in what I found. James also reassured me about my progress at a time of self-doubt, making it easier to press forward when the path towards finishing was not clear. All three committee members were unsparing in their criticisms of my work, but always with the intent of improving the work. I never doubted for a moment that they wanted the best for me, a source of reassurance for which I am thankful. I owe all three a large debt.

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In Uganda, Phillip Kihumuro was more than an excellent research assistant; he helped coordinate the research every step of the way, added his keen insight to the project, and became a good friend. My research teams in Buliisa, Hoima, Kapchorwa, and Mbale braved muddy roads and hot afternoons to collect survey responses for me, for which I am deeply grateful. Thanks to Ivan, Harrison, Golde, Nelson, Susan, Alex, Patrick, Bashir, Michael, Allan, Macris, Juliet, and Demitila. I received a warm welcome from Sisco and her

whole family in Kapchorwa; I miss the nightly milk tea before bed. Last, I am indebted to the hundreds of Ugandans who participated in my survey. I learned so much from the knowledge they shared with me, and I hope this dissertation is a fist step towards producing work that will be of benefit to them.

My family was a constant source of support and encouragement. My mother Mary and sister Reed were especially important in this regard. The family Whatsapp group was a constant point of amusement during fieldwork. I am looking forward to reunions in LA, Saint Paul, Sommerville, and Surry.

My wife Sara deserves much of the credit for this project being finished. From our (many) roadtrips across the US, national park adventures, months together eating chapati in Uganda, to the way you sacrificed over the final six months of the dissertation, I see you in every page of this work. Our daughter Anouk is so lucky to have you, as am I.

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The Social Costs of Titling Land: Evidence from Uganda

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Abstract

Why do some African landholders title their land, while others refrain from doing so? Existing explanations for the evolution of property rights focus on the costs of titling and the degree of enforcement by the state. I suggest a complementary explanation, based on the social costs of titling. In much of Africa, titling equates to removing land from customary authority, which governs multiple domains of social and economic life; actions in one domain bring costs in the others. I cast the decision to title as a coordination dilemma among a community of landholders, rather than an individual choice made in isolation. I test this theory using original survey and interview data from Uganda. A series of logit and probit estimates of data on titling are consistent with the social costs theory, dependent on model specification. Interview evidence indicates that social costs have a marginal effect on titling decisions; this is further supported with an examination of empirical implications at the country level across Africa using Afrobarometer data. The results indicate the need for more empirical tests to establish the conditions under which social costs have the greatest impact. This paper adds to our understand of institutional change over time, as well as the persistence of customary authority in Africa.

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1 Introduction

Why do some African landholders title their land, while others refrain from doing so? Across sub-Saharan Africa, approximately 10% of land is held under private title (Deininger 2003), while the vast majority of the remainder is held under customary tenure, an institution in which property rights are rooted in ethnic communities and governed by customary leaders such as chiefs. This contrasts with many high-income countries, where rates of individual titling are much higher. Private titles are generally thought to offer better security of property rights, increased incentive to invest in land, better access to credit, and the facilitation of markets in land (Boserup 1965; Demsetz 1967; De Soto 2000; North & Thomas 1973). Scholars and policymakers have worried that customary land tenure leads to economic inefficiency, offers uncertain rights to land, is associated with low levels of investment, and is not equally accessible to all social groups. For decades, national governments across the continent — along with non-governmental organizations (NGOs) and international organizations like the World Bank — advocated for a gradual move towards private rights to land (Peters 2004). In recent years these views have moderated with the recognition that customary tenure has some advantages such as flexibility, and that individual titles are no panacea; yet the underlying presumption continues to be that eventually land tenure in Africa will resemble property rights regimes elsewhere, with individual titles to land backed up by government enforcement.[1]

Despite these expectations, the titling of land remains a slow, if not stagnant process; while some titling does take place, customary authority over land remains the status quo for most of sub-Saharan Africa (Boone 2014, p. 23). Existing explanations for this puzzle draw on the New Institutional Economics school of thought, focusing on the transaction costs of obtaining a title to land along with variation in state capacity to enforce titles. These explanations are intuitive, and there seems to be evidence that they carry some empirical weight.[2] However, given both the growth in the ability of landholders to afford titles and the increasing capacity of African governments, the slow pace of titling remains puzzling. By marrying insights of political economy and sociological work on customary communities, both of which emphasize how social and political institutions shape and shove individual behavior, I propose to address this puzzle.

I argue that landholders remain in the customary land tenure regime is because they face social costs upon exiting the regime. Political scientists have been unable to fully explain the slow change in land rights because their focus has been limited to the dynamics of property rights allocation and enforcement, ignoring the fact that these rights are embedded in a wider social system.[3] Titling land is an incomplete exit from

[1] The mixed empirical record of land titling in SSA makes it difficult to make *normative* claims about the relative merits of individual titles versus customary land rights; I do not make any claims here.

[2] Section 8.1 of the Appendix reviews Afrobarometer survey data that helps give a sense of how these explanations hold over the continent.

[3] See Peters (2009) for a review of how anthropologists have thought about land relations as social relations over time.

the wider system of customary law, and landholders who title are still governed by custom outside of land issues. Customary law typically governs the adjudication of disputes, marriage, bride-price and dowries, funerals, and inheritance, and customary communities are frequently able to organize collective action (e.g. harvesting large crops). While a landholder can remove their land from the customary regime, they may face unacceptable costs in these other domains. No landholder wants to be the only member of a community to exit and pay these costs; unless farmers organize to exit as a collective, they remain in equilibrium holding their land under customary tenure. This scenario can be thought of as a classic coordination problem, where first-movers pay heavy costs to exit, but these costs decline with the proportion of a community that has already exited.

I test these arguments using original survey and interview data from Uganda, collected between July and December 2018. The survey includes responses from nearly 1000 landholders in four districts: Buliisa, Hoima, Kapchorwa, and Mbale. Buliisa and Hoima Districts, both in the Western Region of Uganda, are in the midst of an oil boom that has sharply increased the value of land. The subsequent competition for land should, according to extant theories of land tenure evolution, result in an increased demand for formal land titling. I find first that proximity to sources of land competition is not a strong predictor of whether landholders title or not. Secondly, when it comes to the two political economic explanations for titling, subjective perceptions of state enforcement are a better predictor of who titles than perceived costs. Third, social costs do seem to have a marginal effect on whether landholders are likely to title or not, but their effect is contingent, and sensitive to the model specification. That said, interview evidence does offer some support for the social costs theory. The mixed results are potentially a result of Uganda's status as a tough case for the theory, as well as the fact that some social costs must be paid *prior* to titling land there, since neighbors have a veto over the process.

This paper seeks to make a few scholarly contributions. First, the social costs theory adds to our understanding of institutional change over time. In contrast with major theories of property rights change, I argue that there are situations where individuals will refrain from titling their land even when the transaction costs of doing so are low. This paper also contributes to the debate over the persistence of customary authority in Africa. Most explanations for this phenomenon are rooted in historical accounts of the colonial and post-independence moments, and focus on the supply of institutions. The social costs theory below shifts the focus to the demand for customary authority in the contemporary era. Finally, this paper adds to a new strand of scholarship on the strategic titling of land (see e.g. Honig 2017). Building on this work, I explicitly model how social costs are imposed. This paper follows classic works from political economy that assume that farmers are rational, canny actors who try to maximize their utility while operating under institutional constraints (Bates 1981; Popkin 1979).

This paper proceeds as follows: in section 2, I review existing theories of the effects of property rights, and of how these institutions evolve over time. Explaining contemporary patterns of property rights change (and lack thereof) in Africa is the subject of section 3, where I present a theory of socially embedded property rights. In section 4, I introduce data from the Uganda case, and briefly explain how the survey was conducted. I analyze the survey data by estimating a set of logit and ordered probit models, testing the different explanations for why landholders title their land. I supplement these statistical analyses with interview evidence from landholders, clan heads, and civil servants. In section 5, I explore cross-national empirical implications of this theory by showing that the strength of customary authorities is negatively associated with land titling. I follow in section 6 with a discussion of the potential relevance of this theory for understanding other important political questions before concluding.

2 Property Rights

2.1 Institutional change

Political scientists have long emphasized well-enforced property rights as a foundation for economic development (North 1990; North & Thomas 1973). The logic is straightforward: when owners are unsure whether their property will be taken away in the future, they are reluctant to make long-term investments in property which might produce net yields greater than without the investment. For example, if a landowner is operating with uncertainty about her land rights, they may be reluctant to let her land lay fallow for a season, or to plant high-value crops that take a long time to grow. Strong enforcement of property rights relieves the landowner of uncertainty, allowing for longer time horizons when it comes to her property. The right to sell land increases efficiency, as individuals who place the highest value on land can obtain it. Landholders who have full rights of exclusion can devote their energies to efficient land use rather than to patrolling the boundaries of their property. Strong property rights are also thought to have an indirect effect on development through credit availability, particularly in low-income countries with large populations dependent on agriculture. Farmers often need loans in order to make upfront investments in inputs like equipment and fertilizer to grow their agricultural output. With little to no liquid wealth on hand, having secure land rights in the form of a title is a way for farmers to bring adequate collateral to secure loans from lenders. Where rights are not well-enforced, farmers will find it difficult to borrow, resulting in suboptimal land use and economic growth (De Soto 2000).

So-called 'naïve' models of property rights change[4] predict a gradual move towards formalized, in-

[4]See Eggertsson 1990

dividual property rights (Demsetz 1967; Boserup 1965). Because of exogenous shocks like advances in technology, the costs and benefits of modes of production change over time. In turn, "...property rights develop to internalize externalities when the gains of internalization become larger than the cost of internalization" (Demsetz 1967, p.350). This early understanding of property rights change assumed a supply of institutions, and did not take seriously the costs associated with their creation (Eggertsson 1990). Later work by political economists used the insights of Ronald Coase (1960), incorporating transaction costs into their models, as well as the politics of institutional supply and the distributional consequences of different institutional arrangements (Alston et al. 1999; Knight 1992; North 1990). These models suggest that citizens will increasingly demand private rights to property as the transaction costs associated with the creation and maintenance of property rights are outweighed by the benefits of those rights (Feeny 1988; Shipton 1989). Individualized rights allow the rights-holder to internalize the full benefits of his or her property. States as rights enforcers in turn benefit over the long run from taxing the increased levels of production that result from well-enforced property rights; state officials also benefit themselves from having well-enforced property rights. The application of this framework to land has been termed the Evolutionary Theory of Land Rights (ETLR).[5] These theoretical insights were the basis for development policy throughout Africa and elsewhere for decades. For example, the Swynnerton Plan of 1954 in Kenya promoted the development of agriculture by issuing titles, surveying land, and consolidating small landholdings (Swynnerton 1954). Around the same time in East Africa, and SSA in general, pilot programs were created to survey and title land.[6]

In the 1980s and 1990s, organizations like the World Bank began to modify their position on this issue with the recognition that customary land tenure offered some advantages, especially its flexibility for dealing with changing economic and social conditions (Peters 2004); yet from the 2000s up to now, many national governments and NGOs have continued to act under the presumption that individual land titles are a priority for achieving successful land reform and economic growth (Benjaminsen et al. 2008). However, while competition for land has increased over time in SSA, the fact remains that customary land tenure, rather than state-enforced private property rights, is the norm. The following section defines customary institutions in more detail, and reviews theoretical explanations for the persistence of these institutions.

[5] See Platteau (1996) for a critique of how this theory applies to the SSA context.

[6] After independence from Great Britain in 1962, and in part as a response to the lukewarm reception of the programs by landholders, these initiatives came to a standstill in Uganda (Mugambwa 2007).

2.2 Customary property rights

Customary land tenure is a system of property rights based on membership in a community, typically tribe, kingdom, or clan.[7] Rights are allocated and disputes adjudicated by a customary leader such as a chief or clan head.[8] Land tenure can be thought of as a bundle of property rights including the rights to use land as one sees fit and gain income from that use, to exclude others from the land, to subdivide, lease, and sell land, and to transfer these rights to another individual. While the details of these regimes vary by community, landholders across SSA generally have rights to use land as well as some type of inheritance rights. Landholders do not hold a formal title to land, and are limited in their ability to subdivide, sell, or lease. Landholders rarely have the full right to exclude individuals from their property, especially other members of the same customary community.[9]

Customary tenure is widespread: though it is difficult to get a precise estimate, Deininger (2003) suggests that 10% of land in SSA is held under private title, while the majority of the remainder is held under customary tenure. For scholars and policymakers from the classical economics tradition, customary land tenure is potentially problematic for several reasons. First, it is thought to lead to lower levels of investment than private property rights because it is less secure than private tenure; as a consequence, farmers might try to increase their tenure security by overusing land, deforesting, and refraining from fallowing land. Second, customary property rights are thought to give farmers less access to credit than those farmers who have a title. Third, it can lead to fragmentation of landholding, at levels that are economically inefficient. Finally, for customary land that is communal, i.e. a commons area, customary authority is thought to be less effective in handling tragedy of the commons issues than privately held property rights. These critiques informed the recommendations made by organizations like the World Bank as well as government policy across the subcontinent for much of the twentieth century into the 1980s (Chikaya-Banda 2011; Peters 2004; Toulmin 2008).

Despite these stark expectations, the empirical record has been mixed (Bruce 1993; Kingwill et al. 2006; Platteau 1996; Shipton 1989; Sjaastad & Cousins 2008). It is not clear that land titles are the most effective tool to encourage investments in land, facilitate land markets, bring access to credit, or ameliorate the issue of land fragmentation. In some contexts, customary authorities are better able to enforce property

[7] It is possible to hold some property rights to land as an ethnic outsider; in many cases, rights of inheritance are not allocated to immigrants.

[8] I use the term "chief" generically to refer to customary authorities, except when more precision is required.

[9] Camilla Toulmin describes how these rights can overlap, held by multiple individuals or groups in a community: "...cultivation rights to a millet field in Mali may be held by one household, with women from the wider family having rights to glean after harvest, and neighbours then allowed to let their animals graze on the remaining stubble. Rights to dig a well on the field are held by the broader lineage of which the household is part, whereas rights to fruit from the tamarind trees that shade the plot are held by those who have pruned them on a regular basis. Where such a field has been let out to a tenant, however, rights are usually restricted to the cultivation and harvesting of crops. A tenant will not be allowed to dig for water, plant trees or make other significant investments in the land. Moreover, tenants are often not able to pass the plot they have rented to their heirs (Toulmin 2008, p. 12)."

rights than comparatively weak states. There is mixed evidence regarding the efficacy of land titles for addressing social issues like insecure land tenure experienced by women and immigrants (Bruce 1993; Ensminger 1997; Joireman 2011; Obeng-Odoom 2011; Platteau 2000; Twinomugisha 2011). Customary tenure has been shown to be compatible with investments by farmers, more security of tenure than private titling, and deforestation rates that are similar to communities with private property (see for example Besley 1995; Noronha 1985). Motivated by these findings, economists have developed models that formally show how customary tenure might produce these results (Sjaastad & Bromley 1997). Furthermore, despite decades of scholars and colonial authorities equating "customary" with "communal," customary tenure is not incompatible with individual rights (see e.g. Otsuka et al. 2015). As Max Gluckman wrote about then-Northern Rhodesia (now Zambia), "in so-called communal ownership... every member of a certain social group can claim the right to be given a garden... and to make certain use of public lands or water... The working of the land and the appropriation of its products in this system of land tenure are highly individualistic" (1965, p. 101).[10] And in places with true common pool resources (CPRs) like grazing pastures, local institutions can incentivize sustainable resource usage (Ostrom 1990).

A more recent set of work from the field of land administration has also shown how the process of land registration has its own ambiguities and difficulties. This literature has pushed beyond explanations for lack of land registration that focus solely on bureaucratic inefficiency (Abubakari et al. 2020), showing the importance of local-level norms of how land is inherited and shared, and of the existence in some cases of written documents attesting to individuals' property rights. Land registration can also be problematic when it conveys an official recognition of some property rights but not others (e.g. usufruct rights) (Abubakari et al. 2018). The technical details matter too; Lengoiboni et al. (2019) identify the questions associated with the legitimacy of digital versus paper copies of land registration paperwork, as well as the the balance to be struck between transparency of these documents and the protection of potentially sensitive land data.

The ambiguous empirical record suggests one possible answer to the puzzle that motivates this paper; the benefits of titling are neither certain nor great in magnitude. Yet, given the resources devoted by many SSA governments, international organizations like the World Bank, and NGOs to encourage land titling, the persistence of customary land tenure remains a puzzle.

A related strand of scholarship has addressed the continued relevance of customary law, not only for land but other domains such as marriage, inheritance, public goods, and the power of customary authorities (Comaroff & Comaroff 2018; Fenrich et al. 2011).[11] Most authors have focused on the political processes that drove the creation and reemergence of these institutions in the colonial and post-independence eras. During

[10] As cited in Peters (2009, p. 1318). See also Ault & Rutman (1979).
[11] See also: Allott (1960); Chanock (1985); Gluckman (1965).

the late 19th and early 20th centuries, colonial rulers found themselves dependent on traditional rulers for the governing of rural areas (Boone 2003; Firmin-Sellers 1996). Colonial rulers came to the continent predisposed to find chiefs ruling over communities organized along tribal lines, regardless of how social and political structures varied in reality (Hobsbawm & Ranger 1983); and where they did not find chiefs they often created them instead. In turn, local elites sought to present versions of 'traditional' institutions that would secure them the benefits from partnering with the colonial state. These institutions varied in the degree to which they mirrored precolonial institutions (Hobsbawm & Ranger 1983; Hyden 1980, p. 82; Mamdani 1996).[12] Kathryn Firmin-Sellers (1996, p. 14) argues that in Ghana, for example, indigenous actors competed to reinvent tradition, and that "...their efforts, in conjunction with and in response to British pronouncements, determined whether – and which – property rights were enforced." Christian Lund (2008) adds to the Ghana story by showing how the 1979 Constitution, by reverting control of land to local hands in an unspecified manner, led to the revival of the earth priest institution, a customary rival to chiefs.

The persistence of traditional authority in Africa is not just a product of colonial rule. The post-independence period brought similar political dynamics; those in position to dictate what counted as 'customary' crafted institutions that benefited them (Buur & Kyed 2005; Lund 2008: Morapedi 2011). Leaders of newly independent states also had an interest in forming partnerships with traditional authorities as a way to bolster legitimacy, especially since customary institutions could not, in the words of Morapedi (2011, p. 249), be "wished away" anyway. These leaders have also been a useful intermediary for turning out the rural vote. Even in places like Uganda and Mozambique, where customary leaders were stripped of power or outlawed at independence, the power of customary authorities was eventually reinstated.[13] These historical accounts are compelling, yet most of the continent is thirty years or more beyond independence; how has customary tenure managed to remain the status quo for most African landholders since that time?

3 The Social Costs of Exit

This section proposes an answer for why individual titling of land remains relatively uncommon in Africa. It is built around the insight that customary authority governs not only rights over land but also other domains of social life including marriage, inheritance, reciprocity, and the provision of club goods. When landholders title their land, removing land from the customary tenure regime, they face costs in these other domains. Even when it becomes economically advantageous to title to one's land, such as when property values rise, those benefits may still be outweighed by these social costs of exit. Landholders

[12]For this reason, Boone (2014) uses the term "neocustomary."

[13]State-enforced private property institutions were not immune to the influence of politics; Onoma (2010) argues that elites' support for, or undermining of land institutions has been a function of the ways in which these elites extract value from land.

understand these costs, and title their land at lower rates than we would otherwise expect. This section continues by elaborating on what customary communities look like, the powers and responsibilities of chiefs and other customary authorities, and the costs and benefits of titling land versus keeping it under customary tenure.[14] I discuss how status operates in different communities; notably, kinship with a chief in Uganda does not necessarily imply high social costs to titling one's land. I then discuss the coordination problem implied by social costs.

3.1 Customary communities and leaders

Customary law varies in form across the SSA region.[15] At its core, customary law is a system of rules and norms that governs individuals whose membership in the community is based on identity, whether it be clan, tribal, or otherwise. Its importance has varied both spatially and temporally. Note that the term "customary" when applied to land does not always mean "communal," though the terms have been used interchangeably in the past. While some customary communities do include some true commons land or water sources, and have rules to govern these resources, customary land has historically been made up of plots over which rights (especially usage and inheritance) are held by individuals or families, rather than the community as a whole. "Customary" also does not mean unchanging; there is wide recognition by scholars and legal authorities that the rules governing customary communities are in a constant process of change and adaptation (Fenrich et al. 2011). Chiefs and other customary leaders vary in terms of the level of their *de jure* and *de facto* authority. These leaders have obligations to their community members, including the provision of arable land, pasture, and dividing newly acquired land among subjects (Gluckman 1965, p. 78).

Customary law governs domains including marriage, brideprice and dowries, funerals and inheritance, reciprocity, and property rights to land (Fenrich et al. 2011; Hoon 2007; MacLean 2010; Woodman 2011).[16] Thus, customary rights to land are best thought of as embedded in an array of social relationships, and behavior in one area can affect outcomes in the others. The idea that economic and political institutions are integrated with social relations is a familiar theme in anthropology and sociology (Granovetter 1985), but also early work by economic historians like Karl Polanyi (1944). The precise meaning of 'social embeddedness' is not consistent across all of these literatures. For some, like Hann (1998), property relations are inherently social relations, and questions about race and one's relationship to government are inextricably

[14] In Appendix section 8.2, I outline a few options landholders have to improve their land tenure security without exiting the customary regime.

[15] In section 8.3 of the Appendix, I review descriptive data from SSA as well as some qualitative evidence that document the contemporary relevance of these institutions, and how landholders act strategically within institutional constraints.

[16] For a case of how these rules operate and interact, see Comaroff (1981) for Botswana.

tied to property. Peters (2004) argues that the social nature of land tenure means that land institutions can reproduce and reinforce unequal relationships across gender, class, and autochtonene (native) vs. migrant lines. Shipton and Goheen (1992, p. 316) apply the concept specifically to land in Africa, and argue that it is difficult to replace one tenure system with another simply by using legislation, given how these institutions are embedded in "...ecological, social, cultural, and political life."[17] Here, I suggest a 'thin' understanding of the social embeddedness of property rights: community members and chiefs have opportunities for repeated interactions not only when it comes to conflicts over land, but also across other social institutions. Repeated play in games is generally thought of as being associated with increased levels of cooperation (Axelrod 1984; Schelling 1960); in this case, I assume that on average, chiefs desire to retain authority over land. Thus, they want landholders to cooperate by refraining from titling, and use the threat of social costs as a means of deterrence. Other community members may or may not have any interest in whether a neighbor titles their land; I discuss this dynamic in more detail below with reference to the Uganda case.

3.2 Costs and benefits of titling vs. remaining

The costs and benefits of titling are not exclusively related to land use; a host of potential tradeoffs in other social domains accompany this choice. I argue that landholders understand these tradeoffs, and respond to them strategically, taking into account the likely behavior of their peers. What are the benefits of living in a customary community, and how do they compare to living outside this group? Along with individually held plots of land, landholders have access to common pool resources (CPRs) that are supplied and maintained by the group, such as areas of commons land for grazing animals. Rural communities often have informal[18] systems of credit and insurance against risk (Platteau 1997), though the extent to which these are explicitly tied to customary law varies. Community members also receive selective benefits that are distributed by chiefs on the behalf of the state (Baldwin 2015). Customary institutions of reciprocity are characterized by neighbors and family members exchanging labor and cash to help pay for school or medical fees, or to harvest a large crop (Hoon 2007; MacClean 2010). Community members may have favorable marriage prospects and access to a trusted system of dispute resolution. And of course, there may be intrinsic benefits to living in a community with shared norms, values, and traditions (Joireman 2011).

Titling land may result in exclusion from these institutions. The exact nature of these costs depends on who is imposing them. Social costs may be imposed by some combination of chiefs, neighbors, or family

[17] See also Simbizi et al. (2014) on how the concept of tenure security is an emergent one, produced by the interaction of elements of land tenure systems with the environment itself.

[18] By 'informal' I do not mean lacking stable and well-understood rules. Rather, as Platteau (1997, pp. 766-7) states, informal in this context means that "... there is no legal basis on which agents can rely to make binding contracts and enforce promises."

members. The source and magnitude of costs are determined by the structure of customary authority. Where customary authority is hierarchical, with powerful chiefs, I expect costs to be imposed by these leaders. On the other hand where authority is more decentralized, and clan leaders are primary arbiters of disputes, I expect social costs to located within families. Finally, where neighbors are highly dependent on each other (e.g. for reciprocal exchanges of goods and labor), landholders will face social costs from their peers if they choose to exit; but this last source of social costs only holds when titling is seen as either threatening to the land rights of neighbors, or as a rejection of one's customary community.

Living in customary communities is not costless. Community members are routinely called upon to supply time and effort towards development projects (Baldwin 2015) and other club goods. These commitments can add up to several hours a month. In many cases, community members pay regular gifts, tributes, or taxes to traditional authorities (Berry 2000; Bruce & Migot-Adholla 1994; Noronha 1985). Another cost for some landholders is the incomplete set of property rights under customary tenure; the rights of exclusion in particular is rarely allocated to landholders in these arrangements. Farmers have little choice whether to allow neighbors access through their lands, even if they would prefer otherwise. While titling land is thought of as "exiting" the customary land tenure regime, it is not a complete exit from the customary legal system altogether. Hence, and landholder who titles may avoid some property rights-related costs of customary life, but not the others.

As noted above, there are several potential benefits to titling land, whose magnitudes vary over time and space. A landholder may gain access to credit, where before it was absent or available on more costly terms. A title may also give a landholder greater ability to exclude others from her land. Perhaps most importantly, a title is generally thought to carry a lot of weight in the case of a dispute over land ownership.[19] Where true, this greater tenure security brings direct benefits when conflict over rights occurs, but also incentivizes landholders to make costly investments in their land, with subsequent payoffs. All that said, as described in section 8.1, titles can be quite costly to acquire.

3.3 Community status

The distribution of benefits from customary communities is not uniform across the population. Customary leaders and their relatives have greater access to benefits (Honig 2017); oftentimes widows, immigrants, and other groups find themselves in a less privileged position (Peters 2004; 2009). The variation in community status allows us to articulate theoretical expectations about the level of social costs faced by any given individual. High-status landholders should be least likely to title, given the steep social costs. Low-

[19] See for example in the Uganda context, CRED (2015).

status landholders should be most likely to title, after controlling for income and wealth which are likely to be below-average. This is similar to "forum shopping," situations in which individuals have access to multiple legal frameworks to make rights-based claims, and choose the framework that best suits their interests.[20] There is an important caveat when it comes to titling land, since in most SSA countries titling is a permanent removal of land from customary authority. Thus there is no returning to the customary system of land tenure once the decision has been made to title.

Honig's (2017) evidence from Zambia and Senegal supports the claim that farmers with high status in the customary community are least likely to title their land. The mechanism at work in her theory is the secure land tenure enjoyed by high status farmers. Honig shows that landholders who have close kinship ties to chiefs (a measure of status in those contexts) are more likely to fallow their land, a well-established indication of tenure security. She also notes that high status in a customary community may bring other social, political, or economic benefits (Honig 2017, p. 97). In section 8.7 of the Appendix, I replicate Honig's analysis using the data from Uganda, and show that in fact kinship with a chief is *positively* associated with titling, and is statistically significant across a range of specifications. This is true even despite the fact that chief kinship is also positively correlated with fallowing land in Uganda, much the same as Zambia and Senegal.

This puzzling result does not mean that we should jettison status as a key covariate for explaining titling decisions. The differences among Uganda, Senegal, and Zambia suggest we must be careful in thinking about cross-community variation in 1) meaningful indicators of status and 2) how status influences decision-making. In Uganda, "chiefs" as such exist, and are associated closely with customary kingdoms, yet they have little relationship to land tenure politics for the most part (especially in the study areas described in Section 4). Clan heads and elders have much more authority over these matters; yet a survey question asking about kinship with these leaders would likely have little predictive power in explaining variation in titling, given that nearly every landholder can claim close kinship to clan heads.

The same caution is warranted in thinking about low-status landholders with customary tenure. Women (especially widows) and immigrants are often thought to fall into this category. Depending on the nature of local customary institutions these groups may face low social costs of titling because they gain little benefit from their status in the community. However, low status is likely correlated with low levels of income and wealth, which are associated with a lower likelihood of titling. Below in Section 4, I discuss this feature of land tenure politics in Uganda, and suggest that women in particular face lower social costs of titling, and thus — after controlling for economic status — they should be more likely to title.

[20] See for example Busch (2007); Merry (1988); von Benda-Beckmann (1981). On issues of legal pluralism and land in Africa, see for example Fenrich et al. (2011); Joireman 2011; Lund (2008).

3.4 Coordination dynamics

A landholder's decision is based on the costs and benefits they face, but also on the decisions made by other landholders. If everyone chooses to remain in the customary regime they do not want to be the only one to exit, as they face steep costs. They may be closed out of the marriage market, they may be socially ostracized, they may lose out on club goods provided by the customary community, or they may find themselves on the losing end of disputes that are adjudicated by a customary leader. At the other extreme, if everyone around them has exited the customary regime, these social costs of exit they face are lower. Thus, the question of land titling is best thought of as a classic coordination problem; each landowner's best option is to do whatever all the other landowners are doing. Even in contexts where community-wide titling would make everyone better off economically, it may be difficult to get to that equilibrium given the coordination necessary to get many landholders to title their land at about the same time.

This coordination problem is characterized by Hoff and Stiglitz: "Given some initial equilibrium, even though each individual may know that there is another equilibrium at which all would be better off, individuals are unable to coordinate the complementary changes in their actions necessary to attain that outcome" (2001, p. 390). The coordination dilemma framework has been applied to a variety of social phenomena, including why neighborhoods become segregated (Schelling 1971) and how culture plays a role in determining economic institutions (Greif 1994).[21] If the titling of land is a coordination dilemma, the implication is that widespread titling will most likely occur as a result of compulsory programs run by the state (see e.g. Simbizi et al. 2015), or when the social costs of titling are lowered simultaneously for a group, such as when landholders form groups that collectively exit the customary land tenure regime.

The mechanism that explains the dynamics of this coordination problem is that the the utility to an individual of a good — in this case, property rights to land — depends on the level of consumption of that good in one's community. Granovetter and Soong (1986) suggest a few possible reasons for this: people may purchase a good to be in line with fashionable trends; some goods may depend on others' consumption for their utility; or the availability of complementary goods is enhanced when others consume a product. The last category is the best analogue to the customary land tenure case. The more landholders under customary tenure, the greater the ability to draw on the labor of one's neighbors to contribute to club goods, such as collective defense of property or harvesting large crops.

A coordination dilemma has implications for benefits as well as costs. Do the benefits of titling depend on the proportion of one's neighbors who have titled? There are two ways this may be the case. First, as more and more landholders title their land, this may attract institutions like banks that can supply substan-

[21] See also for example Ensminger & Knight 1997; Granovetter 1978; Mackie 1996; Schelling 1960.

tial credit.[22] In a market where only a handful of farmers have titles, it may not be worth a bank's time to open a branch in a community. Second, those who have titled already can provide knowledge and assistance to those who might want to follow, reducing transaction costs. A potential issue is that there may be a time delay between rates of titling hitting some threshold and the appearance of these benefits. In contrast, some social costs of titling are more immediate; a landholder's ability to withstand these costs in the short term, in expectation of long term payoffs, is part of her decision-making calculus. One implication of this discussion is that any exogenous shock that lowers the social costs of titling for *all* landholders *across multiple social issues* should result in an increase in the amount of land held under title. A stark example of this is the death of a chief who wields considerable authority. Baldwin (2015) notes it can take months or even years for a new customary leader to be elected or appointed. In the interim, we should expect landholders to seize the opportunity to title their land, knowing that they will bear lower costs in other domains of customary law.

3.5 Summary

The theory proposed above has a number of moving parts; here I summarize the parameters that affect the process of institutional change (and inertia) in property rights to land. These parameters operate at both the individual and community levels. For landholders, the decision whether to title land is influenced by the costs of titling (including opportunity costs of time and resources); the net social costs of exiting the customary land tenure regime; the tenure security offered by the state relative to the chief; and the difference in the value of the land under the different tenure regimes. The community-level factor that plays a role in this process is the proportion of landholders who have already titled their land. When this value is high, it lowers the social costs to a landholder who is pondering whether to title her land.

4 Evidence from Uganda

4.1 The Ugandan case

In section 4, I present data from Uganda to test the theoretical claims made above. First, I briefly discuss the Ugandan case, some relevant history of customary land tenure institutions, and suggest that Uganda represents a "tough case" for my theory to explain. Uganda's 20th century experience of customary institutions becoming increasingly marginalized, combined with a relatively decentralized system of customary land tenure, together imply that the social costs of titling land are low. Furthermore, the comparatively

[22] Note that this is distinct from the independent effect a land title may have on the *level* of credit available to an individual, regardless of whether others are titling their land.

high percentage of land that has been titled means that information about how the process works may be relatively easy to access.

Contemporary customary institutions in Uganda have roots in the pre-colonial era, when the region was characterized by multiple kingdoms, including the Buganda kingdom in central Uganda (centered around Kampala), the Bunyoro kingdom to the west, Toro and Ankole in the southwest, and Acholi and Lango in the north. The British colonial project in Uganda altered the political landscape, beginning at the close of the 19th century. The British struck an agreement in 1900 with the Buganda Kingdom that elevated the kingdom's position relative to other groups in the region, and set up Buganda as a conduit for Britain's indirect rule of Uganda. The British in turn received military aid from Buganda against the Bunyoro kingdom to the northwest. The Buganda administrative capacity also enabled the British to maintain their foothold in the region with a small number of colonial officials. The 1900 Agreement also created the special *mailo* system of land tenure, a form of leasehold that applied only to the land of the Buganda kingdom.

During colonial rule, lasting until independence in 1962, customary authority over land was permitted to exist outside of Buganda and urban areas, though the colonial Governor reserved the legal right to sell or lease the land without consent of the customary tenants (Mugambwa 2007). The 1967 Constitution under President Milton Obote outlawed the monarchies. Soon thereafter, Idi Amin's rule in the 1970s witnessed a further diminishing of customary institutions, enshrined in the 1975 Land Reform Decree. This law was meant to make all land public, and convert *mailo* and freehold titles to leases, but in practice the ban had little impact (Busingye 2002; Joireman 2011; Mugambwa 2007). Yoweri Museveni's ascendancy to the presidency in 1986, after several years of civil war, brought with it a renewed public interest in land reform. The 1995 Constitution officially reinstated kingdoms, yet limited their legal scope as "cultural institutions." At the same time, customary land tenure was legally recognized and treated similarly to freehold tenure, with land held in perpetuity by the legal tenant. The 1998 Land Act included a provision whereby customary landholders could apply for a certificate of customary ownership, conferring many of the same benefits as a freehold title such as the ability to mortgage, sell, and lease land.

The 1998 Land Act placed customary rights on the same legal level as freehold or leasehold tenure, meaning no type of claim is privileged over another in case of a dispute. Yet the perception among landholders as to how these disputes are resolved in practice is not entirely clear cut. Table 1 displays responses to two questions landholders were given after being read the following hypothetical scenario: "Imagine a situation where two groups argue over the same piece of land. Group 1 claims that they are the true owners because they have the ancestral rights to the land. Group 2 claims they are the legitimate owners because they have purchased the land and hold a title deed." While 71% of respondents said Group 1 had the true right to land, only 40% thought Group 1 would win a legal dispute in court. One interpretation

of these findings is that, while legal outcomes are perceived to be close to even between customary claims and title-based claims, this does not match perceptions of who legitimate property rights holders are. Put another way, titles are seen as having disproportionate legal weight.

Table 1: Legitimacy and strength of land titles

	Group 1	Don't know	Group 2
Who has the true right to claim the land?	693	21	257
Who would win if this dispute was brought to court?	391	96	493

Uganda is a tough case for the social costs theory for a few reasons. First, given its political history, customary authority is weak compared to many other countries in the SSA region. Second, land tenure authority is decentralized, and most everyday issues related to land are handled at the clan level. Together, this means that any social costs related to titling are not likely to be large, and they are mostly limited in origin to co-clan members and neighbors who play active roles in the titling process.[23] This is supported by discussions I had with research assistants in Uganda, who suggested that social costs of titling would likely be limited to the domain of reciprocity (e.g., helping a neighbor harvest a crop), and that one's standing in other institutions would likely be unaffected.[24] Third, rates of land titling in Uganda are near the high end for SSA. This theoretically increases the likelihood that landholders can access correct information about the costs and process of land titling, making overestimates of these costs unlikely. Titles are seen as having real importance in legal disputes, making them a valuable investment. Along other important dimensions Uganda is not an outlier in the SSA region: its GDP per capita of USD $1,864 places it near the middle of SSA, and its population of about 43 million people is comparable to regional neighbors Kenya, Sudan, and Tanzania.

4.2 The Survey

To test the relationship between land titling and other social institutions, I now turn to original survey evidence from Uganda collected in 2018. The survey was conducted by enumerators who were trained by me and my research assistant, Phillip Kihumuro. The four study areas were the districts of Buliisa, Hoima, Kapchorwa, and Mbale. In each of the four districts, the enumerators were local residents who were able to conduct the survey interviews in the local languages (Runyoro, Kupsabinyi, and Lugisu).

The driving force underlying both the theory of social costs as well as existing theories of property rights change is competition for land. In Uganda that competition can be intense, yet localized in small areas, making it reasonable to oversample in areas experiencing the most competition. We thus employed a

[23]The titling process in Uganda is described in detail in section 8.4 of the Appendix.

[24]This point was raised by Phillip Kihumuro as well as by survey enumerators during training in Hoima, November 2018.

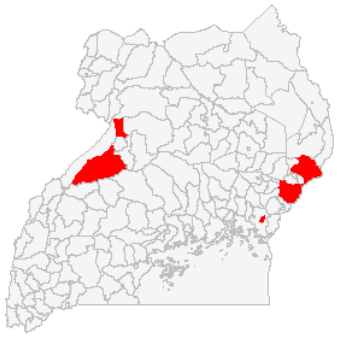

Figure 1: Research Sites in Uganda

stratified sampling technique, based on the major sources of land competition in each district. We sorted all subcounties in each district into three groups based on their proximity to sources of conflict (nearest, middle, farthest). In each group, we randomly selected four subcounties, and one village in each subcounty[25]. Enumerators approached the LC1 (local council) chairperson for each village, from whom they obtained lists of local heads of households. The enumerators then randomly selected 20 individuals to interview in each village, resulting in sixty respondents per group, for a total of 240 respondents per district.[26] It is possible that LC1 chairs did not provide our teams with complete lists of landholders, making the sampling non-random, but we tried to communicate the importance of this issue to them and most seemed to understand our concern.

Enumerators first informed respondents of the purpose of the study, and obtained verbal consent to participate in the survey. Each survey interview lasted approximately 25-30 minutes, and covered a range of questions related to land tenure, land use behavior, and potential social costs of titling land. The enumerators used the Open Data Kit Collect smartphone app to collect responses, and recorded the GPS coordinates of each landholder's plot. Upon completing the survey, enumerators submitted the survey responses electronically to a secure server that only I have access to.

4.3 Variables

There are two relevant dependent variables. The first measures an individual's current land tenure status, taking the following values: titled, customary with no certificate, customary with a certificate[27],

[25] A full list of subcounties can be found in the Appendix.

[26] Enumerator teams exceeded the 20 respondent per village goal in a few cases.

[27] These are relatively rare; though the Land Act of 1998 established these certificates as a means by which to record and certify customary ownership to land, they have only been introduced in a handful of subcounties throughout Uganda. A senior staff surveyor at the Ministry of Lands told me that these certificates are primarily found in districts where the World Bank has been active on land matters: Kasese, Kabale, and Karamoja (author's interview, 22 November 2018). I suspect that, with the exception of Kapchorwa District, respondents who reported having a customary certificate are actually referring to a written agreement made with the previous tenant on their land and surrounding neighbors, rather than a government-issued certificate. These written agreements are often

kibanja[28], leasehold, and illegal squatting. About 12% of the sample reported owning freehold land titles, compared to a national average of about 40%. In the analysis below I create a dummy variable `titled` that takes a value of 1 if a respondent reported having a freehold title to their land, and a 0 otherwise.[29] Table 2 displays the breakdown of tenure status by district.

Table 2: Land Tenure Status

	Buliisa	*Hoima*	*Kapchorwa*	*Mbale*	*Proportion of Total*
Freehold title	10	6	91	6	0.12
Leasehold	10	76	6	0	0.09
Kibanja	1	8	33	32	0.08
Customary with certificate	117	2	13	37	0.17
Customary without certificate	93	147	100	162	0.51
No permission	4	0	0	1	0.01
Don't know	5	12	3	3	0.02

The second dependent variable measures the likelihood that a landholder will title their land in the future. This question was only asked of respondents who reported that their land was not currently titled, and ranges across five values from "very unlikely" to "very likely." Responses for this variable are found in Table 3. We asked a followup question so that landholders could indicate at what point in the future they might begin the titling process.

Table 3: Likelihood of Titling in the Future

	Buliisa	*Hoima*	*Kapchorwa*	*Mbale*	*Proportion of Total*
Very unlikely	7	77	33	60	0.21
Somewhat unlikely	0	9	6	20	0.04
Not sure	154	5	47	81	0.33
Somewhat likely	16	30	26	21	0.11
Very likely	57	120	43	51	0.32

Social costs of titling land are measured in two ways, both of which focus on the institution of reciprocity. A first survey question asked respondents how many hours family members had contributed to helping the respondent with important events, harvesting crops, etc. Interview data and consultations with the local Ugandan research team indicated that social costs were most likely to come in this form, rather than for example in marriage markets. Because of the decentralized nature of land relations in most of Uganda, the social impact of titling on customary institutions is most likely to be felt within-clan and by close neighbors, rather than by a wider community such as village or tribe. The second measure is a question that poses a hypothetical situation to the respondent: there are two landholders in a community, and one titled his land last year while the other remains within the customary system. Each is now asking his neighbors for help

witnessed by LC1 village chairpersons, but their legal status is not clear.

[28]This refers to a special type of land tenure created for individuals who have occupied a land parcel for more than 12 years without any challenge by the legal owners, thus gaining some property rights.

[29]The survey does not include a measure of how long ago the title was acuired.

harvesting a large crop (a common practice in rural Uganda). The question asks respondents to decide if neighbors will favor one landholder over the other, or are equally likely to help either one. In each of the models below, a positive increase in social costs should be associated with a decreased likelihood of having (or planning to obtain) a title.

I include a number of control variables in the statistical models I estimate below. There are a handful of demographic measures (age, gender, education) that are theoretically correlated with the social costs of titling as well as the outcome of the likelihood of titling. I use a wealth index measure to capture landholders' economic status. The index is based on how many of eight items a landholder owns, ranging from a radio up to a tractor. This is a more reliable measure of economic status than a question about monetary income, given that many rural landholders do not have predictable incomes or work outside the formal monetary economy. The Appendix contains summaries of the variables of interest. I also construct two additional control variables. The first is a variable that measures the respondent's distance in kilometers (as the crow flies) from the largest identified source of land competition in her district. These four sites were chosen based on qualitative insights gleaned from interviews with residents and from the local research team. For example, for Hoima district the source of land competition used is the GPS coordinates for the new oil refinery located in Kabale. The refinery itself is 29 square kilometers, and is also the point where a major new road, two intake pipes, and one distribution pipeline meet.

Secondly, I construct a variable named `ethnic outsider`. This is a dummy variable that takes a value of 0 if the respondent is a member of the majority ethnic group in a district, and 1 otherwise. The majority group in Hoima and Buliisa is the Nyoro, in Mbale the Gisu, and in Kapchorwa the Sabinyi. As noted above, ethnic minority members are generally thought of has having relatively low status in customary communities in Africa. While this should mean the social costs of titling are relatively low, the process of land titling in Uganda — which is contingent on the permission of neighbors — means that it may negatively affect a landholder's likelihood of titling.

4.4 Analysis

Next I analyze survey and interview data from Uganda in order to test the theory of the social costs of land titling. Section 4.4.1 discusses the results of modelling whether landholders have a freehold title, and the likelihood of titling for those who haven't already. I supplement this work in section 4.4.2 with evidence from interviews with landholders, clan heads, and civil servants.

4.4.1 Logit and probit models

I first estimate a set of logit models for the binary dependent variable `titled`. Table 4 below displays the results of these model estimations.[30] I begin with a simple bivariate relationship between the `titled` outcome and a variable that indicates the number of hours of labor the landholder receives from family members and neighbors for things like harvesting crops and helping with large events (e.g. marriages and funerals). This model and each of the following is also reproduced using the alternative social costs measure, and results are presented in Appendix 8.9. The coefficient has the expected negative sign, but falls short of standard benchmarks of statistical significance in two of three specifications.

The first set of controls I add are individual-level factors that are theoretically correlated with both social costs and the likelihood of having a title. These include a respondent's age, gender, an index of household wealth, and education. Unsurprisingly, more education is positively associated with having a title; however, the wealth index has no clear relationship in this model, nor in any of the logit models specified. The `female` dummy for gender is positively associated with having a title; this is a counter-intuitive result that is discussed in more detail below after I present the probit models.

Model 3 includes three additional controls. First is the ethnic outsider dummy detailed above. Second is the respondent's distance from major sources of land competition. Basic theoretical expectations from political economy suggest that where competition over land is high, we should observe landholders demanding increasingly formal, individualized property rights. A landholder's proximity to a source of land competition (e.g. infrastructure related to the oil industry) may also be a function of their status in the customary community. Finally, I include `acres`, a measure of the size of the respondent's land holdings. To better visualize the results of this model, Figure 2 displays the marginal effects of each covariate.

Next I estimate the same logit models, replacing social costs with two measures that reflect the prevailing wisdom regarding titling. The first is a measure of a respondent's perceived costs of obtaining a title, per acre of land. The second variable `value of title` is based on a hypothetical posed to respondents: would a customary claim to land trump a freehold title in a legal dispute? Respondents who answered that a title would win out in court are given a value of 1, all others 0. Results are displayed in Table 5, and marginal effects are visually displayed in Figure 3. The coefficient on the perceived cost of a title has the expected sign, though the substantive effect is small. As expected, the coefficient of the measure that indicates strong perceptions of a title's value is positive and statistically significant. This appears to be evidence in support of the claim that only well-enforced formal property rights will induce demand for land titles. Qualitative evidence from interviews conducted in each of the four study districts suggest that

[30] For all models, standard errors are clustered at the village level. I include subcounty-level dummies for the survey strata as well; in the interest of keeping tables from being cumbersome to read I have omitted the dummies.

Table 4: Logit Estimation: likelihood of having a freehold title

	Dependent variable:		
	titled		
	(1)	(2)	(3)
family help (hours)	−0.005	−0.012**	−0.011
	(−0.006)	(−0.005)	(0.015)
age		0.027***	0.030***
		(−0.008)	(−0.011)
female		0.871***	0.936***
		(−0.164)	(−0.305)
wealth index		−0.108**	−0.140***
		(−0.052)	(0.002)
education		0.652***	0.630***
		(−0.094)	(−0.144)
ethnic outsider			−0.639**
			(−0.287)
distance from threat (km)			0.0003
			(0.014)
acres			0.005
			(−0.010)
Constant	−17.540***	−22.346***	−30.005
	(0.201)	(1.666)	(23.165)
Observations	808	806	749
Log Likelihood	−294.004	−244.187	−226.245
Akaike Inf. Crit.	598.008	506.374	476.491
Note:			*p<0.1; **p<0.05; ***p<0.01

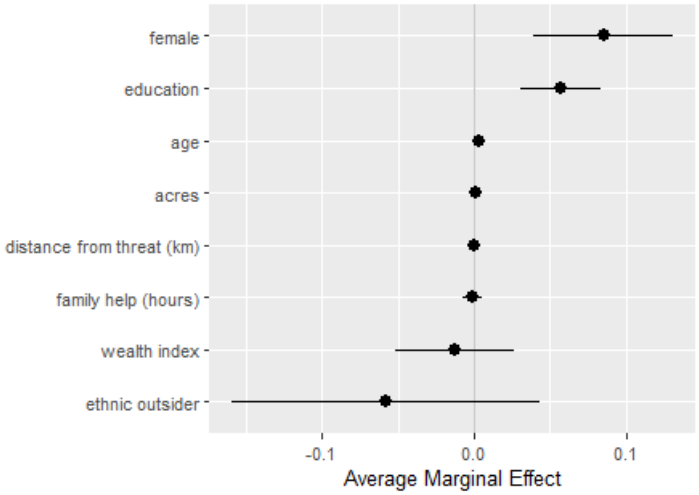

Figure 2: Marginal effects, logit model 3

landholders view the two most important benefits of land titles as their legal weight in a dispute and the access they grant to higher levels of credit from lenders. This perception among landholders does conflict with recent work showing that Uganda's property registry has flaws that make it unlikely — in its current state — to play a significant role as a foundation for a flourishing credit market (Oryema 2016).[31] Still, landholders base their decisions on their best understanding of the benefits of titling, whether or not those benefits will pan out in reality.

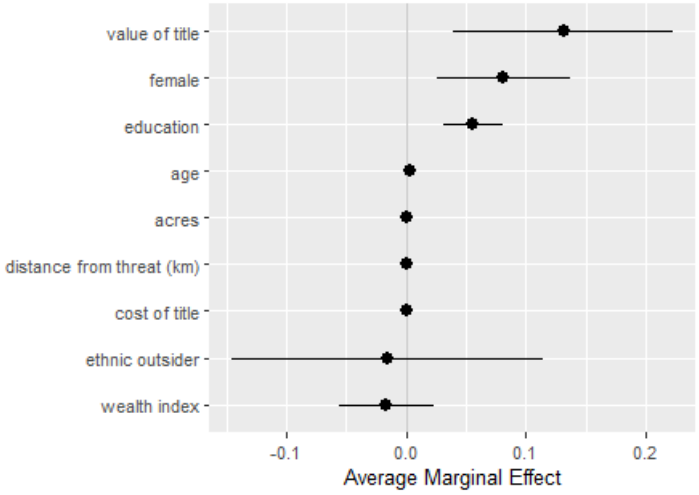

Figure 3: Marginal effects, logit model 3, standard explanations for titling

[31]Oryema (2016) notes that the registry does contain information on property size and location, it lacks information on easements, occupancy rights, and public restrictions, which are useful components for creditors.

Table 5: Logit Estimation: likelihood of having a freehold title, standard explanations

	Dependent variable:		
	titled		
	(1)	(2)	(3)
cost of title	-0.00003^{***}	-0.00002^{***}	-0.00002^{***}
	(0.00000)	(-0.00001)	(-0.00001)
value of title	1.356^{***}	1.163^{***}	1.265^{***}
	(-0.369)	(-0.391)	(-0.471)
age		0.032^{***}	0.033^{***}
		(-0.007)	(-0.006)
female		0.716^{***}	0.777^{***}
		(-0.134)	(-0.131)
wealth index		-0.166^{**}	-0.158^{**}
		(0.066)	(0.062)
education		0.552^{***}	0.537^{***}
		(-0.101)	(-0.112)
ethnic outsider			-0.151
			(0.287)
distance from threat (km)			0.001
			(-0.008)
acres			0.006^{***}
			(-0.001)
Constant	-19.203^{***}	-23.682^{***}	-23.910^{***}
	(1.026)	(1.914)	(2.331)
Observations	655	653	616
Log Likelihood	-252.309	-218.514	-207.043
Akaike Inf. Crit.	516.617	457.028	440.087
Note:			*p<0.1; **p<0.05; ***p<0.01

The second set of analyses are five category ordered probit models for the dependent variable that captures an individual's likelihood of titling their land, ranging from very unlikely to very likely. These analyses are thus limited to a non-random sub-sample of landholders who have not titled their land as of when the survey was conducted. Table 6 displays the results of these models. In each case, I include the same control variables that are discussed above. The social costs variable measuring the help a respondent receives from family members and neighbors has the expected direction and is statistically significant in models 2 and 3, though the sign of the coefficient in model 1 is not the expected direction. Figure 4 displays results from model 3 visually, with simulated expected values for the probability of titling. Figure 4 contains just two of the five categorical outcomes in terms of the likelihood of titling, "very unlikely" and "very likely," and includes on the x-axis the full range of observed distances from land competition. The expected values are for two scenarios: a women with primary school education who is highly dependent on neighbors and family[32] and a male with secondary education and little dependence on neighbors and family. Women are expected to fall into the "very unlikely to title" category at higher rates than men, especially when close to land competition. The reverse is true for the "very likely to title" category.

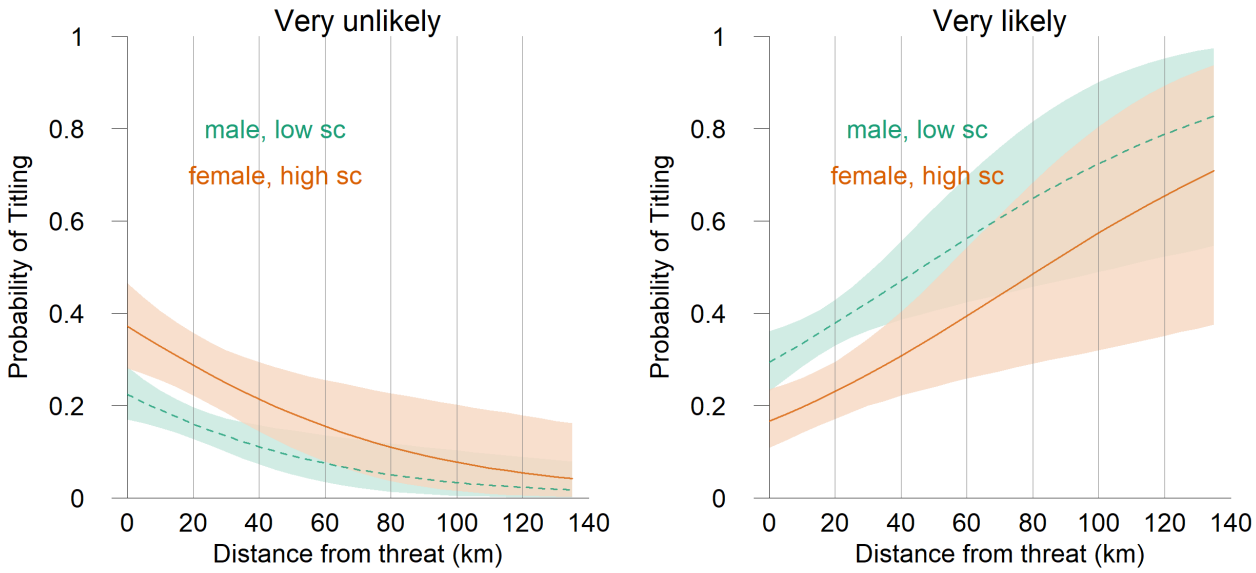

Figure 4: Expected values, probit model 3

Of special note across all the logit and probit estimations are the findings with regard to gender. In

[32]High social costs here are one-half standard deviation above the mean, and low social costs are one-half standard deviation below the mean.

Table 6: Probit Estimation: likelihood of titling

	Dependent variable:		
	will_title		
	(1)	(2)	(3)
family help (hours)	0.005^{***}	-0.003^{***}	-0.005^{***}
	(0.00004)	(0.00005)	(0.00004)
age		-0.010^{***}	-0.010^{***}
		(-0.00000)	(-0.00000)
female		-0.178^{***}	-0.193^{***}
		(-0.0002)	(-0.0001)
wealth index		0.173^{***}	0.156^{***}
		(-0.0001)	(-0.0001)
education		0.096^{***}	0.104^{***}
		(-0.0001)	(-0.0001)
ethnic outsider			-0.266^{***}
			(-0.00003)
distance from threat (km)			0.012^{***}
			(0.00001)
acres			-0.001^{***}
			(-0.00000)
Observations	695	693	641
Note:			*p<0.1; **p<0.05; ***p<0.01

every model of the likelihood of *having* a freehold title, the `female` dummy is *positively* correlated, while in every model of the likelihood of titling in the future the variable is *negatively* correlated. One interpretation of these results is suggestive evidence for the notion that property rights institutional change is a two-stage process. In other words, there may be an initial set of privileged landholders who have the means to title, and are not sensitive to social costs. After they have titled, the community is left in the coordination dilemma described in section 3.4. The wealth index variable has significant, negative coefficients across each estimation of having a title, and significant, positive coefficients across each estimation of titling in the future. This result should be taken with a grain of salt, due to the difficulty of accurately measuring rural landholders' assets, let alone income.

Another result of note is that landholders' proximity to land threats seems to have little to no effect on their likelihood of having (or planning to obtain) a freehold title to their land. This result holds across nearly every specification; and in the case where there is a statistically significant association, it is not in the expected direction. This is startling, particularly given that land values in some of the study areas have risen precipitously in recent years. This runs contrary to the most basic expectations of traditional political theories of property rights change. A potential explanation for this result is that sources of land competition are non-randomly distributed over space. This is most plausible for infrastructure projects, which may be located nearest to poor and vulnerable populations that don't have the means to title their land. This explanation is least plausible in the case of Mbale District, where the biggest source of land competition is population growth in the district capital, and vulnerable populations generally live farthest from this competition.

On the whole, the statistical evidence lends some support for the social costs theory; it is difficult to reject the hypothesis that social costs are a significant explanatory factor when it comes to landholders' decisions to title land. However, this support is somewhat sensitive to the model specification, and to the measure used to capture social costs of titling. Moreover, the substantive impact is not large. This result could be due to an actual lack of causal effect, difficulty in measuring social costs, or a true measure of a small causal effect, consistent with Uganda's status as a tough case. In the next section, I bring some clarity to this question by reviewing interview evidence from Uganda.

4.4.2 Interview evidence

Interview evidence from rural residents in Uganda offers support for the theory of social costs and some clarification of the quantitative results. Some landholders were initially skeptical when asked whether titling one's land might lead to alienation from the customary community. Yet in several cases this initial

skepticism was followed by anecdotes of neighbors who had titled, and were then seen as flaunting their wealth.[33] One civil servant who had worked on land issues at the district level suggested that this problem arises especially when a landholder titles their land, and then is unable to utilize it productively without neighbors' help.[34] The neighbors would then ask why the landholder titled all this land in the first place. A landholder in Kapchorwa described the alienation that might result if her neighbor (and in-law) were to title: "If [he] would title, but we don't, there might be some problem. How can he go and leave us behind?"[35]

Several interviewees also mentioned how titling one's land can inspire fear in neighbors that this will harm their tenure security. While neighbors have a veto on the titling process, once their permission is secured there are several opportunities for the landholder who is titling to leverage political connections with the Area Land Committee, District Land Board, Ministry of Lands, and the Department of Surveying in order to expand the official borders of their property. A natural resources officer for one of the study districts described how title applicants are expected to "facilitate" the Area Land Committee: in other words, pay for their food, transportation, and lodging when they travel to a property to begin the titling process. This is an opportunity for wealthy and well-connected landholders to make side payments to Committee members, with the aim of skipping steps in the titling process or manipulating the boundaries of their property in favorable ways.[36] A landholder in Chema, Kapchorwa District, said that wealthy investors would even go so far as to survey another individual's land at night, and conspire with government officials to backdate land titles twenty years.[37]

Social costs aside, the interviews revealed a mix of opinions as to why some landholders title while others do not, as well as the interests of the Ugandan state in the process. Most landholders suggested that the cost of the title was the biggest obstacle for most individuals, while District and Ministry of Lands officials seemed to think that lack of knowledge about the value of titles and how to obtain them was the limiting factor. Some landholders explicitly echoed the logic of classic theories of property rights change, suggesting that landholders who "need" a title are the ones to get one; i.e., those whose property rights were under competitive pressure. As for the state, the resource officer mentioned above argued that it faces competing pressures. On the one hand, the government is "afraid for people to have land on paper," because the acquisition of land for public works projects becomes more expensive. However, acquisition deals are less subject to fraud if landholders have titles, as the state is ensured that they are dealing with

[33] Author's field notes, November 2018.
[34] Author's interview, Hoima Town, 22 July 2018.
[35] Author's interview, Kapchorwa, 22 August 2018.
[36] Author's interview, Hoima Town, 25 November 2018.
[37] Author's interview, Chema, 1 December 2018.

the legitimate owner.[38]

Other individuals argued that the government is able to derive benefit from ambiguity of property rights. One civil servant described an ongoing court case between Hoima Sugar, a Ugandan manufacturer, and local landholders in Hoima District. Their dispute is over ownership of a large plot of land outside of Hoima Town. The civil servant suggested that the government was taking an active role in delaying resolution of the case, instead preferring to play each side off one another. A legal resolution favoring one party would potentially lead to the losing side petitioning the state for redress, a situation it would prefer to avoid. The civil servant summarized this view succinctly: "Nothing is by accident, everything has a purpose, even confusion around land issues."[39]

5 Further Empirical Implications

Given that Uganda is a tough case for the theory, I next see whether broader empirical patterns suggested by the theory hold across the African continent. This section uses the Afrobarometer survey, the premier collection of public opinion data from Africa, to see whether the power of customary leaders is associated with stocks of titled land.

5.1 Measuring the power of customary authorities

It is difficult to accurately measure the power and authority of customary leaders cross-nationally. The material resources that these leaders control varies not only across countries, but sub-nationally as well. So too varies the degree to which these actors wield authority based on the trust and respect of their co-ethnics (Koter 2016). While some of this variation stems from pre-colonial institutional differences, the colonial period played a large role in shaping contemporary patterns of customary authority (Boone 2003; Koter 2016; Onoma 2009).

This subnational variation in the power and authority of customary leaders aggregates to the national level, where we observe important difference between countries (Koter 2016). Where these leaders are relatively strong, we should expect low levels of land held under freehold title, given the high social costs faced by landholders if they title. This is an endogenous relationship, as the primary foundation of the strength of customary leaders is their authority over land; that said, at any given moment of time we should expect to observe the relationship as described. I test for this pattern first by using question 24E of the 2016 merged Afrobarometer dataset, which asks respondents how often in the past year they have approached

[38] Author's interview, Hoima Town, 25 November 2018.
[39] Author's interview, Hoima Town, 22 July 2018.

their traditional leader for help, or to give their point of view on some matter.[40] I use only the percentage of respondents answering "often" to this question, and plot the country-level values against the percentage of land held under private title, using data on titling rates drawn from Boone (2014). Figure 5 displays this relationship. We do observe visual confirmation of the expected relationship: the greater the percentage of respondents who contact their traditional leader often, the less land is held under freehold title. Similarly, Figure 6 plots the same stocks of titled land against the percentage of respondents who report trusting their traditional leader a lot (question 52K in the Afrobarometer). We observe the expected pattern once again: increased trust in traditional leaders is associated with lower stocks of titled land.

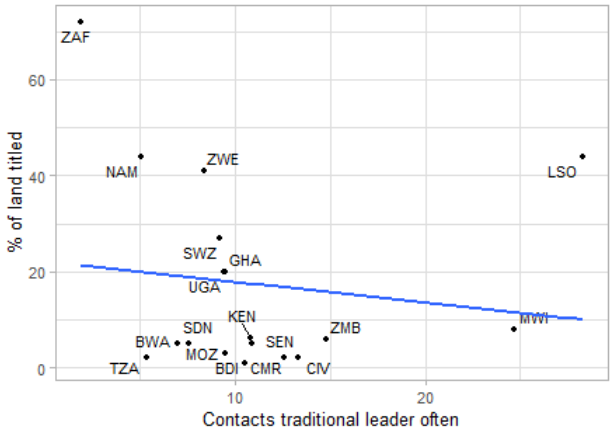

Figure 5: Strength of customary leaders and titling of land

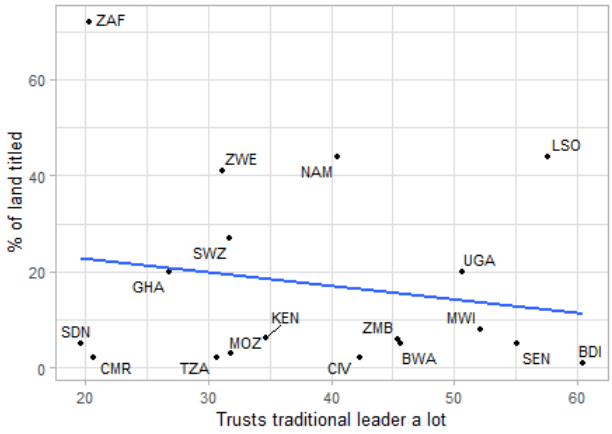

Figure 6: Trust in customary leaders and titling of land

Next I use a question from the 2008 round of the Afrobarometer survey (Q65) which asked respondents how much influence traditional leaders have in governing their local community. Figure 7 plots the per-

[40]These plots are reproduced in the Appendix using 2004 and 2008 Afrobarometer data.

centage of respondents in a country sample that answered by saying "a great deal." As expected, countries where traditional leaders are perceived to have a great deal of influence over local politics have smaller stocks of titled land.

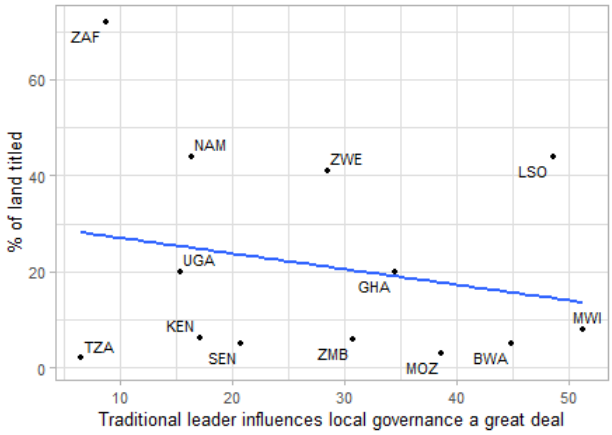

Figure 7: Influence of customary leaders and titling of land

This is a non-random sample of African countries. However, the 2016 Afrobarometer data allow us to examine these relationships for over one-third of the countries of Africa, and there is no clear evidence that the countries excluded from this sample are categorically different when it comes to land titling and the relevance of customary authorities.

Infrequent contact with customary leaders or low trust in them by respondents may not be a sign that customary communities are unimportant, but rather that they are less hierarchical in structure.[41] So, might landholders in decentralized customary communities still face social costs from titling, imposed by neighbors, family, and friends? Consistent with the theory described in Section 3, these landholders should be thought of as facing lower levels of social costs, relative to those in more hierarchical communities. This is because the imposition of social costs by a collection of neighbors implies more difficult collective action than if they are imposed by a chief. Furthermore, if landholders face social costs from close friends or family, they may be able to make investments in these social relationships prior to titling their land, such that the act of removing land from customary authority does not result in unbearable costs. Finally, the removal of land from customary tenure does not impose serious costs on any one individual in terms of a loss of authority in these contexts, as opposed to hierarchical groups where chiefs' authority rests heavily on their control of land rights.

[41] Indeed, this is how Koter (2016) interprets responses to these survey questions.

6 Conclusion

I have argued that the social costs of titling land are useful for explaining why property rights change across Africa has proceeded at a surprisingly slow pace. On the narrow question of the relatively slow rate of land titling, the theory I present should be viewed as a complement to the explanations that come out of the New Institutional Economics framework: the transaction costs of obtaining a title can be prohibitive, and perceived lack of enforcement by the state can deter landholders from making this investment. Here, I complicate the story by suggesting that landholders face a variety of social costs from titling as well. Even when the costs of titling combined with the level of enforcement by the state are outweighed by potential economic benefits, the social costs involved may deter a landholder from exit. Though quantitative survey data from Uganda is not conclusive, qualitative interview evidence suggests support for the theory, as does the cross-national associations observed in the Afrobarometer data. This research has the potential to speak to other areas of scholarship, given the important role land has historically played for other political issues in Africa.

For example, a lot of weight has been placed on identity-based land tenure institutions for explaining the scope of land conflict in Africa (Boone 2014). When ethnic identity is a defining means by which individuals access land and other resources crucial to their livelihood, it makes sense that "...land institutions enforce and reproduce ethnicity as a state-imposed political status, channeling the tensions born of redistributive conflict in the rural areas along the lines of this political (ethnic) cleavage" (Boone 2014, p. 13). Boone and other scholars classify African land tenure regimes as being either statist or customary, with consequent impacts on the type and likelihood of land conflict; yet the reality is that landholders typically have the legal right to title their land, and are not "stuck" in the customary institution. However, this oversimplification is more reasonable if there are heretofore unaccounted costs of titling land, which is what the social costs theory suggests.

The social costs theory hopefully provides a better way to understand customary land regimes as part of a larger suite of social institutions, and suggests that one's status in one institution affects behavior in the others. This theory also speaks to the process of institutional change over time, by focusing on cases where we expect to see change but do not observe it; the persistence of customary law in Africa, an enduring puzzle for political scientists, makes more sense after considering the demand for the institution created by social costs of titling land. It is my aim with this paper that this improved understanding of the rules that govern individual behavior will be of use to scholars, policymakers, advocacy groups, and landholders themselves.

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8 Appendix

8.1 Evidence for contemporary explanations

On the supply side, governments have found titling programs expensive and difficult to scale up to the country level (Deininger 2003). The process of titling requires detailed surveys of land boundaries — often in remote locations — and a well-functioning bureaucracy to receive and process applications for titles. Credible enforcement of titles requires the rule of law and a robust judiciary. On the demand side, slow rates of titling are explained either by the costs or by the perceived lack of enforcement of property rights by the state. Either explanation is plausible. Along with the bureaucratic costs of obtaining a title, which can run in the hundreds or even thousands of dollars (US), there are the costs of transportation to relevant offices, survey fees, and the opportunity costs of the time spent on getting a title. Landholders may find it impossible to afford these costs even when state-enforced property rights would be preferable to remaining in the customary system. The argument that landholders do not title their land because they anticipate insecure property rights enforcement from the state comports with the folk understanding of African states: that is, lacking in institutional capacity and/or corrupt. In short, the argument is that landholders fear that the state will either be unable to enforce property rights or will selectively enforce the rights of allies at the expense of adversaries. I seek to complement, rather than supplant, these explanations with the theory I propose in section 3, to more fully account for the variance in land titling we observe in Africa.

How well do these explanations fare empirically? If the transaction costs of titling hold landholders back from titling, we should expect that higher-income countries in Africa should have more private titling of land. Figure 8 graphs the percentage of land held under private title in 20 SSA countries against log GDP per capita, PPP. The data on titling rates are drawn from Boone (2014), while GDP data are taken from the World Bank and represent figures for 2013 or the closest available year. The line of best fit indicates that some countries' titling figures are well predicted by this rough measure of prosperity, but several countries fall far from their predicted values. GDP per capita is far from an ideal measure of rural landholder income or wealth and masks their distribution in each country, but is likely correlated positively with income in most cases. If on the other hand it is a government's ability to enforce property rights that shape landholder decisions, we should expect state capacity to be a strong predictor of titling. Figure 9 plots the same titling figures against tax revenue as a percentage of GDP (Sudan and Cameroon have been excluded due to lack of data on tax revenues).

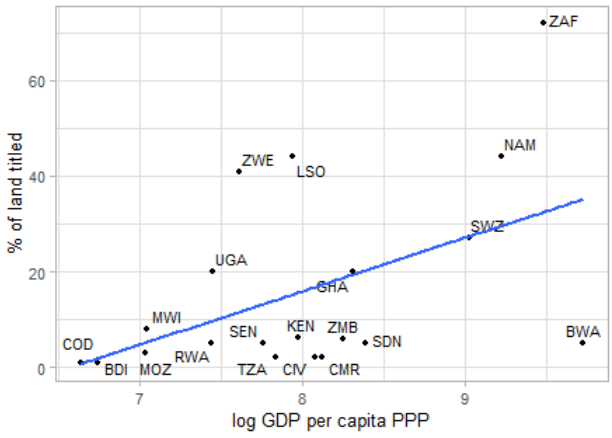

Figure 8: Percentage of land titled vs. logged GDP per capita, PPP

Again, multiple cases fall far from the line of best fit.[42] These plots are meant to motivate the argument made here, and do not constitute a test of the causal relationship between these variables; neither endo-

[42] I reproduce these plots in section 8.8 and remove the former settler-colonies in southern Africa, which may have an oversized role in determining the line of best fit. I also plot the same titling figures against tax revenue and GDP per capita data from 2005, to take into account the potential lag time between applying for and receiving a title. Those plots indicate similar relationships to what we observe in Figures 8 and 9.

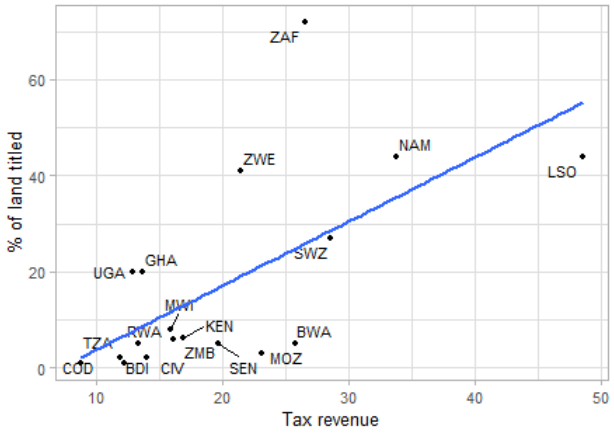

Figure 9: Percentage of land titled vs. tax revenues as percentage of GDP

geneity concerns nor alternative explanations been accounted for. That said, it is important to note that the titling data represent *stocks* of titled land (as of roughly 2013), not *rates* of titling in each of these countries; Figures 8 and 9 represent a static snapshot of property rights in SSA. While accurate data on the rates of land titling are difficult to come by, accounts from journalists and development agencies that work on this issue indicate the stagnant nature of the titling process in most places over the last several years. In short, the dynamics of land titling still represents an important puzzle for political scientists.

8.2 Extra-institutional options

Exit from — versus remaining — in customary land tenure regimes are not the only options available to landholders to bolster their tenure security. There are also what I term "extra-institutional" methods to protect land claims; these include individual use of violence (buying a gun, hiring a guard, etc.) and land-usage (building on land, fencing land, deforesting, planting crops instead of fallowing). These are "extra-institutional" options because they can be used while remaining in either customary or state-enforced property rights systems. A farmer with a title can also build a fence or hire an armed guard. In contrast, it is difficult to title one's land while making a customary claim at the same time; the institutional options are mutually exclusive. Furthermore, exiting the customary regime by titling is a permanent decision, as legally no new land can be added to areas under customary authority.

The costs to landowners of pursuing these extra-institutional options and their effectiveness are part of the decision-making around titling. If it is relatively cheap to implement these tactics the prospect of titling may be less attractive, as it is possible to rely on the customary community's help and supplement it with one of these options. If on the other hand these options are costly (e.g. if violence is the only available option), landholders may feel fully dependent on traditional authorities for tenure security. On the margin, we would then expect titling to be relatively cheaper. The availability of these extra-institutional tactics make it easier for a landholder to justify keeping land under customary tenure.

8.3 Customary Institutions in Africa

This section reviews descriptive data from the African continent that show how citizens engage with traditional authorities, and the trust they have for customary and state institutions. I then document in detail some costs and benefits of living under customary authority, factors which are described in general terms in section 3. These variables are an important part of everyday life for many landholders, but have yet to be fully incorporated into a theory of institutional change.

The Afrobarometer survey offers the best way to assess broad measures of citizen engagement with traditional leaders, state institutions, and measures of trust for these institutions across Africa. Table 7 displays one measure of respondent engagement with customary institutions, the proportion of respondents who

have contacted traditional leaders in the past year about an important problem. The data are from the 2016 round of the survey, and include about 54,000 respondents from 36 countries. Nearly 30% of respondents have contacted their traditional leader during the past year; note that these data include urban centers, where customary authorities are generally less important than in rural areas. How does this compare to engagement with other institutions? Table 7 also displays the responses to the same question about contacting local government councilors and political party officials. The data indicate that respondents contact their traditional leader at least as often if not more than these other officials. Engagement in customary communities is very much a relevant part of life for many in SSA.

Table 7: Contacted in past year about an issue

	Traditional leader	Local councilor	Party official
Never	0.63	0.73	0.82
Only once	0.08	0.09	0.06
A few times	0.11	0.09	0.06
Often	0.09	0.04	0.03
Don't know	0.02	0.01	0.01
Not Asked in Country	0.07	0.04	0.02

Source: Afrobarometer 2016 round, merged data. n = 53,935

How do citizens view these institutions? Table 8 displays responses to the question of how much respondents trust traditional leaders and their local district council. The 30,000 foot view of the continent hides a lot of variation, but we can say that traditional authorities enjoy similar levels of trust as local arms of the state. While the continent continues to industrialize and urbanize at a fast clip, traditional authorities remain relevant for average citizens.

Table 8: Trust in institutions

	Traditional leaders	Local council
Not at all	0.12	0.22
Just a little	0.18	0.27
Somewhat	0.23	0.26
A lot	0.34	0.21
Don't know/ Haven't heard enough	0.06	0.05

Source: Afrobarometer 2016 round, merged data. n = 53,935

These data are useful in demonstrating broad patterns, but do not give insight into the day to day operation of customary communities. Case studies from across SSA suggest that landholders enjoy benefits from customary authority, and at the same time pay real costs for holding property rights under this system.

In the colonial and post-independence moments, traditional authorities in SSA were given the power to administer customary law by central governments. Governments delegated this power to more effectively rule the countryside, to create political partners that would get out the rural vote, and to placate potential rivals. Generally, traditional leaders were not given the legal authority to tax their populations. However, the reality on the ground has diverged from the *de jure* rules. In Ghana, Berry (2000) recounts how permission to use land was acknowledged by a small gift (*aseda*) that landholders presented to their stoolholder (chief); witnesses to this exchange could later help adjudicate land disputes. "Strangers" to the community presented stoolholders with gifts in the form of "drinks," which were soon replaced by money as land values rose in the 20th century when cocoa became increasingly profitable. Chiefs began to demand more, farmers resisted, and rival chiefs fought over the right to collect taxes (Berry 2000, p. 9). In turn, customary communities began to redefine who counted as a "stranger," and who needed to pay to use land. Similarly, in southwest Uganda, Bruce and Migot-Adholla (1994, p. 183) document how landholders pay a one-time usage fee to chiefs. Unused parcels revert back to the chiefs, and any eviction decisions are made by chiefs along with other elders. In Senegal and Mauritania, landholders pay tithes to chiefs (Noronha 1985).

The contributions that individuals make to customary communities are not limited to those associated with land use. Chiefs in Zambia organize community members to work on development projects like

building roads and sinking boreholes (Baldwin 2015, p. 102). In areas of the Democratic Republic of Congo, individuals participate in *salongo*, weekly service towards public works (Hilhorst et al. 2017)[43]. These costs vary in terms of their magnitude as well as how regularly they are required of community members. The contributions result in benefits for individuals when club goods are created. Community members also benefit from politically well-positioned chiefs, who are able to secure valuable resources from the state. States entrust chiefs with this distribution of goods because chiefs are best able to turn out voters during elections, and because "...exchanges between politicians and traditional chiefs are not subject to the same level of commitment problem as exchanges between politicians and voters because these leaders are more likely to anticipate repeated interactions" (Baldwin 2014, p. 256).

Is there evidence that landholders approach identity-based institutions in a strategic way? Hoon (2007, p. 192) describes the pooling of labor among the Ngoni of Zambia, suggesting that this practice "...historically included elements of community solidarity, and generalized nonspecific reciprocity, as well as a strategic dimension of investing in social relations." Furthermore, as this practice has changed over time, the reciprocal exchange of labor is now "...only a facade of former practices of labor solidarity, designed to benefit an exclusive membership of elite farmers and those who have been designated as leaders by external NGOs" (Hoon 2007, p. 197). Parkins' 1972 study of economic transition in a coastal community in Kenya details how farmers balanced the need to subscribe to customary practices while also trying to expand their economic enterprises. Parkins poses the problem faced by farmers: "...he must not seem to flout custom too harshly lest he fail to achieve or retain the local clientele on which his success depends; yet, to succeed, he must excel among his fellows in progressively acquiring their palms and land, in doing which he may be accused by elders and others of contravening certain customary expectations" (Parkins 1972, p. 15). Some farmers sought to avoid customary practices that were costly in terms of time, including ritual meat-eating ceremonies and the daily consumption of palm wine. One successful strategy was to convert to Islam, exempting oneself from these practices without full alienation from the customary community. Offending their chief or neighbors was important to avoid, as farmers who were successful became so by building up a network of contacts to acquire land.

Galvan (2004, p. 96) documents a similar dilemma for landholders in Senegal who wish to avoid customary practices regarding the sale of land. He shows that some landholders convert to become orthodox Tijane Muslims so they can sell land without approval of the *saltigue* (rain priest). Yet this conversion means landholders are forced to give up other customary practices, such as the drinking of local moonshine with neighbors. Faced with this costly choice, many landholders end up reverting back to the customary practices that govern multiple domains of their social lives. Parkins cites Long (1968) to show a similar phenomenon in Zambia with farmers converting to be Jehovah's Witnesses.[44] These stories indicate that individuals have found ways to act strategically within the bounds of customary law, and that there are social costs for defection from these institutions.

8.4 Titling process

Here I briefly describe each step in the process landholders go through to title their land in Uganda. This information is largely taken from an interview on 6 October 2018 with a Land Officer of Hoima District.

1. The landholder resolves any ongoing land disputes with neighbors.
2. They obtain and fill out the titling forms.
3. They pay a District application fee, stamped by the District office.
4. The Area Land Committee (an appointed body at the subcounty level) proceeds with:
    - Inspection of the property.
    - Verification with neighbors that there are no disputes.

[43]Leslie et al. (2011) demonstrate how the *salongo* practice was corrupted under colonial rule to justify slavery. It was later revived under Mobutu, despite resistance. Now, while the practice exits in an innocuous form, it has also been used by rebel militias and the FARDC to get free labor.

[44]Geertz (1963) and Cohen (1969) show the flip side of this phenomenon: individuals reemphasizing their belonging in a religious community to keep claim on important social networks.

- Sketches a map, signed by the neighbors, and makes a recommendation.

5. The recommendation goes to the District Land Board (DLB).
6. The District Physical Planning Committee (DPPC), enacted by the 2010 Planning Act, gives a recommendation to the DLB based on land use plans.
7. The DLB acts on the DPPC's recommendation to approve, reject, or defer the application.
8. If approved, the DLB requires the landholder to have the land surveyed
   - This process is done by private surveying firms, which are regulated by the Minitry of Lands, Housing, and Urban Development.
   - The Department of Surveying processes the survey file, with the shape and area of the property.
9. The District Land Office sets the price of the title, based on the size of the plot and whether it is a freehold or leasehold application, and communicates this to the landholder.
10. The landholder can accept this offer by paying the fees.
11. The Land Office then writes to the Land Registration Commissioner's office, who processes the title after receiving a fee from the landholder.

8.5 Survey

Below in Table 9 are the subcounties sampled in the survey, grouped by their proximity to major threats to land rights in each district.

Table 9: Subcounties Sampled

	Buliisa	*Hoima*	*Kapchorwa*	*Mbale*
Closest to land threats	Biroya, Buliisa TC, Ngwendo	Buseruka, Kabwooya, Kyangwali	Chema, Kapsina, Sipi	Kibagala, Lwandera, Namabasa
Middle	Booma, Butiaba, Kigungu	Bugambe, Kiziranfumbi, Kitoba	Kasarem, Kawowo, Munarya	Bugema, Bumakma, Mafutu
Farthest from land threats	Biiso, Bubwe, Kihungya	Buhanika, Busirisi, Kigorobya	Chepterech, Gamogo, Western Division	Bitisibiti, Bumukari, Mafura

8.6 Variables

Table 10: Descriptive Statistics

	Min	*Max*	*Mean*
age	19	96	45.9
female	0	1	0.36
titled	0	1	0.12
will title	0	4	2.29
acres	0.125	2000	9.43
kin of chief	0	1	0.39
ethnic outsider	0	1	0.19
newcomer	0	1	0.10
distance from threat (km)	0	135.3	18.07
currently fallowing	0	1	0.31

Table 11: Educational Attainment

	Buliisa	*Hoima*	*Kapchorwa*	*Mbale*
No formal schooling	33	50	23	37
Some primary school	74	103	35	91
Primary school completed	59	47	26	36
Some secondary school	37	29	46	48
Secondary school completed	33	12	46	10
College	3	7	55	12
Some university	0	2	7	2
University completed	1	2	7	5
Don't know	0	0	1	0

8.7 Chief kinship and titling

Here I reproduce Honig's (2017) logit model estimation of the effect of kinship with a traditional chief on the likelihood of titling one's land. It is not a complete replication, as my survey did not capture each variable Honig uses in her analysis, but my results remain contrary to hers across each specification. I also estimate the effect of kinship on the likelihood that a landholder is currently fallowing a field. Here the results are mixed in their congruence with Honig's findings from Zambia and Senegal; while kinship with a chief is positively associated with fallowing, having a title is significant and *negatively* associated with fallowing, which is counter to the prevailing logic regarding the importance of formal titles for explaining land use.

Table 12: The effect of chief kinship on titling in Uganda

	Dependent variable:		
	titled		
	(1)	(2)	(3)
kin of chief	0.967***	1.076***	1.051***
	(0.119)	(0.127)	(0.130)
education		0.530***	0.545***
		(0.072)	(0.073)
acres		0.001	0.0005
		(0.001)	(0.001)
wealth index		−0.337***	−0.326***
		(0.118)	(0.119)
female			0.675***
			(0.237)
newcomer			−0.519
			(0.460)
Constant	−5.072***	−6.954***	−7.195***
	(0.426)	(0.576)	(0.601)
Observations	982	905	905
Log Likelihood	−309.876	−259.013	−254.740
Akaike Inf. Crit.	623.752	528.027	523.480
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 13: The effect of chief kinship on land fallowing

	Dependent variable:			
	currently fallowing field			
	(1)	(2)	(3)	(4)
kin of chief	0.432***	0.395***	0.369***	0.437***
	(0.070)	(0.077)	(0.079)	(0.082)
titled				−0.786***
				(0.266)
education		−0.126***	−0.121**	−0.077
		(0.048)	(0.049)	(0.051)
acres		0.0003	0.0003	0.0004
		(0.001)	(0.001)	(0.001)
wealth index		0.441***	0.431***	0.408***
		(0.075)	(0.076)	(0.076)
female			−0.352**	−0.295*
			(0.165)	(0.167)
newcomer			−0.780**	−0.825***
			(0.312)	(0.313)
Constant	−2.019***	−2.476***	−2.217***	−2.454***
	(0.217)	(0.303)	(0.311)	(0.323)
Observations	982	905	905	905
Log Likelihood	−591.027	−524.161	−517.026	−512.352
Akaike Inf. Crit.	1,186.055	1,058.322	1,048.053	1,040.704
Note:				*p<0.1; **p<0.05; ***p<0.01

8.8 Plots

First, using the full sample of SSA countries, Figures 10 and 11 reproduce Figures 8 and 9 using 2005 data on GDP per capita and tax revenue, respectively. Note that several countries did not have tax revenue data available through the World Bank.

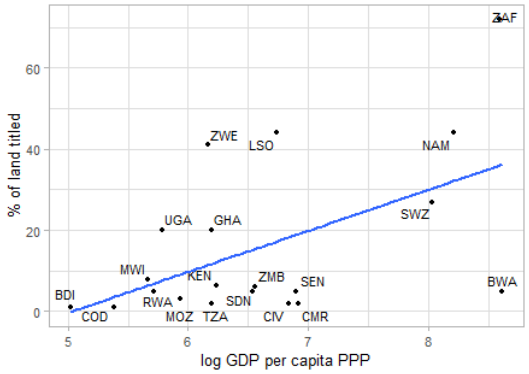

Figure 10: Percentage of land titled vs. logged GDP per capita (2013), PPP, full sample

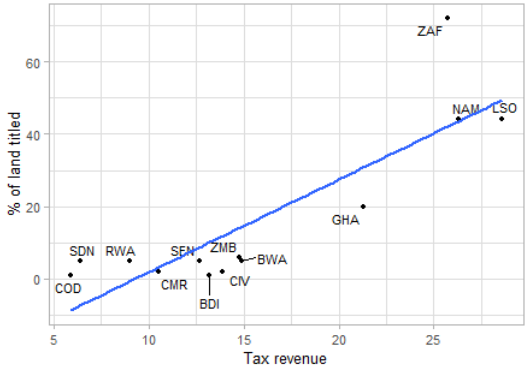

Figure 11: Percentage of land titled vs. logged GDP per capita (2005), PPP, full sample

Next are reproductions of Figures 8 and 9 where South Africa, Namibia, and Zimbabwe have been removed, using tax revenue and gdp per capita data from 2013 and 2005. Figures 12 and 14 use 2013 data, and 13 and 15 use 2005 data.

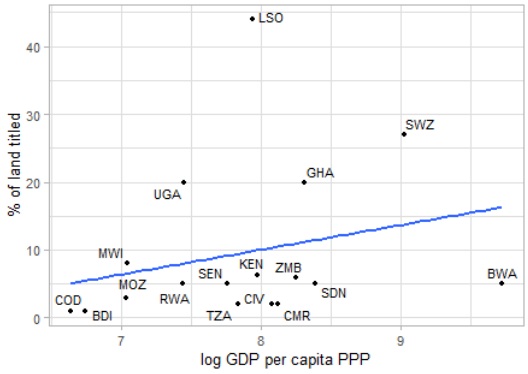

Figure 12: Percentage of land titled vs. logged GDP per capita (2013), PPP, reduced sample

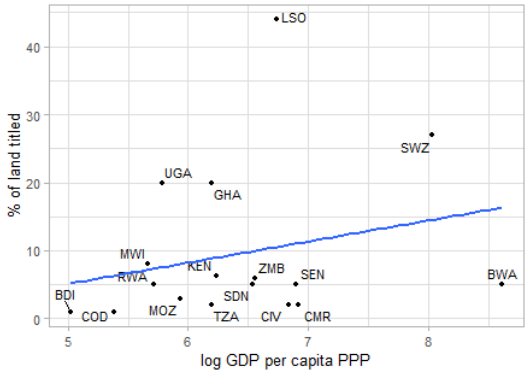

Figure 13: Percentage of land titled vs. logged GDP per capita (2005), PPP, reduced sample

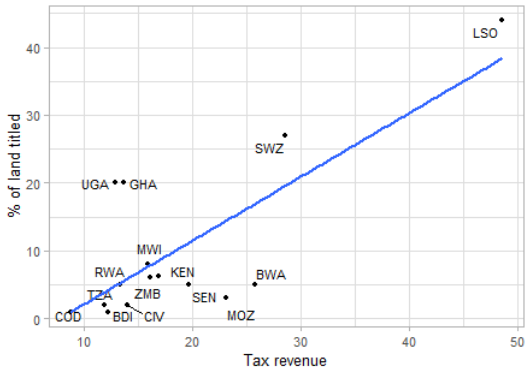

Figure 14: Percentage of land titled vs. tax revenues as percentage of GDP (2013), reduced sample

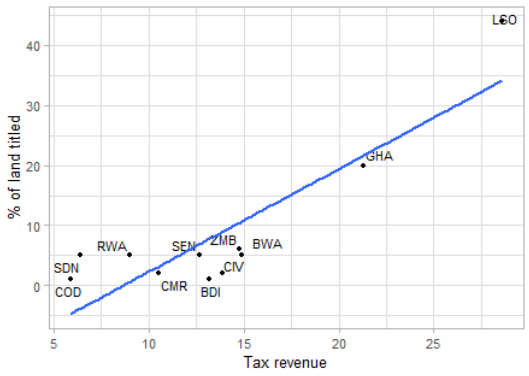

Figure 15: Percentage of land titled vs. tax revenues as percentage of GDP (2005), reduced sample

Figures 16 and 17 below reproduce Figures 5 and 6 from Section 4 above, using the 2008 Round 4 Afrobarometer rather than the 2016 data. Round 4 of the survey was conducted in fewer countries, which is why there are fewer cases displayed.

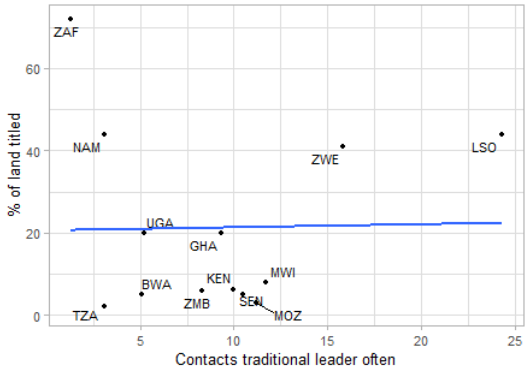

Figure 16: Strength of customary leaders (2008) and titling of land

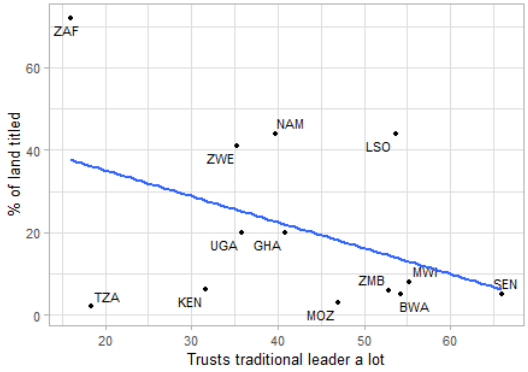

Figure 17: Trust in customary leaders (2008) and titling of land

Figures 18 and 19 plot the same relationships using Afrobarometer's 2004 survey round. This round also includes fewer countries than the 2016 round. One other difference is that the question regarding trust in traditional leaders had different response options: not at all, a little bit, a lot, and a very great deal. I have plotted only the percentage of respondents who replied with "a very great deal."

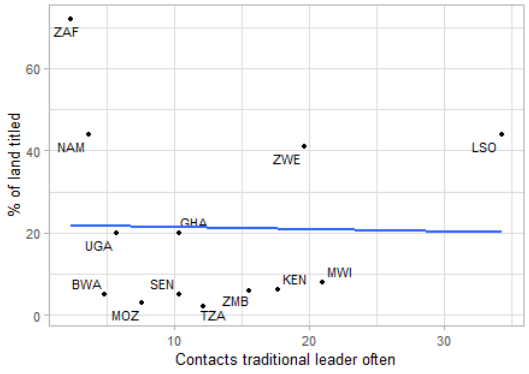

Figure 18: Strength of customary leaders (2004) and titling of land

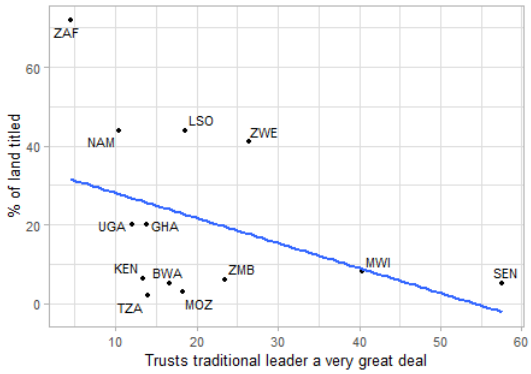

Figure 19: Trust in customary leaders (2004) and titling of land

8.9 Robustness

Below, I reproduce the model estimations used in Section 4.4.1 with alternative measures. Table 14 displays logit estimates of the effect of social costs on having a title, using the hypothetical question about helping a neighbor harvest a crop as the measure of interest. Figure 20 visually displays the marginal effects of each covariate in model 3 from Table 14.

Table 14: Logit Estimation: likelihood of having a freehold title

	Dependent variable:		
	titled		
	(1)	(2)	(3)
social costs hypothetical	-0.094^{*}	0.046	-0.008
	(0.052)	(0.204)	(0.637)
age		0.023^{***}	0.024^{***}
		(-0.003)	(-0.005)
female		0.687^{***}	0.704^{***}
		(-0.065)	(-0.224)
wealth index		-0.128^{***}	-0.134
		(-0.026)	(-0.130)
education		0.590^{***}	0.556^{***}
		(-0.066)	(-0.096)
ethnic outsider			-0.810^{***}
			(-0.172)
distance from threat (km)			0.00003
			(0.007)
acres			0.005
			(-0.012)
Constant	-17.597^{***}	-21.586^{***}	-28.557
	(0.297)	(0.998)	(26.420)
Observations	967	965	881
Log Likelihood	-326.876	-282.800	-262.483
Akaike Inf. Crit.	663.751	583.599	548.966
Note:			*p<0.1; **p<0.05; ***p<0.01

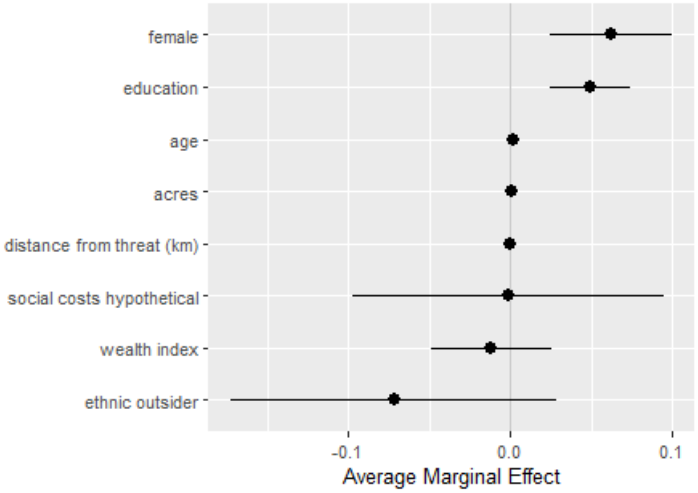

Figure 20: Marginal effects, logit model 3, alternative social costs measure

Table 15: Probit Estimation: likelihood of titling

	Dependent variable:		
	will_title		
	(1)	(2)	(3)
social costs hypothetical	0.102^{***}	0.018^{***}	-0.029^{***}
	(0.005)	(0.005)	(0.005)
age		-0.008^{***}	-0.009^{***}
		(0.00005)	(0.0001)
female		-0.268^{***}	-0.279^{***}
		(0.0001)	(-0.0002)
wealth index		0.134^{***}	0.129^{***}
		(-0.0001)	(0.0004)
education		0.086^{***}	0.098^{***}
		(0.001)	(0.0004)
ethnic outsider			-0.222^{***}
			(0.001)
distance from threat (km)			0.010^{***}
			(-0.0001)
acres			-0.0004^{***}
			(-0.00000)
Observations	845	843	765
Note:			*p<0.1; **p<0.05; ***p<0.01

On Dangerous Ground: Evidence on the link between land insecurity and violence

William Gochberg*

July 2020

Abstract

Why does competition for land result in violence in some contexts and not others? Furthermore, why does land conflict sometimes fall along ethnic cleavages? Institutional theories based on property rights systems in Africa suggest that customary land tenure rules, combined with land competition, incentivize ethnic conflict. Yet in many cases with these conditions we do not observe conflict. I address two related gaps in these theories: first, explaining the collective action necessary to defend customary land claims and second, the notion that most land competition can be anticipated by landholders before it reaches the point of threatening their land rights. I propose a mechanism, "identity maintenance," to fill the first gap in extant theory, a set of behaviors a landholder might pursue to raise their status in a customary community. I then suggest that the contexts in which these tactics might prove useful are limited, since most threats to land rights can be anticipated in advance. This paper then puts institutional theories of land conflict to the test using survey and interview evidence from Uganda, where land values are rising quickly in the context of oil sector development. I find limited support for the argument that proximity to land competition is associated with land-related violence, and mixed evidence of identity maintenance behaviors. Qualitative evidence on the structure of property rights in three of the four study districts suggests that customary leaders can easily monitor landholder behavior, rendering identity maintenance tactics ineffective in those areas.

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1 Introduction

This paper addresses a core puzzle raised by institutional theories of land-based ethnic conflict in Africa: why customary communities and leaders should respond to the efforts of any given landholder to secure her property rights by appealing to her co-ethnics. The resources of these communities and leaders are limited, which implies that there are tradeoffs to collectively acting to defend any one community member's land. Customary elites also have political incentives to selectively enforce property rights for some landholders over others. How is it that "doubling down" on one's ethnic community is even a viable strategy to defend one's land? Elites are likely to enforce the land claims of high-status community members, and those who have demonstrated genuine commitment to the community by making contributions in the past. A landholder who attempts to curry favor with their customary leader after a land threat arrives is likely to be viewed as opportunistic, and unable to credibly commit to community contributions in the future.

Institutional theories have been used to try to explain why competition over land ownership results in violence in some contexts and not others, and furthermore why land conflict sometimes falls along ethnic cleavages. In places where property rights are well-defined and enforced, competition for land can be a boon for land owners as property values increase. Land owners can then choose to sell or lease their property, profiting from local demand, or do nothing with the security of knowing that multiple legal institutions exist to ensure they retain possession of their property. But for much of the world, property rights are not clearly distributed or are imperfectly enforced: residents may disagree about borders, or about who has the right to inherit or sell land. Chiefs, clan heads, local elected officials, law enforcement officers, and judges are not always impartial when defining and enforcing property rights; alternatively, these actors may not have the capacity to enforce property rights even if they wanted to. Thus, land competition is often a trigger for conflict. While some scholars explain this relationship using scarcity of resources or symbolic attachment to land, in this paper I seek to complement more recent theories that highlight the importance of the incentives created by property rights institutions: the rules by which property rights are allocated and enforced, and disputes adjudicated. I address two gaps in extant theories of this type: first, how collective action to defend land rights is organized and for whom, and secondly why ethnic conflict is so rare despite the prevalence of the two causal factors that predict its presence, land competition and customary land tenure.

Scholarship on the African context has pointed the finger at customary land tenure institutions as a critical factor to explain the occurrence and ethnic dimension of land violence (Boone 2014; Lund 2008; Onoma 2009). Customary land tenure is a system of property rights, access to which is restricted by ethnic identity. The institutional theory of land-based ethnic conflict, in short, states that these institutions channel

competition for land along ethnic lines, as this competition raises the value of identifying as an ethnic insider. This can result in inter-group conflict, such as the expulsion of ethnic outsiders. In this way, the institutional theory draws on a large body of social science research on the constructed nature of ethnic identity (see Chandra 2012) that demonstrates that ethnic identity can ebb and flow over time in response to political factors. Yet this theory does not clearly specify a mechanism that explains the collective action required to defend customary land rights. Nor does the theory explain why, if most land competition can be anticipated long in advance, landholders wait to defend their land until imminent threats to their land rights have appeared. Furthermore, both customary land tenure and increasing land competition are widespread in Africa, yet ethnic conflict is relatively rare (Fearon & Laitin 1996); the institutional theory thus over-predicts the occurence of land-related ethnic conflict.

I begin my argument by suggesting a mechanism to explain collective action that follows logically from the institutional theory of land competition. To take advantage of their status as ethnic insiders, landholders must appeal to customary leaders, either by emphasizing their identity in the community or by engaging actively in community activities; I term this group of behaviors "identity maintenance." I suggest a few means by which landholders might make these appeals such as by regularly meeting with clan heads or by making contributions to community goods; however, I then highlight why all of these tactics are difficult to pursue in practice, focusing on the previously ignored material and political constraints faced by customary elites. Customary leaders have limited resources, and so are likely to prioritize the land claims of landholders who are already high-status community members. Second, I argue that many sources of competition over land can be anticipated before they appear. In the limited contexts where appeals to customary leaders are likely to be useful, therefore, I expect landholders to make appeals before their rights are threatened. Once competition for land has intensified there is little a landholder can do to improve their land tenure security. This helps to explain why, in cases where we might expect to observe ethnic clashes after land competition increases, instead landholder behavior does not change, since landholders and customary leaders alike have priced land competition into their behavior before it appears. This argument reconciles the institutional basis of land conflict with the empirical reality that ethnic conflict occurs rarely.

This paper explores these questions using original data from Uganda. In doing so, I follow scholars such as Krause (2018), Klause (2017), and Straus (2012) in examining cases of non-violence, where we might most expect to find land-related conflict. I first test to see if landholders identify more strongly with their ethnic group based on their proximity to sources of land competition. I then analyze whether landholders vary systematically in their likelihood of contacting their clan head and the contributions they make to public events or to helping their families, tactics which might in theory raise their status in the community. Finally, I use a survey list experiment to see whether the use of violence to protect land is more prevalent

in areas with intense competition for land. The data reveal weak support for existing institutional arguments around land conflict and ethnicity. This result is explained drawing on insights from interviews with landholders, customary authorities, and civil servants. Land rights are quite decentralized in Uganda with most dispute resolution and collective action around defending land taking place at the clan level. This means customary leaders have good information about community members' behavior, including freeriding when it comes to the provision of collective goods. Landholders who try to raise their status with these leaders after threats to land tenure arise are likely to be viewed as opportunistic, and so these actions would be a waste of resources. An additional empirical implication tested is the importance of commonly held property arrangements: in these contexts, the requirement of substantial collective action to defend land rights means that elites may encourage and draw on ethnic cohesion as a motivating factor to achieve this collective action.

Along with directly addressing institutional theories of land conflict, this paper contributes to scholarship on the political salience of ethnicity. This scholarship has sought to understand under what conditions identity becomes a locus of political action/affiliation, and why some facets of identity are salient while others are not at a given point in time. Some in this vein have focused on how the ethnic appeals made by elites can trigger identity as a rallying point politically (De Figueiredo & Weingast 1999; Klaus & Mitchell 2015). Other scholars have looked at how certain political moments, particularly elections, can create the conditions for increased tension between ethnic groups (Eifert et al. 2010; Gibson & Long 2009; Klaus 2015; Wilkinson 2004). A third set of work on this topic has demonstrated the importance of institutional rules for explaining the "menu" of identities that are available to politicians as they seek to build winning coalitions (Posner 2005). This article differs from the first group by suggesting a mechanism that drives demand for the political salience of ethnicity, rather than an elite, supply-side explanation. When imminent threats to land rights coincide with landholders who find it prohibitively costly defend their land through individual means, they may instead draw on their membership in an ethnic community to defend their land rights. This paper shares with the second and third groups of scholarship an emphasis on explaining the variation over time in the salience of ethnic identity. While elections and in-migration of ethnic outsiders can lead to conflict along ethnic lines, this article examines whether exogenous changes in the value of land caused by a resource boom may also lead to the same outcomes.

The paper proceeds as follows: in Section 2, I review existing theories of communal conflict, focusing on the nexus of land, identity, and conflict. I pay special attention to recent explanations for conflict in the African context. I highlight important puzzles raised by this institutional theory, and propose a theory in Section 3 to address these questions. In Section 4, I lay out my empirical strategy, first by discussing the case of Uganda and the original data collected in 2018. I use survey and interview data to test the empirical

claims made by existing theories as well as my own, and discuss the results in Section 5. I then conclude.

2 Land, Identity, and Conflict

This paper taps into a rich literature on the nexus of land, identity, and conflict. This work has mostly fallen under the umbrella of civil and ethnic conflict. A smaller literature on environmental conflict pioneered largely by Thomas Homer-Dixon (1991; 1994; 1999) has also emerged on this topic. This section begins by reviewing theoretical explanations for land conflict, roughly grouped into theories based on scarcity of resources and those based on group attachment to territory. These two strands of work are closely related, given historic associations — real or imagined, material or ideational — between ethnic groups and geographic homelands. I then narrow in on research on conflict in Africa, which points to the identity-based rules of land tenure systems as a root cause of why land conflict sometimes falls along ethnic lines. I highlight the main unresolved puzzles from this literature: how do average landholders go about appealing to their customary communities and leaders when land competition intensifies? Secondly, how does ethnic mobilization in the face of land threats actually work on the ground, given that traditional elites — those most likely to be responsible for organizing collective action to enforce land rights — face constrained resources and political incentives that may not align with landholders' interests?

2.1 Land and ethnic conflict

Scholars have identified multiple explanations for ethnic and land conflict, and for the connections between the two types of violence. A first strand of literature focuses on environmental factors that — whether alone or in conjunction with other forces — can precipitate violence between rival groups. Multiple causal pathways are argued to lead to conflict, such as changes in the political economy of natural resources, the attendant social structures, and in the scarcity of resources like land or water. Homer-Dixon & Blitt (1998) establish a starting point for any work on this topic: the idea that scarcity is not an exogenous, randomly distributed variable. While there is some structural scarcity, there are also demand- and supply-driven components to scarcity that are endogenous to consumer and producer behavior, as well as action by the state. Homer-Dixon and his collaborators are generally skeptical of the claim that scarcity on its own is a sufficient cause for conflict. Hendrix & Glaser (2007) find that in Africa, changes in rainfall levels and variance due to climate change do change the baseline probability of conflict, but agree that these changes are not sufficient to cause conflict on their own. The analytical focus on scarcity maps these studies onto the broader historical debate in the conflict literature on the causal importance of inequality, rooted in Gurr's

(1971) relative deprivation theory, versus the "greed" of armed groups who are able to fund their activities using natural resources (Collier & Hoeffler 2004). The headline finding from this work is in agreement with the environmental conflict literature: heterogenous access to resources alone is not sufficient to explain the variation in violent conflict.

A second set of scholarship focuses on the spiritual and material ties that communities — in particular ethnic and religious groups — have with land. Hassner (2009) argues that conflict over sacred spaces is determined by the land's centrality in the spiritual landscape, and the degree to which access to these spaces is circumscribed, monitored, and sanctioned. This work suggests that, at the extreme, some physical spaces may be considered indivisible, making compromise difficult or impossible. This stands in contrast with Fearon's (1995) account of indivisibility as a root cause of war; he argues that this is rarely a property of an issue itself, but rather a product of strategic interaction. Toft (2002) also tackles the idea of land as indivisible, and makes explicit the connection between land-related and ethnic conflict. Her study looks at ethnic groups and the likelihood of conflict with the state. For ethnic groups, territory is inextricably tied to survival, which is what makes territory an indivisible issue with no room for compromise. For the state, compromise is difficult when territorial succession is at stake, as they do not want to set a precedent of allowing separation of sovereign territory.

The connections between these strands of scholarship have not always been made clear. In short, when does competition over land result in conflict that falls along ethnic lines, in contrast to those pre-existing conflicts between ethnic groups that take place over land? This is a difficult distinction to draw and test empirically, but has been the subject of African politics scholars for the last several years, discussed below in Section 2.2. It is worth reiterating here a point made above in the introduction: competition for land is unlikely to result in violence in contexts where property rights are clearly allocated and perfectly enforced. The theories I discuss below and the arguments I make in Section 3 are applicable to contexts where rights overlap, are not clearly articulated, and/or where rights are not well-enforced when challenged.

2.2 Land tenure institutions and conflict in Africa

A growing set of research has emerged that tries to tease out the contingent relationship between scarcity of land and ethnic conflict in the African context. Several studies have documented relationships between the structure of property rights institutions and conflict (Boone 2014; Joireman 2011; Lund 2008; Onoma 2009). The majority of land in SSA is held under customary tenure, while only about 10% is held under private titles (Deininger 2003). This work has come amidst a resurgence of interest in customary authority

on the continent[1], and has emphasized the uncertainty associated with overlapping legal systems (e.g. Lund 2008, p. 2). When land rights come under threat landholders can appeal to multiple authorities based on different legal claims, depending on what is most advantageous. This means conflicts intensify or are left unresolved. Other scholars examine how land tenure institutional changes that bring redistributive consequences raise the stakes of elections, potentially causing violence (Klaus 2020).[2]

Recent institutional explanations for conflict point to the identity-based membership rules of customary land tenure institutions.[3] These institutions create the conditions for property rights hierarchies, whereby ethnic "insiders" have access to more complete or well-enforced rights at the expense of outsiders. For example, ethnic insiders tend to have inheritance rights, while outsiders do not. The structure of these institutions vary across and within countries of SSA. Some customary communities are more hierarchical, with tribal chiefs who wield considerable authority over land rights. In others power is more decentralized, and clan or family heads are responsible for allocating rights and resolving land disputes. Customary land tenure institutions can reinforce inequality between majority and minority groups, and make land grievances an axis for electoral competition.

Catherine Boone (2014) suggests that variations in land tenure institutions can explain when and why ethnicity becomes salient during land conflicts, whether those conflicts remain localized or find expression on the national scene, and whether these conflicts play a role in multiparty elections.[4] The institutional theory of ethnic land conflict draws on well-established strands of scholarship on the constructed basis of ethnic identity (Chandra 2012; Fearon & Laitin 2000),[5] and on rationalist accounts of ethnic conflict (Fearon 1998; Fearon & Laitin 1996; Fearon & Laitin 2011). Most scholars of comparative politics agree that social identities — and ethnicity in particular — change over time (Anderson 1983; Chandra 2012; Gellner 1983), that individuals have multiple identities that can be "activated" by external forces, and that political actors and institutions are among the forces that can activate these identities (De Figueiredo & Weingast 1999; Posner 2004; Posner 2005; Varshney 2001).

Boone (2014, pp. 95-98) describes the logic of her argument as follows:

What happens under conditions of rising competition for land? In chieftaincy- and lineage-centered land regimes, strangers are likely to be squeezed. They are likely to see their rights rolled back or to be expelled, and they have few if any avenues of recourse through the use of political voice. Ethnic insiders can use their politically privileged positions to reallocate land rights to themselves… To claim a land entitlement, one cannot opt out of membership in a particular political collectivity – usually one recognized

[1]See for example Fenrich et al. (2011).

[2]See Knight 1992 for a general discussion of how institutional change is inherently tied up with conflict over redistribution.

[3]Boone (2014) proposes the term "neocustomary" as it reflects the sometimes-unclear connections between modern customary institutions and precolonial forebears.

[4]Note that this account differs from Boone's and others' work on so-called "sons of soil" conflict, where an ethnic minority's land rights are threatened, and the state typically backs the claims of recent migrants to the area. See also Fearon & Laitin (2011) and Weiner (1978).

[5]see Chandra 2006 for a review of this literature.

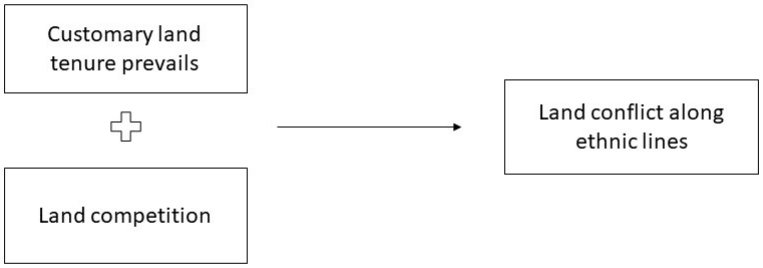

Figure 1: Institutional Theory of Land-related Ethnic Violence

by the state (i.e., the ethnic group rooted in a rural jurisdiction). It follows from this that the value of ethnic membership or attachment may increase as the value of land rises or is pushed up by the perception of scarcity.

The simplified logic of this theory is displayed in Figure 1. In areas where customary land tenure is the prevailing property rights system, when land competition increases we are likely to observe land conflict falling along ethnic lines.

Ethnic insiders presumably have some means of appealing to customary leaders or other co-ethnics to organize the collective action necessary to protect land claims. Yet this framework for understanding conflict leaves us with questions to resolve. How does collective action work in practice, and who organizes it? How do landholders go about making their appeals? Why wouldn't high-status ethnic insiders already have access to this club good without having to make appeals? These puzzles are important for understanding the mechanics of how competition over land can lead to violent conflict, and suggest that this relationship is contingent not only on the macro-type of land tenure in place (customary vs. private property), but on other factors as well, such as the variables that have been long associated with variation in collective action (e.g. size of groups) (Olson 1965). Taking this institutional framework as a starting point, I propose a theory below that helps to explain why rising competition for land does not always lead to ethnic conflict, even when customary land tenure is the prevailing property rights institution.

3 Anticipating Threats and Equilibria

Most studies of land conflict and land tenure examine contexts that are characterized by the most common source of land competition, rising population densities.[6] Some work has come close to equating rising land values with land conflict (Lund 2008, p. 20), though more recent scholarship has stressed that the connection between population density and conflict is contingent on other variables (Boone 2014). Yet for the most part, rising population density is a process that is both visible and one that happens over a number of years. These two features mean that landholders should see threats to their land rights coming, and act accordingly to bolster their rights before the threat is imminent. With this sort of slow-moving competition for land, we should expect landholders to invest in their identity-based customary relationships *before* the competition for land reaches the point where it is an imminent threat to one's property. Below in Sections 3.1 and 3.2 I proceed with the strong assumption that land competition comes as a surprise to all actors; I then relax this assumption in Section 3.3.

This section continues first by examining the options open to landholders when they face the combination of uncertain land rights and a threat to those rights. Past studies have not paid full attention to the costs and coordination necessary to organize collective action to defend land rights from outside threats. I suggest that the identity-based rules of customary tenure incentivize a form of "identity maintenance," which I separate into two categories: ethnic attachment and ethnic engagement. The former refers to landholders' self-reported measure of attachment to their ethnic identity (as opposed to, for example, their national identity), while the latter refers to actions landholders might take to contribute to their communities in exchange for the promise of assistance when their land comes under threat. I then outline the incentives faced by customary elites, who on the one hand are constrained in terms of resources, and on the other hand have their own political motivations. Together these constraints suggest that leaders will not treat all appeals to their authority equally. In Section 3.3, I discuss what we should expect if land competition is anticipated versus unanticipated. Finally, I consider the issue of customary elites who themselves are the threat to land rights.

3.1 Identity maintenance

When landholders anticipate threats to their land tenure — and especially in situations where titling one's land is prohibitively costly — we should expect them to invest in the social relationships that may aid them when the threat appears.[7] In making this argument, this paper directly draws on the constructivist

[6] See Berry 2002 for a review of the "land question" in Africa.

[7] Titling one's land is a process that can take over a year to complete, and only brings greater land tenure security in contexts where titles are well-enforced by the state. As I argue elsewhere in this dissertation, in addition to the costs of surveying land and filing

framework for understanding ethnic identity, a framework that makes the following claims: 1) individuals have multiple identities 2) the salience of one identity (versus others) can change over time 3) identities can be "activated" by political factors like elections, the rhetoric of political elites, and political institutions.[8]

What might investment in identity look like? I distinguish between ethnic attachment and ethnic engagement. A landholder who demonstrates an increase in ethnic attachment may emphasize their identity as a member of a tribe, clan, etc. They may demonstrate this attachment with the language they use, the clothes they wear, and simply by publicly identifying more closely with their ethnic group. Ethnic engagement refers to social behavior rather than a change in one's social identity. Landholders might pursue the following: asking a chief to support one's claim if a dispute goes to the judicial system; emphasizing one's membership in a particular ethnic community, around which customary rights are based; recruiting neighbors to help expel intruders; or organizing with other community members to protest a more widespread eviction. If a threat is not yet imminent, and landholder may try to improve her status in the customary community by increasing her contributions to either local taxes/tributes to a traditional leader, or to regular community public work projects.

A landholder's choice of tactic should vary by the structure of customary authority over land. Customary communities range from the very hierarchical, where chiefs have a great deal of authority, to the more decentralized, where clan heads or households have final say over land issues.[9] In hierarchical communities, we should expect landholders to pursue identity tactics that directly involve/benefit customary leaders. This may mean offering a gift to a chief, diligently paying taxes/tithes due to these leaders, or meeting with them regularly. In decentralized communities, landholders may appeal to neighbors and family members, since they are the means by which one's land rights can be protected in face of a threat. Landholders may choose to meet with their clan head, to make donations to family or community events, or contribute labor to public events as a way to bolster their status.

This framework for understanding a landholder's relationship to her customary community is in many ways akin to the reciprocal relationships between urban residents and their home village communities described by Geschiere and Gugler (1998). They argue that, contra the expectations of modernization theory, urbanization in Africa has not diminished the importance of "traditional" practices, nor urban residents' connections to their home villages. Urban dwellers are expected to send home a portion of earnings, con-

paperwork for a title, and the opportunity costs of the time spent on the process, there may be social costs to titling land as well. In Uganda this process involves several steps and fees for landholders to pay. It is handled at the District level, which means there is no extreme variation in transportation costs based on where landholders reside. Thus, for this study I assume that titling is relatively costly for all landholders.

[8]The constructivist account of identity also notes that the boundaries and content of identity groups are mutable over time as well.

[9]Boone (2014, p.76) also distinguishes between centralized and decentralized customary authority, but focuses on the exit/loyalty options available to landholders in these contexts, depending on the level of land competition. Here I add to the behavior options available to landholders, and in Section 3.2 below I suggest how the nature of customary authority affects leader's options.

tribute to celebrations and other events, and host relatives from home when they visit the city; in return, the village acts as a form of social security, with land reserved for when the urban resident returns permanently to the village, along with the expectation of being buried in the village after death. See also Trager (1998) and Fisiy & Goheen (1998).

3.2 Budget constraints, political incentives, and monitoring

Past explanations for land violence along ethnic lines have for the most part treated the collective action necessary to protect land rights as given. Yet it is not obvious that a community will rally around any and all neighbors when an external threat to their land appears. This collective effort requires time, coordination, and resources, each of which may be in short supply. I propose that customary elites are likely to divert resources to landholders who have demonstrated commitment to the community, and to landholders who already hold high status in the group.

For simplicity's sake, imagine a village with "committed" and "freerider" community members. Freerider members are those who attempt to shirk by not assisting with collective projects, and who use collective resources without contributing to their maintenance. Committed villagers are those who regularly contribute time or resources to collective projects, and who show no signs of defecting. "Defecting" in this context may mean choosing to free ride, or to do something which may actively harm the community or its customary leader. For a leader with limited resources, a surge in competition over land is an opportunity to punish freeriders and reward committed community members.

The budgetary constraints faced by customary leaders are reinforced by political incentives. For many customary leaders, their authority over land is the most important source of their power. I argue that elites best serve their own self-interest by placing priority on the land claims made by high-status community members. High status may result for example from sharing kinship (Honig 2017) or partisan identity (LeBas 2006) with a traditional leader.

How does a customary leader know who is a freerider and who is a committed community member? A leader's assessment of this depends on their ability to monitor landholder behavior. Where it is easy to monitor landholder behavior, landholders are incentivized to regularly act to maintain or improve their status in the community, regardless of whether or not a specific threat to land rights is on the horizon. Where monitoring is difficult, landholders may try to shirk until a threat appears, and then change their behavior to make an appeal to customary authority, under the expectation that they can plausibly try to claim commitment to the community — regardless of their previous behavior. The most obvious variable that influences the ease of monitoring is the degree of centralization of customary authority. Where authority is

decentralized monitoring should be easier relative to communities where authority is centralized (e.g. in a single chief whose jurisdiction is large and highly populated). A clan head, for example, may have a handful of families living in close proximity whose land is under his jurisdiction, making monitoring relatively easy.

3.3 Anticipated versus unanticipated land competition

In equilibrium, we should expect that these incentives are clear to all actors involved, and that the supply and demand for property rights to land are elastic.[10] Thus, where landholders anticipate that competition over land will increase, they will invest in their customary community *before* threats appear, and refrain from freeriding. In other words, future land competition is priced into landholder behavior before it appears. When competition does increase, there is little incentive for a landholder to appeal to their customary leader, as it is too late to signal one's commitment. While some landholders may be in a position to simply increase the size of their contributions at the last minute in compensation, in rural agrarian contexts this option may be out of reach for most individuals.

What about land competition that comes as a truly exogenous shock? In the short term, supply and demand for property rights to land may be inelastic, which is the impetus for landholders to try to raise their status in the community, ensuring access to well-enforced rights. In a community where no one anticipates land conflict, we may observe a mix of landholder strategies. If customary leaders are able to easily monitor community members for freeriding, there will likely be little change in behavior even when there is a surprise increase in land competition; elites face the same incentives they always do, and are likely to aid landholders with high status in the community. Where monitoring is difficult, there may be room for landholders to appeal to their customary leaders for assistance, as they can claim to be committed community members.

One additional factor is the structure of property rights, from communal to individually-held rights. Where land is communal, we might expect more identity maintenance behavior and potentially violence for two reasons. First, the presence of communal property necessarily imposes greater monitoring responsibilities on customary leaders, making it easier for any one landholder to freeride while appearing committed. Second, large areas of communal land requires more extensive collective action to defend. For leaders, the pressing need to organize against land threats may outweigh their desire to punish freeriders; thus, increasing ethnic attachment and engagement may be a viable strategy for landholders.

I thus have proposed a mechanism that links customary land tenure, competition for land, and con-

[10] Thanks to Victor Menaldo for suggesting this framing.

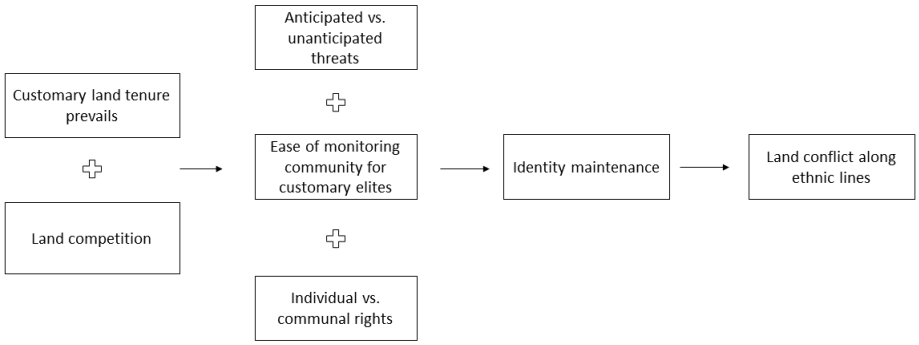

Figure 2: Identity maintenance and mediating variables

flict that falls along ethnic lines: identity maintenance. I have also suggested three factors that mediate this relationship by determining the likelihood that identity maintenance behaviors will be successful for a landholder: whether threats to property rights are anticipated, whether customary leaders can easily monitor their communities, and whether land rights are more individual or communal. These relationships are displayed in Figure 2.

3.4 When customary elites defect

So far I have discussed actors' incentives and constraints under the assumption that customary elites will serve the interests of at least some subset of their customary community when land threats appear. Yet there are well-documented cases in which local authorities find ways to benefit from changing economic conditions at the expense of their own communities (e.g. Acemoglu et al. 2014; Babatunde 2020; Boone 2014). If chiefs are the threat to property rights, what should we expect to observe? Both ethnic attachment and ethnic engagement are unlikely to prove useful for landholders, as those tactics are normally meant to appeal to a customary leader when threats come from *outside* the community. One exception may be acts of ethnic engagement that involve family members or neighbors, who may aid a landholder against an opportunistic customary leader.

As for violence, this theory concurs with previous work (Boone 2014, p. 74) that suggests this scenario can lead to violence at the local level. If landholders can appeal neither to customary authorities nor the state to enforce their property rights, violence may become an attractive last-resort option. However, this is

likely to manifest as isolated incidents of violence, rather than a more organized clash between two ethnic groups. This suggests that the defection of customary elites in this manner is an additional reason why, relatively speaking, ethnic conflict is rare; because most studies set a certain threshold of injuries or deaths to measure the scale of conflict, isolated instances of land-related ethnic violence may not be recorded as such.

4 Empirical Strategy

In this section I outline my empirical strategy for testing claims about land-related ethnic violence. I discuss the case of Uganda, with special reference to recent changes in the value of land resulting from an oil boom in the Western Region. I then describe the original dataset I use in the analyses below, and explain the survey response items used to measure outcomes of interest.

4.1 Uganda

Uganda lies near the average of SSA countries in terms of the amount of land held under private title, approximately 20% (Businge 2007), but in rural areas the majority is still governed by customary authority. The twentieth century witnessed the marginalization of customary law first by British colonial administrators, and later the Obote and Amin administrations. The legal revival of traditional kingdoms in the 1995 Constitution limited their scope to "cultural institutions," with the central government reserving final legal authority on most matters. That said, customary law remains the *de facto* institution governing land rights. Authority over land is for the most part decentralized, with most authority over property rights held at the individual, family, or clan level (rather than tribe or kingdom), and disputes are generally resolved by clan heads.

Oil field development in the vicinity of Lake Albert in western Uganda has led to an influx of migrants and infrastructure construction. While exploration for oil has taken place since the mid-20th century, it was not officially discovered in economically viable quantities until 2004. Landholders in two of the study sites — Buliisa and Hoima — have seen the price of an acre of land increase seven-fold in some places. In Hoima, infrastructure development — including a new oil refinery and international airport — and the presence of well-paid employees of international firms has brought with it a large inflow of internal Ugandan migrants to the district over the last few years, particularly in the area of Hoima Town. Buliisa District contains the sites of many of the oil wells that will provide the bulk of production once it commences. This boom has brought mixed reactions from local residents, due to the fact that property rights are not perfectly defined

or enforced, a defining feature of cases that fit institutional theories of land conflict.

Evidence for threats to property rights comes in multiple forms. While some landholders report being forcibly evicted from their land, others suggest that investors are claiming land with fraudulent titles (CRED 2015; Mugerwa 2016; Muriisa & Twinamasiko 2020). Others accuse the local District Land Boards of conspiring with outside investors to acquire land illegally (*The Independent* 2016). Crucially, while oil development is the main driver of land competition in western Uganda, the nature of the actual threats to land rights can still be thought of as individual outsiders versus insiders, rather than corporations infringing on land borders for example. In Buliisa, several of the land disputes trace back to a single investor from the capital Kampala, Kahwa Francis.[11]

Uganda should be a "best case" for existing institutional explanations for land-based ethnic conflict. The intensity of land competition is very high, but with significant variation that allows us to establish its relationship to landholder behavior. In the western region (Buliisa and Hoima Districts) this competition is mostly due to oil development around Lake Albert. While the development of an oil industry is not a randomly assigned exogenous variable (Menaldo 2016) at the macro level, it is plausible to say that it is not the product of average landholder behavior. It has also developed quickly over the past several years, and so it arguably closer to "unanticipated" than "anticipated" on a spectrum of threats to property rights. Customary land tenure remains the norm for most of the country, such that property rights institutions favor ethnic insiders versus outsiders. In the four case areas (Buliisa, Hoima, Kapchorwa, and Mbale Districts), nearly all landholders hold their land under customary tenure. Taken together, these factors make for a study area that is well suited for testing institutional theories of land and ethnic conflict.

4.2 Data

I use an original dataset of survey and interview responses, collected in Uganda between July and December 2018. Data was collected in four districts: Buliisa and Hoima in the Western Region, and Kapchorwa and Mbale in the Eastern Region. The survey includes 982 landholders, spread roughly evenly across the four districts. A team of local researchers worked as survey enumerators in each district, and conducted the survey in the local languages (Runyoro, Kupsabinyi, and Lugisu). To ensure that we obtained variation in intensity of land competition, we employed a stratified sampling method, based on proximity to sources of competition (nearest to farthest). Based on interviews with local residents we identified the following main sources of land competition: in Buliisa, the EA-2 exploratory oil drilling area; in Hoima, the construction site of a new oil refinery, which is also a node for multiple pipelines; in Kapchorwa, a coffee processing

[11] Author's interviews, 26 November 2018. See also for example CRED (2015) and Wamala (2018)

facility which was being expanded into neighboring land; and in Mbale, the center of the district capital, as most competition revolved around population density growth there. The sample is stratified at the subcounty level.[12] We also conducted follow up interviews with respondents who agreed to expand on their survey responses, as well as separate interviews with customary leaders and civil servants.

Survey teams first approached the LC1 (local council) chairperson of each village to inform them of the purpose of the survey, and to obtain a list of landholders. They then proceeded to contact a random set of 20 individuals per village, resulting in about 60 respondents per stratified group and 240 per district. Respondents were told about the study, and gave explicit consent to share their responses. The enumerators used a smartphone app to collect responses, and also recorded the GPS coordinates of each landholder's plot. Upon completing the survey, enumerators submitted the survey responses electronically to a secure server.

Landholders' subjective assessments of their own land tenure security, reported in Table 1, are striking. By all accounts, Buliisa and Hoima Districts are experiencing much more intense competition for land than Mbale and Kapchorwa as a result of infrastructure development and population inflows related to the burgeoning oil sector; yet it is in the former areas that landholders are more apt to report "very secure" land rights, while responses are more moderate in the latter pair.[13] This suggests that the degree of land competition alone does not account for patterns of tenure security; the analysis below goes further to show that land-related violence is similarly not well predicted by proximity to land competition.

Table 1: How would you rate the security of your land rights today?

	Not secure	Somewhat secure	Very secure
Buliisa	64	60	116
Hoima	26	16	206
Kapchorwa	47	114	85
Mbale	77	132	32

Cells indicate the number of respondents

4.3 Land competition

The theoretical causal variable of interest is the degree to which landholders feel secure in their property rights to land. While one might use a landholder's subjective assessment of their land tenure security, that measure may be endogenous to each of the dependent variables (this concern is discussed further in section 4.5). Instead, in an effort to obtain an exogenous source of variation in landholders' land tenure security,

[12] We sorted all subcounties in each district into three groups based on their proximity to sources of conflict (nearest, middle, farthest). In each group, we randomly selected four subcounties, and one village in each subcounty.

[13] This is supported in Table 13 which displays results from a simple probit estimation of perceived tenure security. Coefficients for Buliisa, Hoima, and Kapchorwa district dummies are all positive (i.e., more secure) and significant compared to the reserve category of landholders in Mbale.

I use the GPS information along with insights from interviews to construct a measure of a respondent's proximity to the biggest source of land competition in each district. These sites were identified after discussions with local landholders, including my survey enumerator teams, each of which was made up of local residents. For example, in Hoima District I use the location of the construction of a new oil refinery, and calculate Hoima landholders' distance (as the crow flies) from that point. The refinery will take up a large plot of land, and has intake and outflow pipelines leading into and out of the location.

I do not have a spatial measure that captures exactly the strength and weakness of land competition. Even if complete, reliable data on changes in land values were available, those prices would be the product of institutions and the rule of law, not only the demand for land. Thus, a concern is that the true effect of a landholder's proximity to land competition is washed out in the models below since I have pooled data across four districts that have different baseline levels of land competition. Therefore in Section 8.4 of the Appendix I present model results with a reduced sample, leaving in only Buliisa and Hoima Districts. This allows me to compare two districts with similar average levels of land competition, a shared customary community (the Bunyoro Kingdom), and theoretically similar baseline levels of identity maintenance. The results with regard to land competition are similar to those from the full sample.

4.4 Dependent variables

There are a handful of variables that I use to measure outcomes of interest. First is ethnic attachment, which is a respondent's self-reported identification with their ethnic group. I use a survey question that borrows language from the Afrobarometer survey, the premier social science survey covering most of the continent. Respondents were asked the following question: "Do you identify more as Ugandan or more as [your ethnic group]?" Enumerators replaced the bracketed language with the appropriate ethnic group while conducting the survey. Answers were recorded on a 5-category scale from "only Ugandan" to "only [my ethnic group]." Table 2 displays percentages of respondents in each study district who report identifying along this scale. I also include for comparison nation-wide percentages from the 2015 Afrobarometer survey round in Uganda, as well as Afrobarometer's 2016 merged survey of 36 sub-Saharan African countries. In using studying this measure as an outcome to be explained, I join a handful of scholars who have similarly used this Afrobarometer question to probe the political determinants of identity (Eifert et al. 2010; Higashijima & Houle 2018; Koter 2019; Robinson 2014).

Next is ethnic engagement, the degree to which respondents are interacting with customary elites and neighbors, as well as their contributions to local club goods. I measure this in two ways. The first is a question that asks the respondent how often they have contacted their clan head about an important matter in

Table 2: Ethnic attachment comparisons; cells report percentages

I feel:	Buliisa	Hoima	Kapchorwa	Mbale	Uganda (2015)	Afrobarometer (2016)
Only Ugandan	31	0.4	63	11	20	35
More Ugandan	5.4	13	17	5.4	11	8.3
Equal Ug. & eth. grp.	0	65	3.3	27	50	31
More ethnic group	3.8	8.7	8.1	16	14	5.8
Only ethnic group	59	13	8.9	41	4.2	3.4
n	240	252	246	241	2400	53935

the last three months, displayed in Table 3. The second measure is a question that asks respondents about contributions they have made (in terms of Ugandan shillings) to events in their community (such as weddings, funerals, etc.).[14] The average response was about 47,000 Ugandan shillings (approximately $12.50 USD), and the maximum reported value is two million shillings ($525). This is a more direct measure of customary community engagement, though the "audience" for this engagement varies by event; for example, contributing funds for a small gathering of neighbors may not have the same impact as contributing to the wedding of a clan head's daughter. Any instrumental value of these contributions depends not only on their size, but on who the recipients are.

Table 3: How often in the past 3 months have you contacted your clan head?

	Never	Only once	A few times	Often
Buliisa	154	31	50	5
Hoima	151	60	19	21
Kapchorwa	98	59	60	23
Mbale	118	86	32	5

The last outcome of interest is violence resulting from conflict over land. There are three reasons to believe that we may be able to measure incidences of land-related violence in Uganda. First, the oil boom in the Western Region has been associated with land values that have risen up to seven times their levels from a decade ago. The second factor, property rights that are imperfectly defined and enforced, means that this upsurge in land values has not been a welcome development for many landholders. Media and NGO reports from the region abound with stories of fraudulent land claims and sales. Third, there have been reported instances of land violence in multiple regions of the country.

List experiments are a technique to elicit survey responses about sensitive topics like personal involvement in violence. They involve splitting the survey sample into treatment and control groups, and providing respondents a question that lists a set of activities, asking them *how many* they have done during some time period, rather than *which* activities they have done. The treatment group is given one additional item on their list which describes the sensitive activity of interest. By comparing mean responses to the survey

[14] I replace these variables in the Appendix with a measure of the same contributions in terms of hours to both public events and family-related activities.

item, we can make claims about the average number of respondents in a given group who have participated in the sensitive activity, without being able to make claims about the activity for any one respondent. We included a list experiment in the survey that seeks to measure whether landholders have threatened violence against others as a result of a land dispute. The survey item is discussed in more detail below in section 5.3.

4.5 Controls and alternative measure

In the analyses below, I include a number of controls to account for omitted variable bias. Proximity to land competition is used in this paper to measure land tenure security. It follows that each of the control variables I employ are used because they are theoretically correlated with both land tenure security — though not necessarily physical location itself — and the outcomes related to ethnic attachment and engagement. Along with demographic variables (age, sex, education) and district-level dummies, I also employ three other variables that may explain the outcomes of interest. First is a dummy for whether a landholder is a member of a minority ethnic group in their district. Secondly, I include a variable called `titled`, a dummy variable that takes a value of 1 if a landholder possesses a legal title to their land. Lastly, I use a self-reported measure of land tenure security, ranging from "not secure" to "somewhat secure" to "very secure", to replace proximity to land competition in the third model estimation in each of the tables below. Distribution of responses to this survey item are shown in Table 1 above. It is possible that actual proximity to land threats is not as important as landholders' subjective experience of land competition. This measures ends up being both statistically significant and having the expected sign only when it comes to ethnic attachment (see Table 14); furthermore, there are serious endogeneity concerns with using this measure. Therefore I use the land competition variable constructed using GPS coordinates for most models.

5 Analysis

This section includes analyses of each of the dependent variables discussed in section 4.4. In each case, the analysis reveals that existing institutional explanations for land-related ethnic violence do not clearly predict landholder behavior, and require additional refinement. This is shown by taking a look at landholders' proximity to land competition, which in nearly every model falls short of statistical significance, has a substantively small impact, or has the opposite of the expected sign. For ease of presentation of the results, I include visualizations of the model results. For each dependent variable, I include multiple model estimations, beginning with simple bivariate relationships and finishing with a full model including each

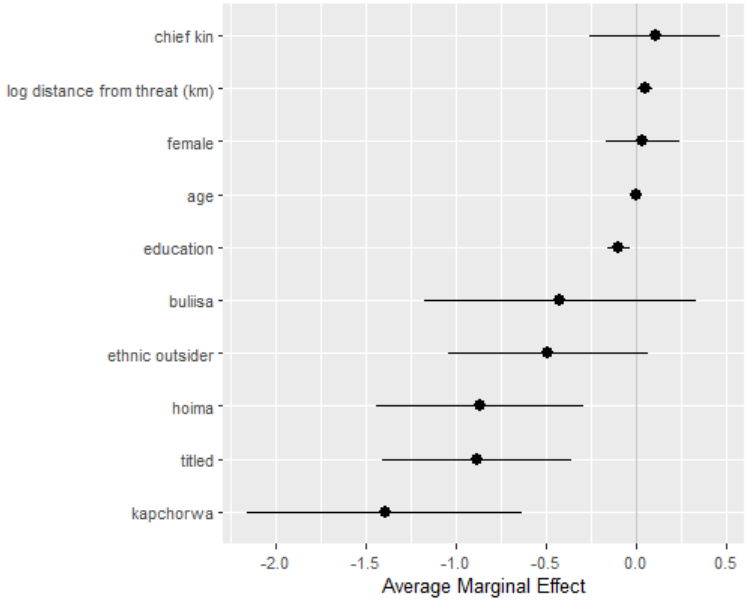

Figure 3: Marginal effects: ethnic attachment, model 5

of the covariates of interest. In all models, standard errors are clustered at the village level.

5.1 Ethnic attachment

I begin by estimating an OLS model with ethnic attachment as the dependent variable, with results displayed in Table 4. The dependent variable ranges from 0 to 4, with 0 representing "strongly Ugandan" and 4 "strongly my ethnic group." In the Appendix I include ordered probit estimations of the same model specifications. Some results of note stand out from an examination of the coefficient estimations. The headline finding is that the coefficient on the distance from land competition is statistically significant across three of four models, but has the opposite sign from what is predicted by the institutional theory of ethnic conflict. In each case the substantive effect is also small. A result that does align with theoretical expectations is that possessing a title to one's land is negatively associated with identifying with one's ethnic group. Those landholders who have the means and desire to title are unlikely to be devoted to their customary communities.[15] Alternatively, this result could also be explained by the institutional theory of ethnic conflict: when a threat to land rights appears, a landholder who has a title has no instrumental basis for claiming a strong association with their customary community, since their land rights are adjudicated by the state. Figure 3 displays the marginal effects of each covariate in the full model 5 estimation.

If the institutional theory of identity is correct, and respondents are behaving instrumentally with regard to their ethnic identity, then they might not report "genuine" attachment to their identity as measured

[15]Titling land in most African countries removes it permanently from customary authority.

Table 4: OLS estimation: ethnic attachment

	Model 1	Model 2	Model 3	Model 4	Model 5
log(distance from threat)	0.468***	0.298		0.359***	0.329**
	(0.130)	(0.174)		(0.120)	(0.148)
perceived tenure security			-0.226		
			(0.142)		
Hoima		-0.832**			-0.866***
		(0.303)			(0.295)
Buliisa		-0.442			-0.421
		(0.389)			(0.386)
Kapchorwa		-1.727***			-1.392***
		(0.423)			(0.390)
age				0.000	-0.002
				(0.004)	(0.004)
chief kin				0.205	0.108
				(0.193)	(0.186)
education				-0.140***	-0.096***
				(0.046)	(0.033)
female				-0.101	0.038
				(0.108)	(0.104)
ethnic outsider				-0.364	-0.487
				(0.330)	(0.284)
titled				-1.412***	-0.882***
				(0.346)	(0.266)
Constant	0.909**	2.087***	2.340***	1.664***	2.349***
	(0.368)	(0.433)	(0.242)	(0.413)	(0.455)
Num.Obs.	967	967	974	965	965
R2	0.089	0.242	0.013	0.202	0.289
R2 Adj.	0.088	0.239	0.012	0.197	0.282
N	967	967	974	965	965

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

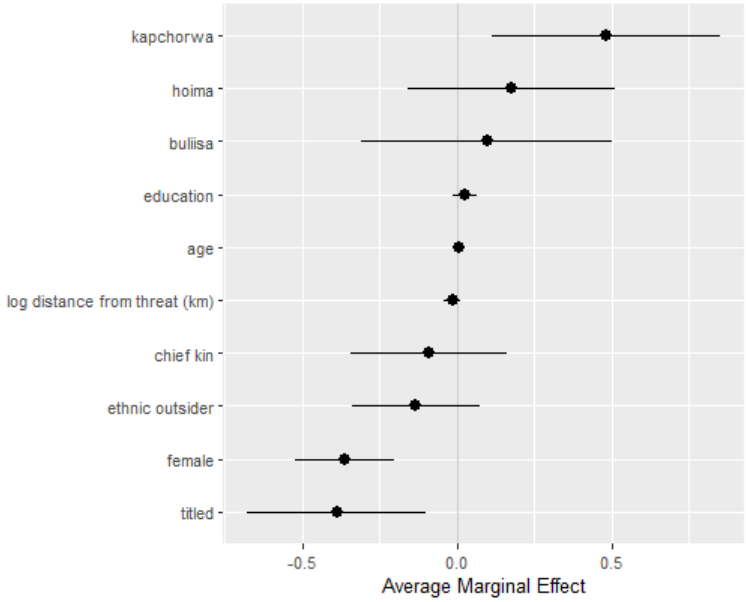

Figure 4: Marginal effects: contact clan head, model 5

above. They might be especially unlikely to report high ethnic attachment to a survey enumerator who is not engaged in their local community, particularly in matters related to land; after all, the "audience" for their ethnic attachment is limited to customary leaders and other members of their immediate community. With this concern in mind, I now turn to repeating the analyses using measures that focus on behavior rather than self-identification. I interpret these behaviors as indicators of ethnic "engagement," in contrast with measures of ethnic attachment used in this section.

5.2 Ethnic engagement

The first measure of ethnic engagement is the frequency of contact landholders have with their clan head.[16] The possible responses were "never," "only once," "a few times," and "often". I again use OLS and include a probit estimation in the Appendix. Figure 4 displays marginal effects from Model 5. The estimations lend support to the claim that proximity to land competition is associated with greater likelihood of contacting one's clan head, though this result is not consistent across all models.

The next measure is the amount (in 1000 Ugandan shillings) a landholder reports contributing to community events. Table 6 reports OLS estimates. I use the same sets of controls that are used in the models above. A straightforward reading of the institutional theory of ethnic land conflict would suggest that proximity to competition over land should be a significant predictor of this outcome; landholders who see their land rights under threat should be contributing in the hopes of strengthening their claims to land. If, as I

[16]In Section 8.3 of the Appendix I show model estimations for alternative measures of ethnic engagement.

Table 5: OLS estimation: contacted clan head, past 3 months

	Model 1	Model 2	Model 3	Model 4	Model 5
log(distance from threat)	-0.157*	-0.116		-0.139*	-0.103
	(0.084)	(0.090)		(0.079)	(0.081)
perceived tenure security			-0.004		
			(0.052)		
Hoima		0.104			0.174
		(0.183)			(0.171)
Buliisa		0.036			0.097
		(0.185)			(0.207)
Kapchorwa		0.294			0.481**
		(0.200)			(0.189)
age				0.007***	0.007***
				(0.002)	(0.002)
chief kin				-0.124	-0.092
				(0.098)	(0.129)
education				0.045**	0.025
				(0.022)	(0.020)
female				-0.317***	-0.362***
				(0.073)	(0.082)
ethnic outsider				-0.180*	-0.133
				(0.102)	(0.106)
titled				-0.187	-0.389**
				(0.130)	(0.148)
Constant	3.132***	2.923***	2.747***	2.909***	2.686***
	(0.249)	(0.232)	(0.095)	(0.264)	(0.249)
Num.Obs.	961	961	969	959	959
R2	0.028	0.041	0.000	0.084	0.110
R2 Adj.	0.027	0.037	-0.001	0.077	0.100
N	961	961	969	959	959

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

suggest, individuals are able to anticipate most land competition, proximity to land threats should not be a strong predictor.

The average marginal effect of each covariate in the full Model 5 is displayed in Figure 5. Proximity to land threats turns out to have no significant effect across all model specifications. District-level differences between Kapchorwa and Hoima versus the reference category of Mbale are significantly associated with increased contributions, while women contribute less than men. On the whole, the analyses of ethnic attachment and engagement reveal mixed evidence for the importance of land competition. This ambiguity is addressed further below in Section 5.4.

Table 6: Logged respondent contributions to public functions, 1000 UGX

	Model 1	Model 2	Model 3	Model 4	Model 5
log(distance from threat)	0.093	0.050		0.163	0.054
	(0.178)	(0.188)		(0.181)	(0.191)
perceived tenure security			0.043		
			(0.124)		
Hoima		1.968***			1.960***
		(0.579)			(0.578)
Buliisa		0.836			1.016
		(0.636)			(0.691)
Kapchorwa		1.870***			2.008***
		(0.614)			(0.648)
age				-0.009*	-0.004
				(0.005)	(0.005)
chief kin				-0.359	-0.337
				(0.234)	(0.270)
education				0.044	-0.018
				(0.072)	(0.072)
female				-0.342*	-0.521***
				(0.171)	(0.135)
ethnic outsider				0.207	0.350*
				(0.237)	(0.185)
titled				0.940	0.360
				(0.539)	(0.480)
Constant	2.157***	1.040*	2.322***	2.394***	1.385**
	(0.549)	(0.546)	(0.300)	(0.565)	(0.525)
Num.Obs.	795	795	801	793	793
R2	0.003	0.211	0.000	0.045	0.241
R2 Adj.	0.001	0.207	-0.001	0.037	0.232
N	795	795	801	793	793

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

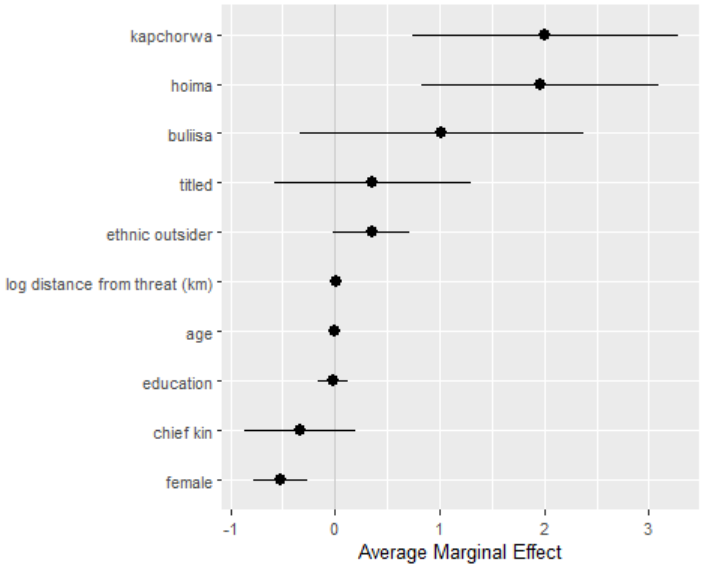

Figure 5: Marginal effects: contributions, model 5

5.3 Land-related violence

Where property rights are not fully enforced, violence (or threats of violence) can be a tactic employed by landholders to defend their land rights. In this section I discuss the results of a list experiment that attempts to measure the prevalence of land-related violence in Uganda. I briefly explain how the list experiment works, then show that patterns of land-related violence in Uganda are not well-explained by existing theory.

In the Uganda survey, respondents were asked to answer how many of the following activities they had done in the past year:

* Helped a friend or neighbor plant crops
* Attended a community meeting
* Bought a new piece of land
* Traveled outside of Uganda

The treatment group were given the same list, with one additional item:

* Threatened violence against someone because of a dispute over land

The wording of the treatment item was made intentionally broad with the hopes of capturing reliable data about an activity that is both sensitive and rare. The tradeoff is that we cannot distinguish between landholders who only threaten others versus those who actually engage in land-related violence. Table 7 shows the distribution of item counts across the control and treatment groups.[17]

Table 7: Observed data from list experiment

Response value	**Control**		**Treatment**	
	Frequency	Proportion (%)	Frequency	Proportion (%)
0	2	0.4	4	0.9
1	136	29.3	99	21.3
2	245	52.8	240	51.7
3	69	14.9	94	20.3
4	12	2.6	14	3.0
5			13	2.8

Differences in means between the control and treatment groups for this list experiment allow for estimating the prevalence of land-related violence in the four study districts. If we were to observe a difference

[17] It is useful to construct a list experiment such that few respondents in the control group respond with "0" or the maximum number (in this case 4) items. The first case would be a list filled with rare behaviors, and a "1" response for a treated respondent could reveal that they have engage in the illicit behavior. In the second case, the list is filled with very common behaviors, and so anyone in the treatment arm who has engaged in the illicit behavior must respond with the maximum item count if they are to be truthful, which reveals without a doubt that they have engaged in the illicit behavior. Table 7 shows that "0" and "4" responses in the control arm are rare, 3% of the sample.

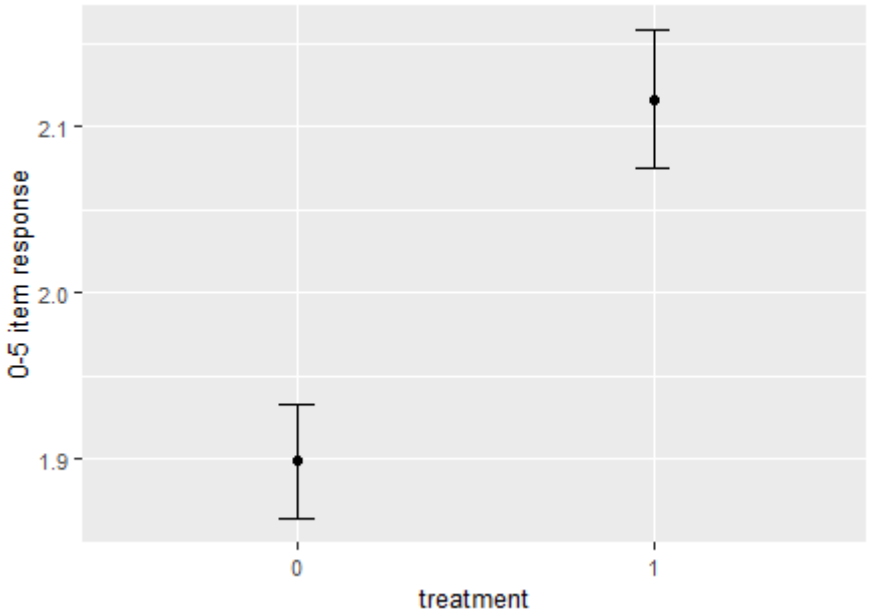

Figure 6: List experiment, full sample, prevalence of threats of violence

in means of 1, it would mean everyone in the treatment group reported having participated in one more of the listed activities than the control group; we would infer that *all* respondents had threatened violence against others. If the difference in means were 0, we would infer that no respondent had threatened violence. Thus, the difference can be interpreted as a proportion of respondents who have engaged in the sensitive activity.

Figure 6 visually displays the difference in means for the full sample, with 95% confidence intervals around the point estimates. Approximately 22% of the survey respondents report having threatened violence against someone because of a dispute over land.[18] Anecdotally, survey enumerators reported that most landholders appeared comfortable answering this question, and in fact some volunteered additional information about the threats they had made during the course of land disputes.

Figure 7 displays the list experiment results, separated by district. The district breakdown shows that the list experiment results for the full sample are driven for the most part by landholder behavior in Mbale District, where nearly half of respondents report threatening violence against others as a result of conflict over land. The results are surprising for two reasons. First, the difference in means for Hoima and Kapchorwa Districts are not statistically significant, such that we cannot reject the possibility that the rates of land-related violence there are 0. This is a striking result for Hoima District in particular, where we would expect — given the proximity to oil development, rapid population growth, and rising land values — that

[18]The control group mean item response was 1.899 and for the treatment group was 2.116.

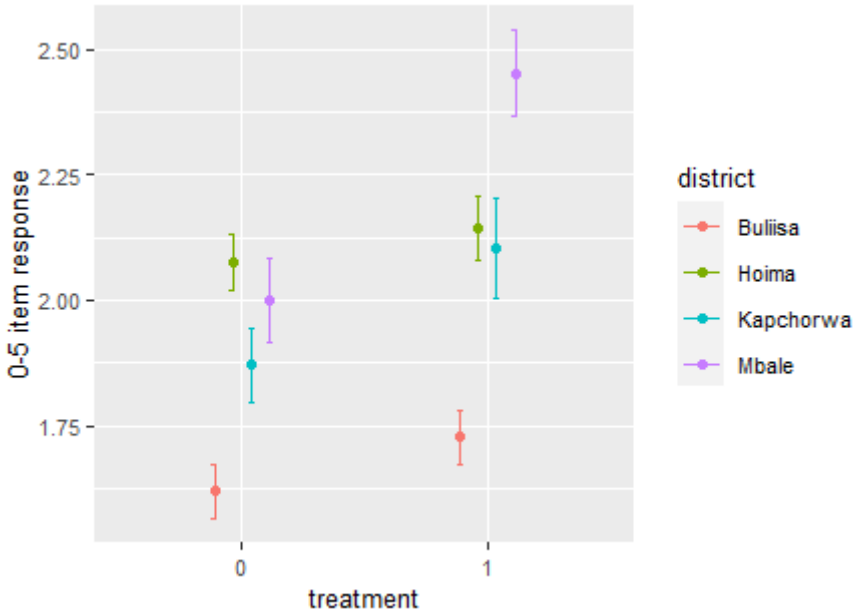

Figure 7: List experiment by district, prevalence of threats of violence

land conflict would be prevalent. Secondly, respondents in Buliisa District do report — albeit at low levels — threatening violence against others because of land disputes, despite the fact that the population in Buliisa and the nature of threats to land rights are quite similar to those in Hoima. What explains the variation in outcomes between Hoima and Buliisa Districts?

5.4 Explaining empirical anomalies

Here I present some qualitative evidence that suggests support for the theory I outlined in Section 3. On the surface, the four study district all exhibit land competition as well as customary land tenure rules for most landholders, variables that previous work suggests should be associated with conflict. Yet, we see variation in reported levels of violence across the districts. Furthermore, there is mixed evidence that a landholder's proximity to land competition predicts measures of ethnic attachment or engagement. A potential explanation lies in the structure of customary authority across the four districts. While on paper there are three distinct sets of customary institutions (Buliisa and Hoilm are both part of the Bunyoro Kingdom), the reality on the ground is that the majority of land issues are handled at the clan level in each district. As discussed above, decentralized authority means it is relatively easy for customary heads to monitor landholder behavior, meaning that once land competition appears, it is hard to change one's behavior to appeal to a clan head for strengthened land rights.

Why do Buliisa and Hoima districts diverge in terms of the reported presence of land-related violence?[19] Interviews with landholders in Hoima and Buliisa Districts suggest that despite sharing the same marco-level customary institutions, as well as very similar ethnic makeups, the communities in these districts vary in terms of the local configuration of property rights to land. Several Buliisa landholders contrasted the historical culture of land management there to that of Hoima, saying that in Buliisa it has been much more communal in nature. The common ownership and use of land by a clan is more prevalent there than in Hoima, where landholders described land rights that are mostly vested in the individual. For example, farmers in Hoima said that in order to sell their land, they needed only the approval of the clan head, which was almost always given.[20] In Buliisa, landholders reported that land sales involved more family members, and that clan consensus is generally needed for such a decision. As discussed above in Section 3.3, when collectively held land comes under threat, it is difficult for any one landholder to mount a defense, thus incentivizing collective action on the part of all clan members; it is also more costly for customary leaders to monitor freeriders. Both of these factors incentivize the identity maintenance tactics proposed above, and potentially explain the differing rates of violent threats in the two districts.

6 Conclusion

This paper tests and refines existing institutional accounts of land-based ethnic conflict which suggest that the identity-based membership rules of customary land tenure systems in Africa channel land competition along ethnic lines; when competition increases, the value of membership in the in-group increases. I address two important questions left unanswered by these theories: first, how does a landholder make appeals to their community for help to defend land rights? Secondly, if landholders can anticipate most competition over land, won't they price it into their behavior before the threats appear? I argue that landholders have a variety of means by which to engage in "identity maintenance" in order to maintain or improve their status in their customary community, knowing that they will need the help of leaders and other landholders if their property rights come under threat. However, most land threats can be anticipated; therefore, where landholder behavior is easily monitored, they must demonstrate commitment to their community prior to the arrival of land competition.

Evidence from Uganda shows at best mixed support for existing institutional theories of land-based ethnic conflict. Proximity to land competition is not a good predictor of land-related violence, nor of the

[19] An analysis included in Section 8.4.1 also suggests that respondents in Buliisa are more likely than those in Hoima to identify strongly with their ethnic group.

[20] This is separate from the titling process, when landholders must get signatures of neighbors testifying to the fact that there are no ongoing land border disputes.

behaviors we would expect landholders to engage in if they were trying to bolster their status in their customary communities. The empirical puzzles revealed by the data are addressed using insights from several interviews. First, despite the variation in customary communities included in the data, most land issues are handled at the clan level across each area. Monitoring of behavior is relatively easy with this institutional setup, which helps explain similar landholder behavior across the four study districts. Differences in levels of estimated land-related violence in Hoima versus Buliisa, two very similar districts, is explained by the historical prevelance of individualized property rights in the former and communal in the latter. Communal property that comes under threat necessitates extensive collective action to defend, making it more likely for Buliisa to fit the expectations of institutional theories of ethnic violence. Some incidences of opportunistic clan heads in Buliisa also set the stage for land-related violence.

This paper adds to the literature on rationalist accounts of ethnic behavior and conflict, and on land conflict in Africa. Given that population densities continue to grow in SSA, combined with the fact that this has not led to the expected evolution of property rights from customary tenure to private property, conditions remain in place that can lead to ethnic conflict. However, as this paper documents, this association does not always hold. Understanding the variables that exacerbate or ameliorate this causal chain is important in order to better predict the effects of rising land values, and to prevent conflict occurring when it otherwise might. I have also attempted to push forward work on institutional theories of land conflict in particular by addressing theoretical "black boxes" that have been left unopened by previous scholarship.

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8 Appendix

8.1 Data

This section includes tables displaying summary information for several variables from the Uganda survey.

Table 8: Descriptive Statistics

	Min	*Max*	*Mean*
age	19	96	45.9
female	0	1	0.36
titled	0	1	0.12
will title	0	4	2.29
acres	0.125	2000	9.43
kin of chief	0	1	0.39
ethnic outsider	0	1	0.19
newcomer	0	1	0.10
distance from threat (km)	0	135.3	18.07
currently fallowing	0	1	0.31

Table 9: Educational Attainment

	Buliisa	*Hoima*	*Kapchorwa*	*Mbale*
No formal schooling	33	50	23	37
Some primary school	74	103	35	91
Primary school completed	59	47	26	36
Some secondary school	37	29	46	48
Secondary school completed	33	12	46	10
College	3	7	55	12
Some university	0	2	7	2
University completed	1	2	7	5
Don't know	0	0	1	0

Table 10: Who do you think is responsible for resolving land disputes?

	central govt.	local govt	traditional leaders	community members	don't know	none
Buliisa	4	60	19	156	1	0
Hoima	6	47	0	195	5	1
Kapchorwa	6	55	115	65	2	3
Mbale	12	69	151	8	0	0

Table 11: Land Tenure Status

	Buliisa	*Hoima*	*Kapchorwa*	*Mbale*	*Proportion of Total*
Freehold title	10	6	91	6	0.12
Leasehold	10	76	6	0	0.09
Kibanja	1	8	33	32	0.08
Customary with certificate	210	149	113	199	0.68

Table 12: Have you given a gift to your traditional leader in the past 3 months?

	yes	no	don't know
Buliisa	222	15	3
Hoima	220	30	0
Kapchorwa	148	92	6
Mbale	200	37	3

Table 13: Probit model: perceived land tenure security

	Dependent variable:
	perceived tenure security
buliisa	0.571***
	(0.103)
hoima	1.549***
	(0.115)
kapchorwa	0.467***
	(0.100)
Observations	977
Note:	*p<0.1; **p<0.05; ***p<0.01

8.2 Probit estimations: ethnic attachment, contacting clan head

Here I include alternative estimations of the first two dependent variables analyzed in Section 5, respondents' ethnic attachment and their likelihood of contacting their clan head in the past 3 months. Both variables are ordered and categorical, so I use ordered probit estimations.

Table 14: probit estimation, ethnic attachment

	Dependent variable:				
	ethnic attachment				
	(1)	(2)	(3)	(4)	(5)
log(distance from threat (km))	0.350***	0.250***		0.313***	0.297***
	(0.037)	(0.049)		(0.040)	(0.051)
hoima		−0.630***			−0.676***
		(0.110)			(0.113)
buliisa		−0.306***			−0.245**
		(0.112)			(0.115)
kapchorwa		−1.362***			−1.104***
		(0.108)			(0.119)
perceived tenure security			−0.157***		
			(0.045)		
age				0.001	−0.001
				(0.003)	(0.003)
female				−0.083	0.026
				(0.076)	(0.078)
education				−0.098***	−0.074***
				(0.024)	(0.025)
ethnic outsider				−0.280***	−0.398***
				(0.093)	(0.096)
titled				−1.300***	−0.977***
				(0.140)	(0.150)
Observations	967	967	974	965	965
Note:					*p<0.1; **p<0.05; ***p<0.01

Figure 8 displays simulated predicted probabilities generated by the full probit model.[21] I limit the figure to the two outermost responses to the survey item, "strongly Ugandan" and "strongly my ethnic group." The x-axis indicates a respondent's distance from a land threat, while the y-axis indicates the probability of falling into the category. I also differentiate between ethnic insiders and outsiders. Figure 9 displays the same expected values, but separated by whether a landholder has a title to their land or not.

For contacting a clan head, I estimate a four category ordered probit model, the results of which are displayed in Table 15. I also display a visualization of the relevant results below in Figure 10. I collapse the

[21] I use the `simcf` R package to generate simulated probabilities.

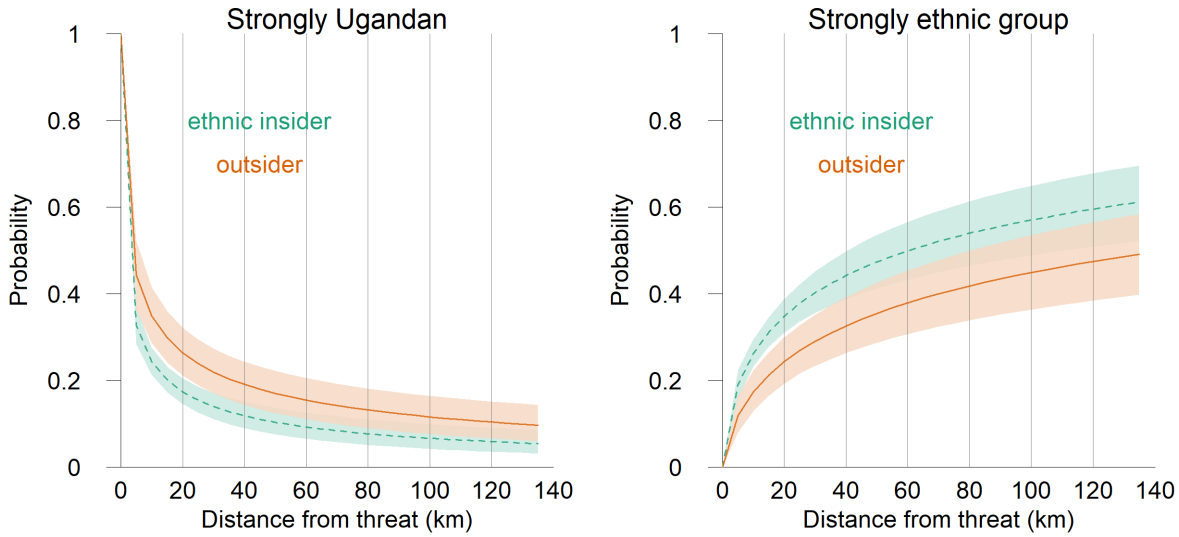

Figure 8: Likelihood of identifying as strongly Ugandan or ethnic group

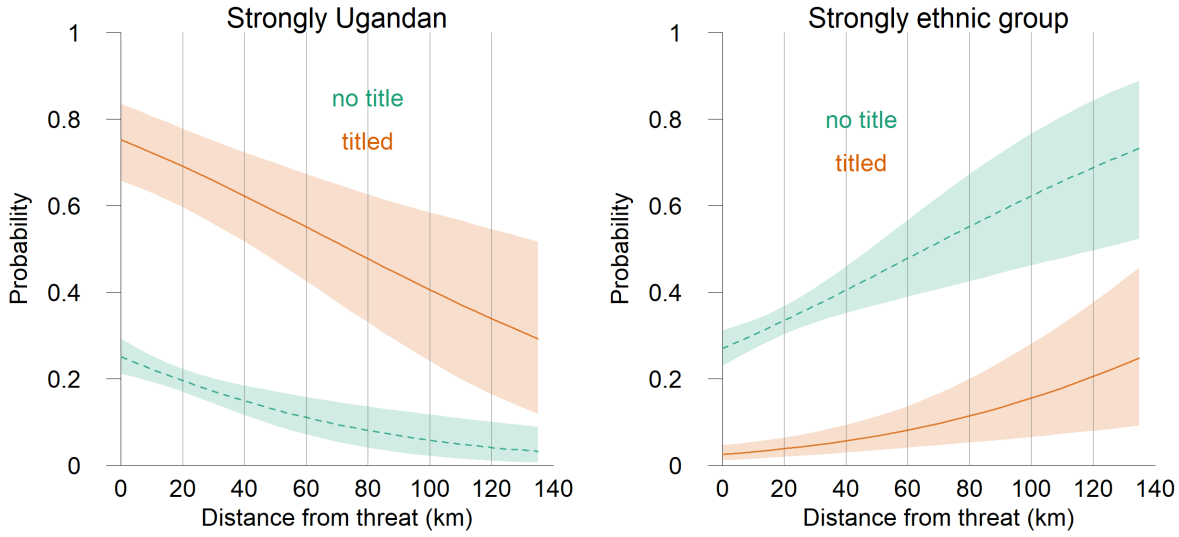

Figure 9: Likelihood of identifying as strongly Ugandan or ethnic group, with and without title

four categories into two groups, and again differentiate between ethnic insiders and outsiders.

Table 15: probit estimation, contacting clan head

	Dependent variable:				
	contact clan head in past 3 months				
	(1)	(2)	(3)	(4)	(5)
log(distance from threat (km))	-0.198^{***}	-0.144^{***}		-0.198^{***}	-0.137^{***}
	(0.037)	(0.049)		(0.039)	(0.049)
hoima		0.094			0.182
		(0.117)			(0.119)
buliisa		-0.030			-0.020
		(0.115)			(0.118)
kapchorwa		0.297^{***}			0.531^{***}
		(0.106)			(0.122)
perceived tenure security			-0.010		
			(0.046)		
age				0.007^{**}	0.008^{***}
				(0.003)	(0.003)
female				-0.422^{***}	-0.483^{***}
				(0.081)	(0.082)
education				0.048^{*}	0.028
				(0.024)	(0.025)
ethnic outsider				-0.212^{**}	-0.136
				(0.101)	(0.104)
titled				-0.299^{**}	-0.521^{***}
				(0.126)	(0.136)
Observations	961	961	969	959	959
Note:					*p<0.1; **p<0.05; ***p<0.01

8.3 Alternative dependent variables

Here I present results from GLM estimations of two variables that are attempts to measure the same concepts analyzed in Section 5.2. The first is the number of hours contributed by the respondent in the past 3 months to family events, for example, helping to build a fence or building, harvesting crops, or organizing a social function. The second is the number of hours over the same period the respondent reports having spent on community projects. In each case I use the same model specifications as those reported in Table **??** above, and also include Figures 11 and 12 that show marginal effects of the full model specification.

The results for the most part echo those discussed in Section 5.2. Proximity to land competition is generally not significant statistically, and is substantively insignificant in the one specification that is an exception (specification 2 in Table 16).

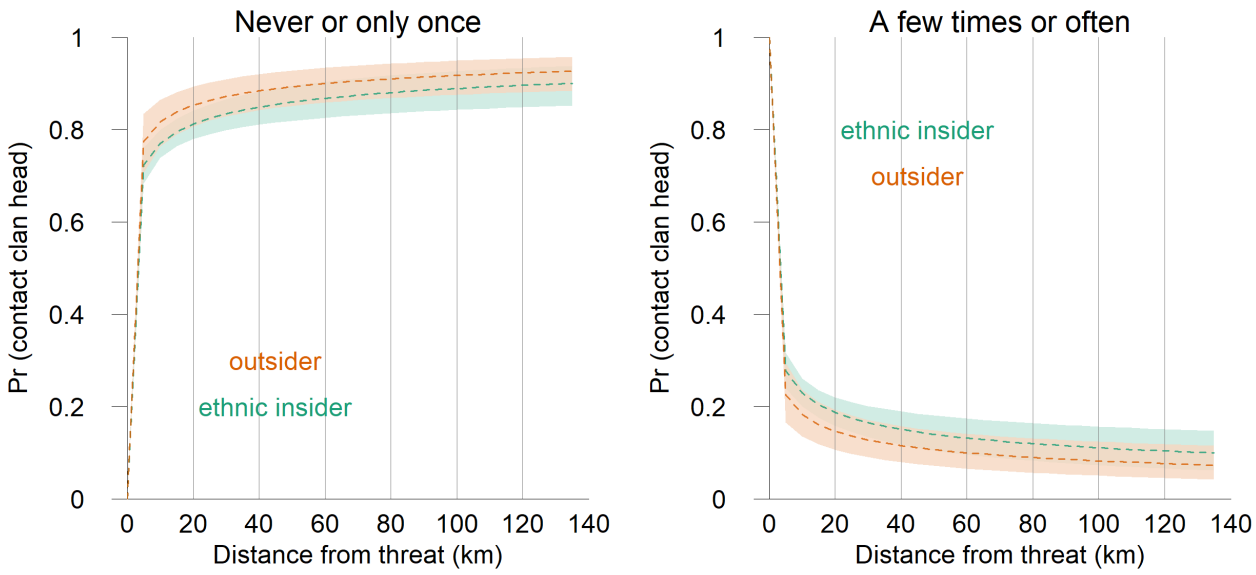

Figure 10: Likelihood of contacting clan head

8.3.1 Hours contributed to family events

Table 16: GLM results: hours contributed to family events

	Dependent variable:				
	log(hours contributed in past 3 months)				
	(1)	(2)	(3)	(4)	(5)
log(distance from threat (km))	−0.020	−0.103***		−0.026	−0.096***
	(0.025)	(0.032)		(0.026)	(0.032)
hoima		0.131			0.122
		(0.081)			(0.081)
buliisa		0.389***			0.401***
		(0.079)			(0.080)
kapchorwa		−0.029			−0.009
		(0.072)			(0.082)
perceived tenure security			−0.069**		
			(0.032)		
age				−0.002	−0.004*
				(0.002)	(0.002)
female				−0.139**	−0.122**
				(0.054)	(0.054)
education				0.018	0.014
				(0.017)	(0.018)
ethnic outsider				0.003	−0.072
				(0.067)	(0.067)
titled				−0.134*	−0.069
				(0.081)	(0.086)
Constant	1.356***	1.441***	1.385***	1.508***	1.619***
	(0.066)	(0.084)	(0.046)	(0.132)	(0.136)
Observations	864	864	870	862	862
Log Likelihood	−971.915	−955.970	−978.188	−962.049	−946.553
Akaike Inf. Crit.	1,947.830	1,921.941	1,960.376	1,938.098	1,913.106
Note:					*p<0.1; **p<0.05; ***p<0.01

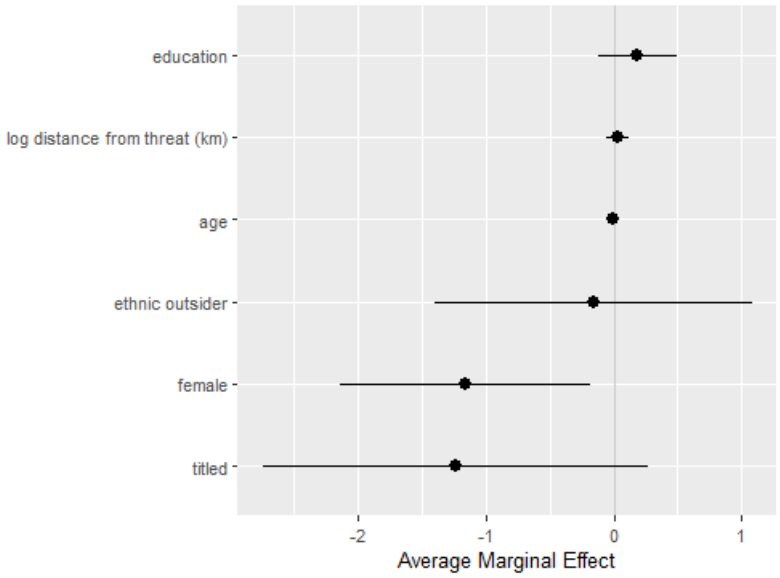

Figure 11: Marginal effects: full model, contributions (hours) to family events

8.3.2 Hours contributed to public events in community

Table 17: GLM results: hours contributed to public goods

	Dependent variable:				
	log(hours contributed in past 3 months)				
	(1)	(2)	(3)	(4)	(5)
log(distance from threat (km))	0.065***	0.046		0.065***	0.067**
	(0.024)	(0.032)		(0.025)	(0.032)
hoima		−0.242***			−0.266***
		(0.086)			(0.086)
buliisa		0.266***			0.262***
		(0.085)			(0.086)
kapchorwa		−0.061			0.004
		(0.071)			(0.081)
perceived tenure security			0.130***		
			(0.033)		
age				0.003	−0.00004
				(0.002)	(0.002)
female				−0.005	−0.001
				(0.055)	(0.054)
education				0.049***	0.037**
				(0.017)	(0.017)
ethnic outsider				−0.044	−0.097
				(0.069)	(0.069)
titled				−0.360***	−0.367***
				(0.077)	(0.080)
Constant	0.881***	0.939***	0.880***	0.687***	0.865***
	(0.064)	(0.085)	(0.047)	(0.133)	(0.138)
Observations	698	698	699	696	696
Log Likelihood	−731.428	−709.220	−729.222	−716.323	−694.010
Akaike Inf. Crit.	1,466.855	1,428.440	1,462.444	1,446.647	1,408.019
Note:					*p<0.1; **p<0.05; ***p<0.01

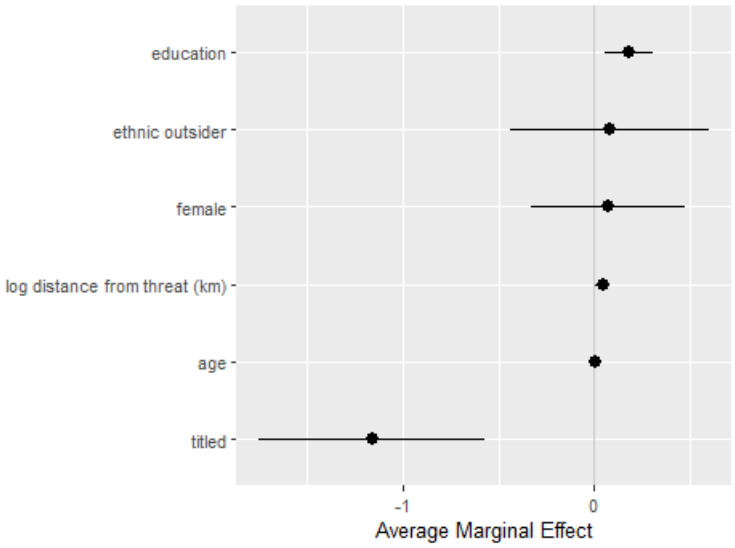

Figure 12: Marginal effects: full model, contributions (hours) to public goods

8.4 Reduced sample - Buliisa and Hoima only

Here I present model results using only survey data from Buliisa and Hoima districts.

8.4.1 Ethnic attachment - reduced sample

Table 18: Ethnic attachment - reduced sample, probit

	Dependent variable:				
	ethnic attachment				
	(1)	(2)	(3)	(4)	(5)
log(distance from threat (km))	0.349***	0.380***		0.393***	0.439***
	(0.077)	(0.078)		(0.079)	(0.080)
buliisa		0.324***			0.459***
		(0.103)			(0.110)
perceived tenure security			−0.005		
			(0.063)		
age				−0.001	−0.005
				(0.004)	(0.004)
female				−0.064	−0.048
				(0.109)	(0.109)
education				−0.028	−0.049
				(0.037)	(0.038)
ethnic outsider				−0.581***	−0.661***
				(0.111)	(0.113)
titled				0.253	0.225
				(0.292)	(0.297)
Observations	484	484	487	483	483
Note:					*p<0.1; **p<0.05; ***p<0.01

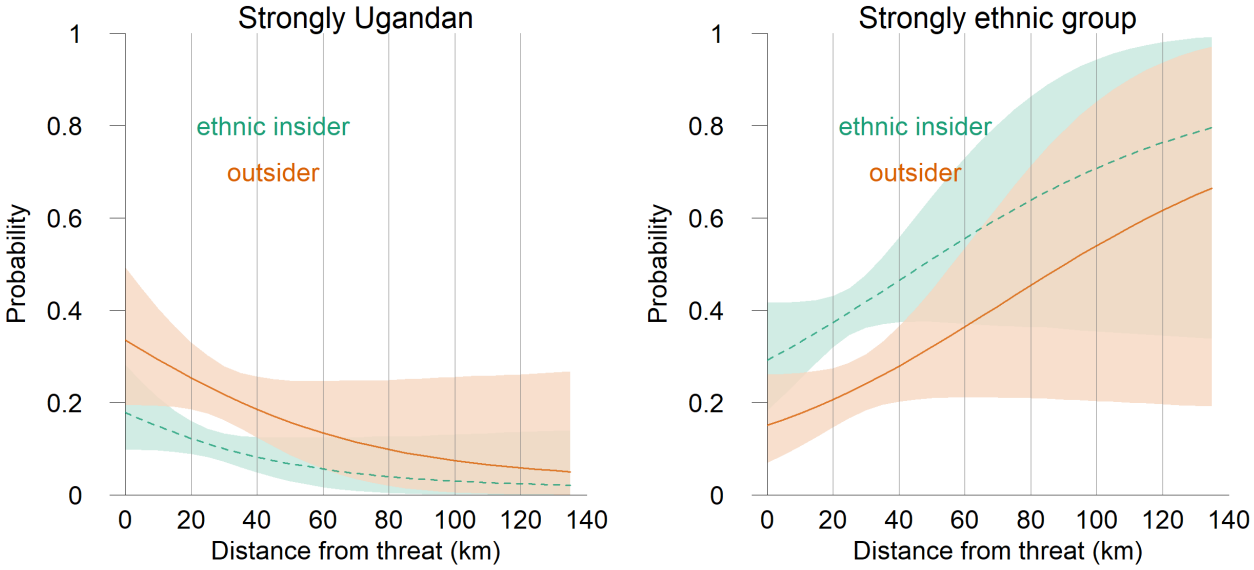

Figure 13: Likelihood of identifying as strongly Ugandan or ethnic group, reduced sample

Table 19: Ethnic Attachment, OLS estimate, reduced sample

	Model 1	Model 2	Model 3	Model 4	Model 5
log(distance from threat)	0.439*	0.473*		0.544**	0.553**
	(0.220)	(0.215)		(0.227)	(0.231)
Hoima		-0.415			-0.227
		(0.250)			(0.273)
age				-0.008	-0.009*
				(0.005)	(0.005)
chief kin				0.722***	0.582***
				(0.189)	(0.191)
education				-0.065	-0.070*
				(0.038)	(0.040)
female				-0.085	-0.072
				(0.159)	(0.157)
ethnic outsider				-0.634*	-0.694**
				(0.317)	(0.298)
titled				0.154	0.158
				(0.387)	(0.381)
Constant	2.011**	2.116**	3.393***	2.020***	2.234**
	(0.738)	(0.807)	(0.253)	(0.660)	(0.756)
Num.Obs.	484	484	487	483	483
R2	0.040	0.061	0.000	0.150	0.153
R2 Adj.	0.038	0.057	-0.002	0.137	0.139
N	484	484	487	483	483

* p < 0.1, ** p < 0.05, *** p < 0.01

8.4.2 Contacting clan head

Table 20: probit estimation, contacting clan head, reduced sample

	Dependent variable:				
	contact clan head in past 3 months				
	(1)	(2)	(3)	(4)	(5)
log(distance from threat (km))	0.079	0.071		0.104	0.093
	(0.083)	(0.083)		(0.085)	(0.085)
buliisa		−0.097			−0.147
		(0.108)			(0.115)
perceived tenure security			0.0005		
			(0.069)		
age				0.0002	0.002
				(0.004)	(0.004)
female				−0.338***	−0.344***
				(0.122)	(0.122)
education				0.069*	0.077*
				(0.040)	(0.041)
ethnic outsider				−0.183	−0.160
				(0.121)	(0.122)
titled				−0.118	−0.104
				(0.319)	(0.320)
Observations	484	484	488	483	483
Note:					*p<0.1; **p<0.05; ***p<0.01

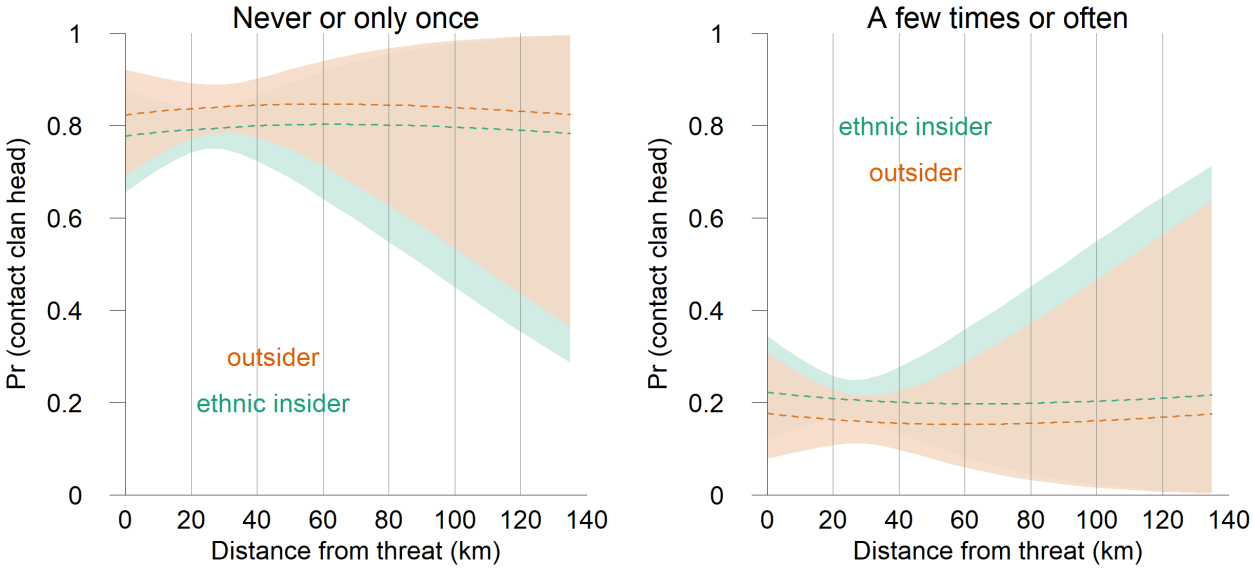

Figure 14: Likelihood of contacting clan head, reduced sample

Table 21: Contacted clan head, past 3 months, OLS, reduced sample

	Model 1	Model 2	Model 3	Model 4	Model 5
log(distance from threat)	0.052	0.049		0.082	0.071
	(0.098)	(0.097)		(0.088)	(0.085)
Hoima		0.045			0.292*
		(0.111)			(0.158)
age				-0.000	0.001
				(0.003)	(0.003)
chief kin				0.152*	0.332**
				(0.084)	(0.125)
education				0.054*	0.061**
				(0.028)	(0.026)
female				-0.275***	-0.291***
				(0.071)	(0.075)
ethnic outsider				-0.116	-0.040
				(0.121)	(0.123)
titled				-0.086	-0.090
				(0.224)	(0.222)
Constant	2.472***	2.461***	2.644***	2.344***	2.068***
	(0.322)	(0.348)	(0.092)	(0.315)	(0.373)
Num.Obs.	484	484	488	483	483
R2	0.001	0.002	0.000	0.046	0.060
R2 Adj.	-0.001	-0.002	-0.002	0.032	0.044
N	484	484	488	483	483

* p < 0.1, ** p < 0.05, *** p < 0.01

Table 22: Logged respondent contributions to public functions, OLS, reduced sample

	Model 1	Model 2	Model 3	Model 4	Model 5
log(distance from threat)	-0.069	0.105		0.036	0.098
	(0.335)	(0.232)		(0.278)	(0.219)
Hoima		1.142***			1.316***
		(0.245)			(0.258)
age				-0.008*	-0.004
				(0.004)	(0.004)
chief kin				-0.627**	0.152
				(0.232)	(0.160)
education				0.148**	0.156**
				(0.064)	(0.068)
female				-0.258	-0.260*
				(0.172)	(0.145)
ethnic outsider				0.114	0.342*
				(0.162)	(0.179)
titled				0.270	0.385
				(0.347)	(0.334)
Constant	3.000**	1.688*	2.904***	3.086***	1.416*
	(1.117)	(0.841)	(0.333)	(0.890)	(0.758)
Num.Obs.	332	332	334	331	331
R2	0.001	0.148	0.002	0.094	0.198
R2 Adj.	-0.002	0.143	-0.001	0.074	0.178
N	332	332	334	331	331

* p < 0.1, ** p < 0.05, *** p < 0.01

8.4.3 Contributions to public functions

8.4.4 Contributions in hours to family events

Table 23: GLM results: hours contributed to family events, reduced sample

	Dependent variable:				
	log(hours contributed in past 3 months)				
	(1)	(2)	(3)	(4)	(5)
log(distance from threar (km))	-0.323^{***}	-0.308^{***}		-0.325^{***}	-0.308^{***}
	(0.062)	(0.062)		(0.062)	(0.062)
buliisa		0.235^{***}			0.245^{***}
		(0.080)			(0.084)
perceived tenure security			-0.187^{***}		
			(0.053)		
age				-0.005	-0.007^{**}
				(0.003)	(0.003)
female				-0.168^{*}	-0.168^{*}
				(0.089)	(0.088)
education				0.085^{***}	0.071^{**}
				(0.031)	(0.031)
ethnic outsider				0.012	-0.028
				(0.087)	(0.088)
titled				0.179	0.147
				(0.218)	(0.216)
Constant	2.386^{***}	2.220^{***}	1.641^{***}	2.495^{***}	2.462^{***}
	(0.197)	(0.204)	(0.088)	(0.258)	(0.256)
Observations	425	425	427	424	424
Log Likelihood	-522.836	-518.515	-534.308	-513.361	-509.020
Akaike Inf. Crit.	1,049.672	1,043.030	1,072.617	1,040.721	1,034.039
Note:					*p<0.1; **p<0.05; ***p<0.01

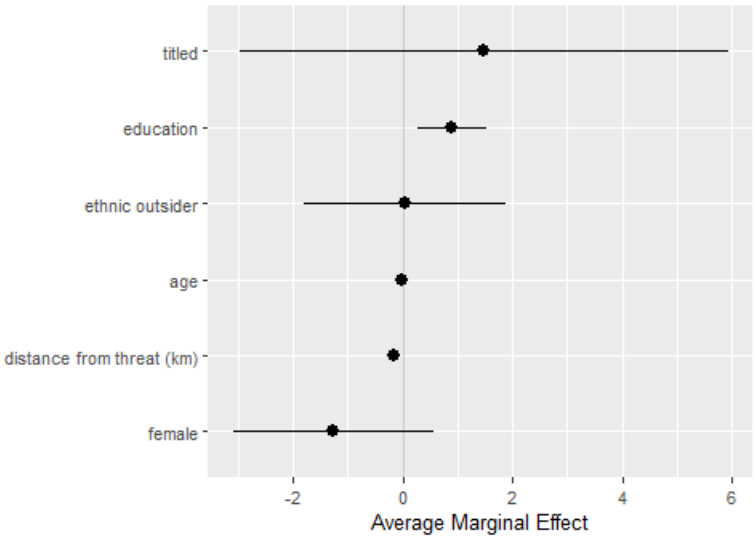

Figure 15: Marginal effects, full model, contributions (hours) to family, reduced sample

8.4.5 Hours contributed to public events in community

Table 24: GLM results: hours contributed to public goods, reduced sample

	Dependent variable:				
	log(hours contributed in past 3 months)				
	(1)	(2)	(3)	(4)	(5)
log(distance from threat (km))	0.109	0.114*		0.115*	0.110*
	(0.067)	(0.062)		(0.068)	(0.064)
buliisa		0.509***			0.477***
		(0.072)			(0.078)
perceived tenure security			0.011		
			(0.049)		
age				0.009***	0.003
				(0.003)	(0.003)
female				−0.044	−0.039
				(0.085)	(0.080)
education				0.007	−0.013
				(0.030)	(0.028)
ethnic outsider				0.040	−0.024
				(0.082)	(0.079)
titled				0.297	0.200
				(0.199)	(0.188)
Constant	0.755***	0.479**	1.088***	0.283	0.397
	(0.218)	(0.206)	(0.082)	(0.286)	(0.271)
Observations	308	308	306	307	307
Log Likelihood	−316.703	−293.044	−314.898	−308.877	−290.921
Akaike Inf. Crit.	637.406	592.087	633.795	631.754	597.842
Note:					*p<0.1; **p<0.05; ***p<0.01

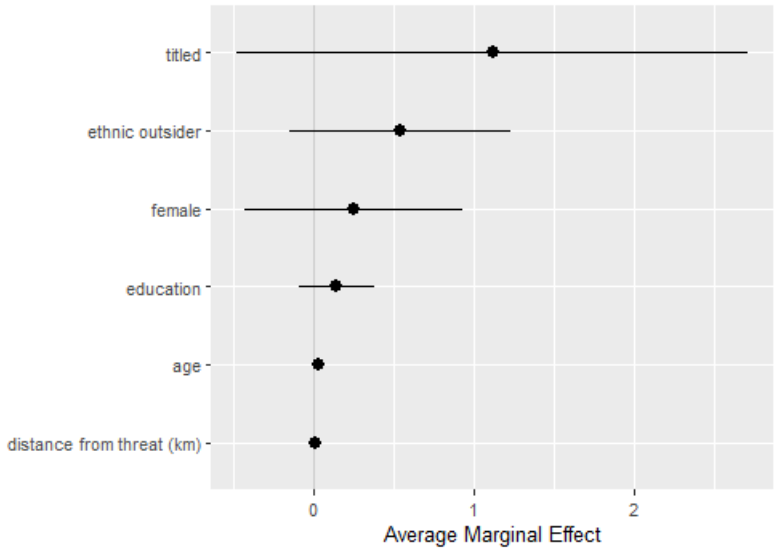

Figure 16: Average marginal effects, full model, hours contributed to public goods, reduced sample

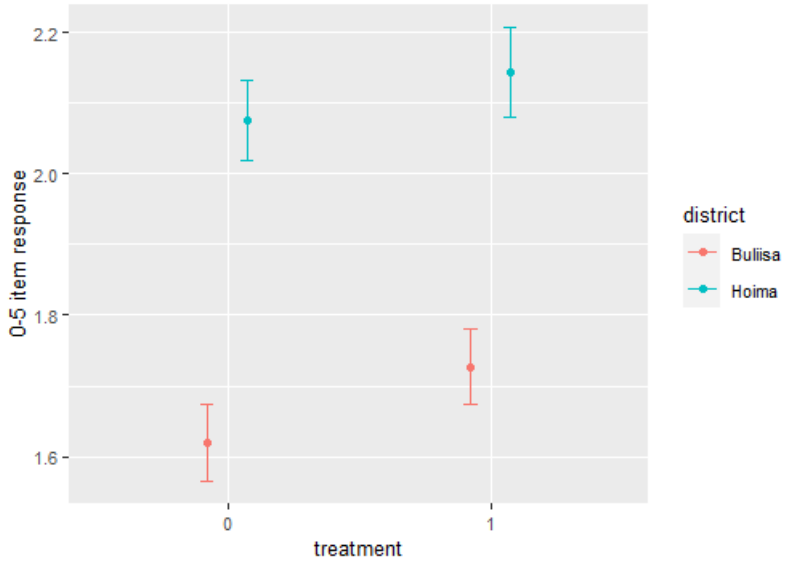

Figure 17: List experiment by district, prevalence of threats of violence: reduced sample

8.4.6 List experiment

Figure 17 displays the mean item response count by district for the reduced sample. Similar to Figure 7 above, there is no significant difference between the control and treated groups in Hoima District, indicating little evidence of land-related low level violence there.

Institutional Determinants of Land Use Decisions in Extractive Communities

William Gochberg*

July 2020

Abstract

Does natural resource extraction have spillover effects on land use practices in local communities? While popular narratives tend to cast the relationship between large extractive projects and local communities as inevitably harmful, I highlight how this relationship is mediated by local property rights institutions, with some unexpected consequences. Using original data from Uganda, I show that proximity to extractive projects is associated with higher rates of clearing trees, but also higher rates of fallowing land. Proximity has no clear association with the likelihood of putting up fences or buildings, or with plans to fallow land in the future. I also find that variation within a single customary community — the Bunyoro Kingdom — in how property rights are allocated and enforced is the most consistent predictor of landholder behavior. This intra-community variation in political institutions has been understudied in previous work on land tenure in Africa.

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1 Introduction

Does natural resource extraction have spillover effects on land use practices in local communities? While most attention is paid to the direct effects of extractive industries on environmental outcomes like carbon emissions and pollution, there has been less empirical investigation within political science of how these industries shape the behavior of local communities, and how this behavior is conditioned by political variables.[1] In this paper I lay out theoretical expectations for how large infrastructure projects like oil fields and refineries affect the behavior of local landholders by putting pressure on their land tenure security. These projects can be multi-billion dollar investments, and are accompanied by the construction of roads and pipelines, the acquisition of land, and the influx of migrants looking to benefit from economic opportunities. In a context where property rights to land are not always clearly delineated or enforced, each of these factors has the potential to leave landholders feeling less secure in their property rights than before. Landholders who find themselves with insecure land tenure are incentivized to extract value from the land in the short term, forgoing uncertain future value from land that could be obtained if land was used more sustainably. Yet, I argue that the relationship between extractive industry operations and the land use decisions made by local residents is contingent on local institutions, specifically the way that property rights are established and maintained through land use decisions like planting trees, as well as dispute resolution mechanisms. Where property rights are clearly defined and enforced, extractive industry activity can incentivize individuals to invest in their land, including by fallowing fields and building infrastructure.

I explore these questions using original data from Uganda, collected in 2018. I focus on two districts - Buliisa and Hoima - that are the site of substantial economic development as oil production begins near Lake Albert. The data consist of an original survey of 492 landholders and several interviews with landholders, clan heads, and civil servants. I examine land use behavior by private individuals including fallowing, clearing trees, and constructing fences or buildings. I use proximity to large extractive projects as a measure of landholders' tenure security — the perception on the part of a landholder that their rights to land are recognized by others and will be enforced in case of a dispute. This measure is supported by claims made by landholders themselves about the variety of threats to their property rights that have accompanied the resource boom, discussed in Section 4.2. I find that the local institutional makeup of property rights is a more consistent predictor of patterns of land use than proximity to oil projects, and that the proximity variable has mixed effects on behavior across different measures of land use. The two study sites share the same customary community — the Bunyoro Kingdom — but differences in the micro-rules of how land rights are allocated, delineated, and enforced are a potential explanation for district-level differences. For

[1] In the dataset described below, the median landholder lives within 28km of major extractive sites, and the most distant landholder lives 45km away.

example in Hoima, individually-held and well-enforced property rights are associated with less reported clearing of trees, while in Buliisa, communally-held rights with a recently mixed record of enforcement are associated with higher reported rates. The results suggest that the economic and environmental effects of extractive projects on local communities are contingent on institutions; furthermore, they demonstrate that there exists important variation in property rights institutions within a single customary community, a group that is often thought of as having a single set of rules to govern land.

But why focus on extractive industries, when any significant economic change should logically have the same effect on landholder behavior? There are two motivations. First, popular writing on this topic at times assumes that natural resource extraction is invariably harmful to local communities and the environment. Here I demonstrate that this relationship is complex, and contingent on the rules in place locally as well as how well those rules are enforced. Second is the sheer magnitude of the economic impact of infrastructure projects of this kind. In the case areas of Buliisa and Hoima Districts this includes several wells, multiple pipelines, an oil refinery, a new international airport, paved roads, and updates to existing infrastructure. Infrastructure investments by international oil companies already total at least US $4 billion (Pearce 2020).

This paper makes two primary contributions. The first is documenting and explaining how a resource boom in a context of a low-income country can produce the counter-intuitive results described above. This finding puts this paper in conversation with two strands of research in political science and economics. On the independent variable side (resource extraction) is the so-called resource curse literature. This scholarship includes one set of scholars who finger natural resource abundance as the root cause of corruption, authoritarianism, conflict, and a host of economic problems (e.g. Auty 1990; Collier & Hoeffler 1998; Dunning 2008; Gelb 1988; Mahdavy 1970; Ross 2012; Sachs & Warner 1995), and a second group that takes issue with the causal logic linking natural resource abundance and those outcomes (e.g. Brunnschweiler & Bulte 2009; Cotet & Tsui 2013; Haber & Menaldo 2011; Menaldo 2016). This research has focused on the interaction of large oil companies and states, the ways in which states extract rents from these firms, and subsequent political and economic outcomes. Little attention from political science is paid to how extractive industries interact with the societies in which they operate; this question has historically been explored mostly by geographers and political ecologists who attribute a host of negative environmental and social outcomes to the actions of extractive firms operating in contexts with weak — or complicit — states.[2] This paper suggests that property rights institutions condition the effects of large infrastructure projects, such that they can be a boon rather than a burden, both economically and environmentally. Local communities are thus not inevitable victims of economic change brought about by resource extraction.

On the side of the mediating variable (property rights institutions) and the dependent variable (land

[2]A few recent exceptions are Arce & Miller (2016), Arellano-Yanguas (2012), Haslam & Tanimoune (2016), and Steinberg (2019).

use) is literature on natural resource institutions. A major area of this work, spearheaded by Oran Young (1982) and Elinor Ostrom (1990) among others, has already established the importance of local institutions and the incentives they create for sustainable (or unsustainable) use of natural resources. These institutions define who has access to resources and when, how communities monitor themselves, how disputes are adjudicated, and how new rules are made. In general, property rights institutions are thought to determine how landholders react to changing factors like the price of crops, environmental conditions such as drought, and population density. Here I examine factors shaping landholder decisions about fallowing land, deforesting, and investing in infrastructure on their land. I exploit Uganda's district-level variation in the characteristics and enforcement of property rights to explain differences in landholder behavior which have important environmental implications over the long term.

The second contribution this paper makes is showing that property rights institutions vary within a single customary community, and that this variation helps explain patterns of land use behavior. Scholars and policymakers have debated the relative merits of customary tenure and private property in Africa for many decades. A robust body of theoretical work and empirical findings has shown that customary tenure is compatible with long-term investments (Besley 1995; Noronha 1985; Sjaastad & Cousins 2008), can offer better tenure security for women and immigrants (Bruce 1993; Ensminger 1997; Joireman 2011) and are an attractive alternative to uncertain rights enforcement by weak states (Bruce 1986; Bruce & Migot-Adholla 1994). Yet while this literature has long acknowledged the variation in customary institutions across communities and how these institutions transform over time (Peters 2004), as well as how some individuals in a community have access to more secure rights than others (Honig 2017), it has tended to equate a single customary community to a single set of property rights rules. I show that this is not the case for the Bunyoro Kingdom of western Uganda. This paper thus recommends greater precision in the future when defining what exactly is "shared" within a customary community.

When landholders decide whether to make investments in their land, they are making choices with both economic and environmental consequences. By linking these themes, this paper responds to the growing chorus of calls for greater recognition and understanding of the links between land tenure, land use, and climate change (see for example IPCC 2020; Kukkonen & Pott 2019; Quan & Dyer 2008). The most obvious way in which land use relates to climate change is through deforestation; tree loss in the tropics alone accounts for 8-10% percent of carbon emissions annually (Gibbs et al. 2018); land use as a whole in the land sector (agriculture, forestry, and other uses) is responsible for 25% of annual greenhouse gas emissions (Roe et al. 2019). Trees, especially in the tropics, are a robust means by which carbon is sequestered from the atmosphere. Other land use practices are also important when it comes to climate change; if landholders are secure enough in their land tenure to fallow fields, they are able to work the same fields over the long

term, rather than moving and clear cutting a new plot once the soil in their current fields is exhausted. Fallowing is also important because it improves soil fertility, prevents erosion, and helps the soil to retain water (Nielsen & Calderon 2011). The construction of infrastructure on land may help farmers to be more productive: fences can prevent animals from over-grazing certain areas or trampling crops — a major concern for farmers in Uganda (Horning 2018, p. 79) — while buildings allow for the storage of crops and equipment. Note also that many farmers in Uganda plant "living fences" using trees (Kihumuro et al. 2020). Where land tenure is insecure, landholders face incentives to maximize short-term returns on planting and are disincentivized to fallow fields, or to plant crops or trees that take a long time to mature. Where large-scale logging operations are profitable, insecure land tenure may invite illegal logging, a common, lucrative, and violent business (Nellemann & IECP 2012). NGOs and policymakers alike have focused on the major areas of tropical deforestation, which include the Amazon and Congo rainforests, as well as parts of southeast Asia like Indonesia and Papua New Guinea. The deforestation in this paper is much smaller in magnitude relative to these well-known sites but is characteristic of many communities across the tropics – as well as temperate zones – that cumulatively are important for understanding the link between land tenure and deforestation.

This paper should be of interest to policymakers for three reasons. The first is it improves our empirical evidence of the conditions under which large infrastructure projects can have beneficial effects on local communities, indicating the importance of the content and enforcement of property rights institutions. Second, it adds to our understanding of the ways in which farmers respond to institutional incentives, a topic of great interest to governments, NGOs, and donors alike throughout low-income, agrarian societies. Third, it adds complexity to our expectations of the environmental outcomes that result as farmers respond to economic change. The mixture of causal effects presented in Section 5 suggest mixed environmental outcomes as well.

The paper proceeds as follows. I first discuss the theoretical link between land tenure institutions and land use practices. The specific rules in place and the degree to which they are enforced shape the incentives faced by landholders, and can incentivize long-term investment in land, or alternatively short-term maximization of output at the expense of sustainability. I then review scholarship on extractive industries and how they interact with local communities. Section 3 discusses land tenure institutions in Uganda, beginning with a brief history of customary law and proceeding with some details about how these institutions operate currently in the study areas. Section 4 describes the history of oil exploration in Uganda, and the modern development of the sector since oil was discovered in profitable quantities in 2006. I highlight the comparatively slow pace of development, the infrastructure investments that have been made, and the interaction this development has had with local communities. Section 5 includes analysis of data collected

in Uganda in 2018, examining the determinants of land use decisions. I discuss the implications of this analysis for understanding landholder behavior, the importance of institutions, and broader implications for climate change before concluding.

2 Property Rights, Land Use, and Extractive Industries

In this section, I review political theories of land use by referencing the many studies that document how institutional rules of property rights shape the incentives faced by landholders. The content of these rules combined with the likelihood of their enforcement contribute to whether a landholder has long or short time horizons in decision-making, and the land use options available to them. This general framework is applicable to a wide array of contexts around the world and holds across different legal forms of property rights systems. I describe customary property rights, widespread throughout Africa, focusing on the variety of institutional rules and means by which those rules are enforced. I then shift to a discussion of how extractive industries interact with the local communities in which they operate. While popular narratives tend to cast this relationship as unidirectional and harmful to communities, I emphasize the variation that exists in reality, and how local residents may include both winners and losers from this economic activity.

2.1 Land tenure and landholder behavior

Economists and political scientists have stressed the importance of property rights systems for explaining land use decisions on the part of landholders (Boserup 1965; Bruce 1993; Demsetz 1967; De Soto 2000). Special emphasis has been put on the clarity and the enforcement of property rights. The logic is straightforward: where rights are clearly defined and well-enforced, landholders can make decisions using a long time horizon.[3] This might include fallowing fields, which is beneficial for the long-term sustainability of agriculture, planting crops or trees that take a long time to mature, or making infrastructure investments (e.g. irrigation systems, silos, etc.). These decisions only make sense if a landholder expects to retain property rights to her land in the future.

Most land in sub-Saharan Africa is held under customary land tenure rules, rather than private property rights that are the exclusive domain of the state. Under customary law, rights are allocated based on membership in an ethnic community, and adjudicated by customary leaders like chiefs, clan heads, earth priests, etc. For decades scholars and policymakers equated customary land tenure with on the one hand insecurity and on the other with common property arrangements, with private title to land being the best policy solution (e.g. Dorner 1972; De Soto 2000). They also argued that customary land tenure harms

[3]See also North 1990; North & Thomas 1973.

economic efficiency by creating highly fragmented land holdings (Ault & Rutman 1979). In each case, the implication was that customary land tenure would be associated with weak markets for land, conflict, weak agricultural productivity, and unsustainable land use.

Yet while some studies are in line with the expectation that formal property rights incentivize, for example, reductions in forest loss (e.g. Becera-Valbuena et al. 2020), there is also a large body of empirical work (see e.g. Besley 1995; Bruce 1986, 1993; Noronha 1985; Place & Hazell 1993; Sjaastad & Cousins 2008) that suggests that customary tenure can be compatible with long term investment by landholders and land use behavior that is similar to landholders operating under different property rights regimes.[4] In sum, the current state of scholarship on land tenure suggests that it is not possible to make definitive statements about the effects of customary land tenure. Both theoretical and empirical studies have demonstrated that the structure of these property rights in practice, how they are enforced, and how these practices change over time all contribute to determining whether these rights lead to land practices that are economically and environmentally viable over the long term.

The two study districts share many characteristics, but differ in that property rights are more individual in Hoima, and more collective in nature in Buliisa (see Section 3.2 below). This means that in Hoima, land use decisions apply to what is essentially a private good, while in Buliisa land is closer to a common pool resource. This provides a useful comparison of two tenure systems, but also puts this research in conversation with a rich political science literature on common pool resources (e.g. Agrawal 2003; Anderson et al. 2002; Andersson & Ostrom 1998; De Geest & Stranlund 2019; Ostrom 1990; Ostrom et al. 1994; Schlager et al. 1994), goods that are rival but not fully excludable. More than anything, this literature has demonstrated that the fine-grained details of institutions matter (Ostrom 1990, p. 22): the ways in which communities define rights, demonstrate and document ownership, monitor freeriding, enforce rules, and resolve disputes all help determine whether they are productive and sustainable. Section 3.2 below supports this assertion, documenting some of these features in the Bunyoro system of land tenure, as well as by showing why variation on these dimensions matters for explaining land use patterns.

This paper proceeds under assumptions based on this scholarship. Customary tenure is neither uniformly insecure, nor inherently less secure than tenure based on private property rights. Many landholders feel secure in their ability to use, buy, and sell land, and pass on land to descendants. However, customary tenure is also not fully secure for all landholders in all places; I assume that there is variation in security, with subsequent consequences for how landholders behave.[5] When property rights are insecure, landholders can make land use decisions of two general types: they can maximize extraction in the short term, or

[4] See Bruce & Migot-Adholla (1994) for a review of these topics.

[5] In the discussion below of the Uganda case, I demonstrate that tenure security varies in some predictable ways that make empirical predictions possible.

they try to better secure their property rights. In the former case, landholders may refrain from fallowing, or plant crops with quick turnover, or deforest areas to maximize planting area. The latter case is more complicated, because the kind of land use behavior that can help improve land tenure depends on the institutional rules in place. In some contexts, active land use is a way to demonstrate tenure, which is an incentive to behave in a somewhat similar fashion to the short-term maximizing landholder from above. In other places, there are specific practices that help delineate plot boundaries, such as planting a particular type of tree or placing recognizable stones on boundaries. In these contexts, clearing trees or planting crops may not improve one's land tenure. In Section 3.2 below, I describe specific property rights rules related to establishing land tenure, and explain how rights enforcement varies across the study districts.

2.2 Extractive industries and communities

Political scientists and economists have long studied the effects of resource extraction; most of this literature has fallen under the umbrella of the "resource curse," so named because of the counter-intuitive correlations between natural resource abundance and authoritarianism, corruption, economic stagnation, and conflict (see e.g. Auty 1990; Dunning 2008; Gelb 1988; Ross 2012; Sachs & Warner 1995).[6] This literature has focused on the relationship between states and firms (especially international and national oil companies), and the ways in which states can extract economic rents from these firms and use them to sustain themselves (Karl 1997; Ross 2001). For years the conclusion drawn by this scholarship was that natural resource revenues allowed states to forgo taxing their populations, thus removing the impetus to make democratic concessions to the populace, to build effective bureaucracies and other state institutions, and to incentivize a vibrant economy that might otherwise be the main source of government revenues. In these accounts the general population is largely absent from playing any active role.[7] This is true as well of a second set of scholars who take issue with the causal logic of the resource curse (Brunnschweiler & Bulte 2009; Cotet & Tsui 2013; Haber & Menaldo 2011; Menaldo 2016). In short, this scholarship has little to say about how extractive projects might spur competition for land, and in turn affect the decisions landholders make about how to use their land.

Instead, these questions have been the interest of geographers, anthropologists, and scholars of environmental studies, often grouped under the umbrella of "political ecology" (see e.g. Ayanoore 2020; Bebbington et al. 2018; Kirsch 2006; Sawyer 2004).[8] Much of this work rests on ethnographic narratives that

[6] See Ross (2015) and Gochberg & Menaldo (2016) for reviews of this literature. For critical takes on the causal relationships suggested by the resource curse, see (Brunnschweiler & Bulte 2008; Haber and Menaldo 2011; Menaldo 2016).

[7] An exception is the literature on resource-fueled conflict – there, rebel groups feature as potential captors of natural resources, which they use to fund their activities.

[8] For reviews of this literature, see Bryant & Bailey (1997), Forsyth (2004), Robbins (2011), and Zimmerer & Bassett (2003).

capture the often wide disparities in power between international oil companies (IOCs) and states, and the local communities in which resource extraction takes place (Orr 2019). This research is often limited to cases of contentious relations between firms and communities (e.g. Bebbington & Bury 2013; Cuba et al. 2014, Kirsch 2014).[9] Sometimes this is informative, as these firms have substantial resources and often have the host state as a ready ally to suppress local dissent regarding their practices. However, this is not a universal experience. Some communities may resist mining projects for example, while others do not, depending on several factors such as the environmental impact, trust in local institutions, and the remoteness of mining operations (Conde & Le Billon 2017). The likelihood of social conflict associated with mining projects depends on local socio-economic factors that shape distributional concerns, but also on firm-level characteristics; foreign firms, for example, may face a "liability of foreignness" that increases their likelihood of conflict relative to locally-based firms (Haslam & Tanimoune 2016). In some places, extractive industries end up being an economic boon, create jobs, supply public goods normally distributed by states, and work to mitigate their environmental impacts (Steinberg 2019). States may find it useful to require firms to engage in local community development as a way to pass on the costs of public goods provision, and as a way to signal their commitment to respecting firms' property rights (Dupuy 2016). Looking beyond extractive industries, large infrastructure projects are often argued to be a net benefit to local communities. In Mexico, for example, President Lopez Obrador is seeking to more than double existing railway in the Yucatan Peninsula as part of the Maya Train project and suggests it will bring 80,000 jobs to the area (Whelan & Ruiz 2020). Further, he argues that poverty is the main driver of illegal logging within the rainforest on the peninsula, and the train project will help to alleviate this problem by creating opportunities for residents. While it is not easy to calculate net impacts of these projects on communities, taking economic, environmental, and social effects all into account, the fact remains that some communities do welcome them rather than resisting.[10]

Local communities are also not unitary entities. Even in contexts of repression, social upheaval, and environmental damage, there are "winners" of this form of economic development (Francescone 2015; Houeland 2020).[11] Winners might include politicians that receive side payments for facilitating extractive operations, businesses that win contracts to provide inputs to production, chiefs that take payments in exchange for land concessions, residents that secure jobs working on infrastructure projects, and in some cases community members that benefit indirectly because of improved public goods provision in the area and consumption driven by foreign workers. Politicians may side with firms, with indigenous groups, or civil society organizations, depending on the circumstances (Moore & Velasquez 2013).

[9] This pattern extends to media interpretations of these relationships as well. See for example Monks (2018), Turner (2007).
[10] See Smart (2020) on this topic in the Latin America context.
[11] See Larmer & Laterza (2017) for a review of this theme in the context of resource extraction in Africa.

This topic is of increasing relevance in the African context, where natural resource extraction has been labeled by some as the next "scramble for Africa" (Carmody 2011) and as "looting" by others (Burgis 2016).[12] Extreme examples abound: in Equatorial Guinea, the ruling Obiang family sustains a firm grip on power in part by relying on substantial oil wealth. President Teodoro Obiang Nguema Mbasogo's oldest son (and vice president) Teodoro Nguema Obiang Mangue was convicted in 2017 by a French court for embezzling over US $100 million of Equatoguinean public money to buy a mansion and several sports cars (Soto 2019). In Angola, Isabel dos Santos – the president's daughter and richest woman in Africa – has been accused of embezzling tens of millions of dollars during her time as the head of Sonagol, the national oil company (Dwyer 2020).[13] Oil development in Chad is argued to have been initially a basis for hopes of poverty reduction, but ultimately failed to improve livelihoods, while at the same time reconfigured social and family relations (Leonard 2016). In Cameroon, President Paul Biya deploys oil rents to ensure loyalty from supporters, resulting in poor health outcomes for children compared to similar non-oil producing regimes (Bellinger & Fails 2020). And in perhaps the emblematic case on the continent, oil development in Nigeria is argued to have led to massive environmental damage in the Niger delta and the marginalization of ethnic minorities (Nixon 2011; Watts 2004). Claims of land and resource ownership have created an "oil citizenship," whereby modern extraction has become tied to older understandings of one's relationship to land and wealth (Adunbi 2015). Regionally, evidence suggests that resource extraction causes increased protest activity (Arce & Miller 2016). Yet extractive industries have been a much-needed boost to economies and government coffers in places like Botswana (Economist 2018; Mbayi 2013) and Namibia (GRN 2012), and to indigenous communities in South Africa (Gapa & Walker 2020).[14] In these cases, tax revenue and other economic benefits have not only accrued to governments; in Namibia for example, local residents make up the bulk of mine employees. Botswana's government has negotiated to have De Beers construct downstream diamond cutting and polishing facilities in Botswana, so that workers gain the knowhow and access to technology that allows for value-adding steps of the production chain to take place in-country (Mbayi 2013). Outside of Africa there are the classic examples of countries like Canada, Australia, Norway, and the United States, each of which has benefited from mineral mining and oil and gas industries.

Much attention has been paid to the direct negative environmental effects of extractive industries on their local surroundings.[15] These include for example pollution of water sources, exposure of workers to harmful substances, the disposal of waste and cleaning of closed extraction sites, and emissions of greenhouse gases. There are also the environmental consequences that arise when land is deforested to access

[12] See Graham & Ovadia (2019) for a review of trends in the oil sector in Africa over the last 30 years.

[13] See also Le Billon (2001a) on oil extraction and diamond mining in Angola.

[14] These cases are not unvarnished success stories. See for example Conde & Kallis (2012) and Basedeau & Mehler (2005).

[15] Note however that small-scale operations by individuals and local groups have their own environmental consequences. See for example Dezécache et al. (2017), Hammond et al. (2007).

mineral resources. Alvarez-Berríos & Aide (2015) for example found that nearly 1700 square km of tropical forest was cleared around gold mining sites over a 12-year period in South America, with negative consequences for both greenhouse gas emissions and biodiversity. These harmful consequences of resource extraction should not be minimized, yet neither do they capture the full range of cases. While popular narratives of these industries tend to assume that environments are inevitably harmed by their presence, scholars have sought to define under what conditions this is true, and what factors might lead to operations that are sustainable (Bebbington & Bury 2009). A recent study of over 82,000 large-scale land acquisitions across Latin America, Africa, and Southeast Asia that uses satellite data on forest cover shows that deforestation rates are sometimes lower around mining concessions compared to similar areas, depending on the institutional context and mineral type (Davis et al. 2020).[16]

Concerns about these effects are common throughout Africa, including in the "success" stories like Namibia and Botswana. Uranium mining in Namibia pose health risks to miners, and soon to be closed mines leave behind large areas of land – including in national parks – that require environmental rehabilitation, only a fraction of whose cost will be paid by the firms (Pietrzela 2013); there is also evidence of chemical pollutants in areas surrounding copper and nickel mines in Botswana (Letshwenyo 2016). Deforestation in the Democratic Republic of Congo results from both the direct process of timber extraction, but also the associated infrastructure like roads (DRC 2010). Ghana provides an example of how economic booms interact with local tenure institutions: deforestation associated with the development of cocoa farming during the 1990s and 2000s was in part a result of the fact that farmers did not have ownership over trees on their land, leaving little incentive to leave any land uncleared (Chazan 1992).[17]

3 Customary Land Tenure Institutions in Uganda

In this section I first offer a brief overview of customary law in Uganda, with a focus on property rights to land. I then narrow in on the study areas, Buliisa and Hoima Districts. These areas share many institutional features and are roughly considered part of the same broad customary community, but also differ in some important respects. I detail current land tenure practices in the study areas. While "customary" is often associated with the traditional, ancient, or unchanging, the reality is that customary law is not a static set of institutions. The content of these laws, who they apply to, and how they are formed changes over time, albeit with variation across communities in the pace of change.

[16]The same study finds that agricultural land acquisitions, such as for palm oil plantations, are associated with high rates of deforestation, while counterintuitively logging sites are often associated with lower rates than comparable areas that have not been the subject of land deals.

[17]This system has changed only recently (World Cocoa Foundation 2019).

3.1 History of institutions

Customary institutions have waxed and waned in importance throughout Uganda's history, especially the twentieth and early twenty-first centuries.[18] Contemporary customary communities have their roots in the pre-colonial era, when Uganda was made up of several kingdoms. These include the Buganda, Bunyoro, Toro, Ankole, Acholi, and Lango. British colonial rule, beginning at the end of the 19th century, initiated a decades-long process of altering the shape and importance of customary institutions. In 1900, the British signed the Buganda Agreement with the Buganda Kingdom, which had several consequences. First, it elevated the Buganda Kingdom farther above other kingdoms and ethnic groups in the territory. Buganda elite were charged with helping the British to administer the territory. Second, it decreased the role of the *kabaka* (king of the Baganda people) while empowering the *lukiiko*, the Buganda parliament. Third, the Buganda and British helped each other in military conquest against rivals, notably the Bunyoro Kingdom in the west near Lake Albert. Fourth, the Agreement addressed land rights. It established the *mailo* form of land tenure, a special type of leasehold property rights only applying to the Buganda Kingdom, which exists to today. It also vested the colonial governor with rights to sell and lease customary land, though in practice the British allowed customary land practices to persist in a de facto manner throughout colonial rule (Mugambwa 2007).

The de jure status of customary law diminished in a series of steps since Uganda's independence from Great Britain in 1962. Monarchies were outlawed in 1967 under President Milton Obote. After coming to power in 1971 through a military coup, Idi Amin pursued this strategy further, with the aim of consolidating power under the central government. With regard to land, Amin pushed through legislation in 1975 to make all Ugandan land public and to convert all freehold titles to leases. This legal reality did not reflect actual practices, as customary law continued to operate relatively undisturbed, especially in rural areas. The legal ban on kingdoms persisted through the short-lived presidencies of Lule, Binaisa, and Muwanga, a second Obote administration from 1980-85, and the beginning of President Yoweri Museveni's tenure. The 1995 Constitution marked the official reinstatement of kingdoms but limited them in status as so-called cultural institutions. The constitution also affirmed the legitimacy of customary land tenure but did not spell out the details of this form of tenure apart from the fact that land is held in perpetuity by the tenant.

3.2 Current practices

Customary land tenure institutions vary in form across Uganda. In the north where pastoralism is a prevalent social arrangement, land is often held under common tenure. In many parts of the country, land

[18] This section relies on Reid (2017).

rights are allocated, and disputes heard at the clan level; yet, rights of inheritance, division, usage are held by individuals. This is the institutional makeup of Hoima District, in the Western Region along Lake Albert, which borders the Democratic Republic of Congo to the west. Neighboring Buliisa District, just to the north, is also characterized by land which is owned at the clan level, but has a long history of those same rights being held at the clan or family level rather than with the individual.

What do these practices look like, and how do they inform our theoretical expectations of how competition for land will shape land use decisions? Both of the study sites of Buliisa and Hoima Districts fall within the boundaries of the Bunyoro Kingdom, the overarching customary community for the Banyoro people, but there is variation in institutions within the Kingdom. First, in Hoima District most customary land is held by individuals. Landholders have the right to use their land and benefit from that use (e.g. through agriculture), and the right to pass on land to descendants (of all sexes). The right of access is somewhat circumscribed: while landholders can restrict the boundaries of most of their land, there may be some areas that clan members or neighbors expect to be kept open. For example, a convenient footpath may be left undisturbed so that local residents can use it, even if it passes through individually held land. How is tenure established and recorded? Landholders plant *omarumosa* trees or cactuses to mark borders[19], and it is well-understood that these trees serve this purpose. Families may also plant fig trees to mark the birth of a family member, which clan members can use as testimony as to the length of residence if an outside threat to property rights appears.[20]

If a dispute over land occurs, including intra-clan disputes, the clan head will often be called in to adjudicate the conflict. They may consult a committee of clan elders, for example if the dispute happens far from where the clan head lives such that he or she lacks first-hand knowledge of the particulars of the case. If one or both parties in the dispute wish to take the case to court, the clan head can write a report on the matter that can be used by the magistrate to inform the case. Landholders sometimes bring in the LC1 (head of the local village council) to help resolve disputes; LC1s can also witness sales of customary land.

Why plant *omarumosa* trees instead of titling one's land and having a surveyor mark property boundaries? There are costs and benefits to each option. Titling land is a costly process in terms of both time and money, and can take several months or even more than a year. As I argue elsewhere (Gochberg 2020) there may also be social dynamics within the customary community that make titling even more costly, bringing harm to important social relationships. That said, nearly all interview subjects agreed that land titles represent a strong claim to land in the context of a court dispute. On the other hand, the planting of boundary trees is seen as a viable way to establish clear property rights because it is a widely recognized practice,

[19] Author's interview, 25 November 2018.
[20] Author's interview, 6 October 2018.

including among the clan elite that are responsible for resolving disputes. Furthermore, it takes considerable effort to uproot and either move or remove these trees, which acts as a deterrent to any neighbor who might want to cheat by extending their own property in an underhanded way.

In neighboring Buliisa District, some practices are the same as in Hoima, such as the planting of omarumosa or fig trees to mark boundaries and births. Yet property rights institutions there also differ in some important ways. Communal property arrangements are much more common than in Hoima.[21] This type of land is owned collectively by a clan, and the collective makes decisions about subdivision, sale, and inheritance, ostensibly through inclusive decision-making procedures. Families each have designated areas of land within clan holdings.[22] There has been some movement from communal towards more individual customary property rights, and increasingly so in response to the large volume of land sales and conflicts in the past decade. However, this process has tended to disadvantage vulnerable groups (e.g. orphans, widows, etc.) and reinforce existing inequalities, a familiar story for scholars of institutional change (Knight 1992). Some clans have pursued another option: organizing committees to protect the interests of the collective. There are even instances of an entire village registering land as communal, so that the village as a while must consent to any land sale or purchase.[23]

Interviews with landholders also suggest that property rights enforcement in Buliisa is weaker than in Hoima. Figure 1 suggests that landholders' own subjective assessments of their land tenure security lines up with this broad pattern. Standard theories that link property rights and land use decisions would predict that landholders in Buliisa would have shorter time horizons than those in Hoima. Buliisa residents should therefore be less likely to fallow land, to invest in infrastructure like buildings and fences, and should be more likely to deforest their land.

Finally, aside from the special trees mentioned above, landholders did not report any other ways in which land use *determines* land tenure security, which would otherwise be a potential source of endogeneity in this analysis. This is in contrast to some customary systems elsewhere on the continent, where the active demonstration of using land (primarily through planting crops) is a means by which landholders establish that they are the rightful owners of land. The implication is that any association observed between land tenure insecurity and land use decisions can be interpreted as a causal relationship leading from the former to the latter, rather than the other way around.

[21] Author's interview, 6 October 2018.
[22] Author's interview, 25 November 2018.
[23] Author's interview, 26 November 2018.

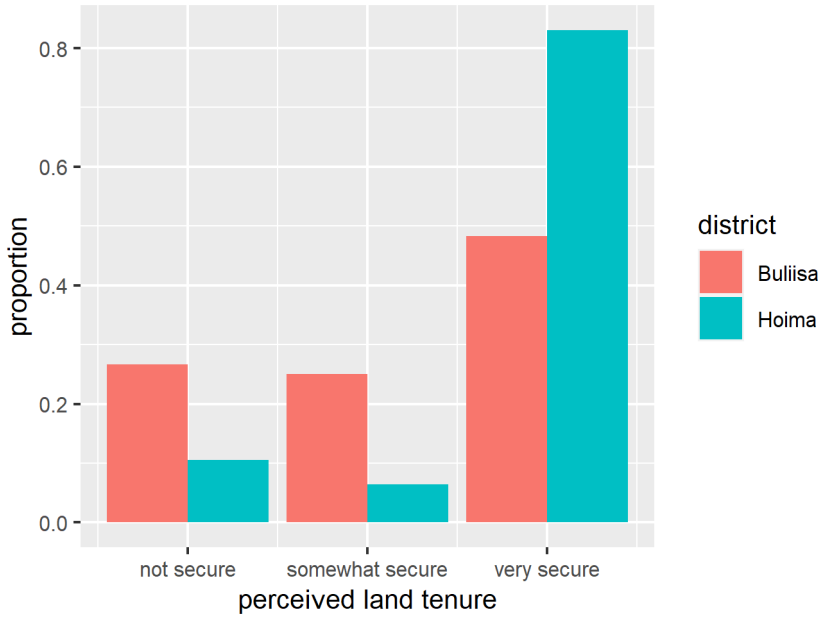

Figure 1: Self-reported land tenure security

4 Extractive Industry in Uganda

In this section I review briefly the history of oil exploration in Uganda and describe the current state of the industry. After several decades of fruitless exploration, Uganda is now on the verge of active oil production, with plans in the works to pipe refined oil from Lake Albert in western Uganda to the coast of Tanzania. This development has brought economic and social change, particularly in the study districts of Buliisa and Hoima. I then describe the industry's presence in the region, highlighting the relationship among IOCs, local residents, and the Ugandan state.

4.1 History

Oil was first discovered in Uganda by the British in the 1920s near Lake Albert. Exploration soon began in earnest. But over the course of the twentieth century, exploratory drilling failed to result in discoveries of viable quantity and quality to justify investment in production and transportation of oil. Uganda possesses medium to heavy sweet grade crude oil (Petroleum Authority of Uganda 2018), which is costly to extract and refine, and must be transported long distances to the coast for international shipment. This means heavy upfront capital investment is required to get production up and running. Along with costs as a barrier to production, political upheaval in the 1970s and 80s also disrupted exploration activities.

In 2006, the discovery of large-scale oil deposits was announced, with estimated reserves at about 2.5 billion barrels, later revised upward in 2017 to 6.5 billion barrels (Mbabazi & Muhangi 2020). Projected

maximum output is 125,000 barrels per day, a figure that would place Uganda among the middle ranks of oil producers worldwide (Shepherd 2013). This estimated production would provide the Ugandan state with a substantial revenue boost, and already has had an impact on the economy through substantial FDI inflows. However, nearly fifteen years after discovery, oil production has not yet begun (see Hicks 2015). This is for several reasons. First are ongoing negotiations between the Ugandan government and international oil companies. Tullow Oil was the firm that was primarily responsible for exploration and early development of infrastructure in the 2000s. Second, there are the large infrastructure projects that need to be completed before production can fully ramp up. The government has prioritized capturing the value added at each stage of production, and for example is constructing a new refinery at Kabaale rather than exporting unrefined crude. Pipelines also need to be constructed, both to feed the refinery from wells and to transport refined oil to the Indian Ocean. The East African Crude Oil Pipeline, under construction, adds to the delay in production given the technical requirements. For example, the pipeline must be heated to 50 degrees Celsius, because the quality of the crude is such that if it cools below that temperature it will solidify in the pipeline (Pearce 2020). Third are the negotiations that took place between Uganda, Kenya, and Tanzania to determine the pathway a new oil pipeline would take from Lake Albert east to the coast. Uganda eventually opted in 2016 to go with the Tanzanian route, south around Lake Victoria and east to the port of Tanga. Finally, there have been lengthy discussions between the state, IOCs, NGOs, and communities about the environmental and social effects of the oil sector's development (more on this in the next section).

While Uganda has created and is developing its own national oil company (NOC), in 2017 Tullow sold off a large fraction of its share of oil production to Total Uganda (a branch of the French company) and the China National Offshore Oil Company (Graham & Ovadia 2019); as of 2020, Tullow is now out of Uganda entirely, leaving Total and CNOOC as the big players. The official start of production has been delayed multiple times and is unlikely to commence for at least another two years. In the meantime, infrastructure construction and related economic activity in the Western Region of Uganda has grown substantially over the past decade.

Oil fields lay near multiple wildlife and nature preserves as well as Murchison Falls National Park, creating concern about the disruption of wildlife habitats as well as the economic benefits of tourism related to these parks. The Albertine Rift is a hub of biodiversity, and environmental groups have expressed concern over the risk of harm due to oil spills, clearing of vegetation, and the construction of roads and pipelines. Furthermore, each of the state agencies in charge of implementation environmental regulations have already faced challenges of enforcement even before the emergence of the oil industry (Isabirye 2020,

p. 226).[24]

4.2 The industry and local neighbors

The presence of oil companies in western Uganda has been cause for both worry and hope for local residents (Tumusiime et al. 2016). Residents are optimistic about oil extraction brining about improved access to education, health care, cheaper energy, clean drinking water, infrastructure, and employment. Yet they also have negative expectations with regard to the arrival of migrants, land conflicts, inequality, pollution, and the disruption of livestock grazing lands (Mawejje 2019, p. 130). This mix of hopes and fears seems to be matching the reality of actual impacts, though oil companies are yet to reach the production phase (Ogwang et al. 2018).

While some residents have concerns around migrants related to urbanization, and fears of attendant alcoholism, theft, and other social ills, much of this anxiety is centered on so-called "land grabbing" (Muriisa & Twinamasiko 2020). The term is used to describe a number of different kinds of competition for land, but each is predicated on the assumption that property rights are not completely defined or well-enforced in the oil region. This is generally the case due to the prevalence of customary tenure, communal land arrangements, and rights to sell land held by "absentee landlords" (Mawejje 2019). Media reports reinforce the perception that land rights are increasingly insecure in the oil-rich Western Region.[25] Where land grabbing is perceived to be a problem, I expect to see landholders altering their land use behavior, with the aim of either maximizing short-term gain or strengthening their land rights. Land grabbing is neither distinctly Ugandan nor a product only of oil extraction, but is a term that captures the uncertainty around land acquisitions in any context where rights are ill-defined or not fully enforced (Peters 2013).

Interviews with landholders conducted in 2018 reveal that they perceive a number of threats to their property rights: other local residents, in-migrants, investors from outside the region, extractive companies, and the Ugandan state itself.[26] Several respondents reported cases of fraudulent land titles being used to lay claim to land, or land sales taking place with landholders who do not fully understand the terms of the contracts they are signing. Respondents variously viewed the state as a fairly neutral enforcer of land rights, biased towards recognizing land titles (real or not) over customary claims, and at the extreme the source of land conflict in places where it has acquired land for infrastructure, such as the new oil refinery and airport in Hoima District.

[24]These agencies include the National Environmental Management Authorities, the Uganda Wildlife Authority, and the National Forestry Authority.

[25]The references section at the end of this article includes a list of news articles on this topic.

[26]On this last point see also Ssekika & Mugalu (2012), and Peters (2013) for cases across the continent. Complaints regarding state behavior range from local council chairpersons, to District Land Boards, up to President Museveni himself.

5 Land Use Patterns in Uganda

In this section, I draw on original survey data from Buliisa and Hoima Districts to document variation in land use. I briefly describe how the survey was conducted and the variables of interest, and then proceed to the analysis.

5.1 Survey

The survey was conducted in November and December of 2018 and includes 492 respondents across the two districts. I employed a stratified sampling technique to ensure variation on a key variable, proximity to land competition – which in the case of these districts means infrastructure development related to oil extraction. This variable is discussed in more detail below. Subcounties in each district were divided into three groups based on land competition, and I randomly selected four subcounties from each group to sample from. Survey teams visited one village in each subcounty and spoke to approximately 20 landholders.

The survey included five questions about land use. The first is a question about whether the landholder is currently fallowing a field, of which 43% reported that they were. Landholders were also asked whether they were likely to fallow a field in the future. Another set of questions asks landholders whether, in the last three months, they have built a fence on their property, put up a new building, or cut down trees. 36%, 42%, and 49% of respondents report having taken these actions, respectively. See table 1 for descriptive information for these variables, organized by district.[27] The first four land use questions allowed for yes/no responses; the table displays the count and percentage of "yes" responses.

Table 1: Land use statistics

	Buliisa	**Hoima**
Currently fallowing	134 (56%)	76 (30%)
Built fence, last 3 months	118 (51%)	59 (24%)
Put up building, last 3 months	128 (53%)	75 (30%)
Cut down trees	189 (79%)	51 (20%)
Will fallow in the future:		
very unlikely	22 (13%)	179 (76%)
somewhat unlikely	2 (0.8%)	6 (2.5%)
not sure	70 (29%)	
somewhat likely	3 (1.2%)	22 (9.3%)
very likely	33 (55%)	29 (12%)
n	240	252

Survey teams also collected responses for a number of individual level demographic data. These include measures of age, gender, a wealth index, and education level. Capturing socioeconomic status using wealth

[27] An error in the survey software meant the "not sure" option for fallowing in the future was unavailable for Hoima District.

is preferable to income since many rural residents don't have regular, cash-paying jobs, experience income variability throughout the year making it hard to arrive on an annual average income, or otherwise operate outside the cash economy. Women in the Bunyoro Kingdom have fairly strong access to property rights, including the right to inherit land, which stands in contrast to many customary tenure systems in Africa. Respondents' self-reported ethnicity is used to construct an "ethnic outsider" variable, and respondents also reported whether they were closely related to officials of the Bunyoro Kingdom. These variables are theoretically markers of low and high status in customary communities, respectively. Last, landholders indicated whether they held a private title to their land, which would mean they are not subject to customary property rights practices.

This survey was collected using smartphones, with completed forms uploaded directly to a secure server. This allowed us to record the GPS coordinates of the location of each landholder at their home. I use this information to construct a variable that measures the distance between landholders and the biggest source of rising land values in their area. While both Buliisa and Hoima Districts are experiencing significant economic changes due to the extractive industry's operations and government investment in infrastructure, these changes are not uniformly distributed throughout the two districts. Buliisa is nearly 1000 square miles in area, and Hoima is 1,400 square miles. Within that area, some residents acutely feel the effects of changing economic and social circumstances, while others are relatively isolated. For landholders in Buliisa, this variable is created by taking the distance between the landholder's property and the Exploratory Area 2 (EA-2) oil field, one of the main fields in Uganda. EA-2 lies in the northern section of Buliisa and extends south along the coast of Lake Albert, as well as inland. In Hoima the variable measures the distance between a landholder and Kabaale Parish in southern Hoima, the location of the new oil refinery and international airport, both of which are under construction as of 2020.

One drawback of this approach is that physical proximity – as a proxy for competition over land - is only one possible channel for the effect of extractive industry development on landholder behavior. Increasing economic activity in a region may attract banks and other lenders, increasing the supply of credit. An influx of extractive industry employees, along with other in-migrants, can increase the demand for agricultural goods. Cheaper credit would allow landholders to invest more in their land (e.g. through fertilizer and other agricultural inputs, or by constructing buildings), and increasing demand for agricultural goods would raise prices, incentivizing landholders to plant and harvest crops. These other channels are less likely to fall along geographic lines that are captured in these data. Prices per acre of land would potentially be a useful alternative measure; however, that variable would be of most use only when property rights enforcement is uniform across a geographic area. When this is not the case, low prices in one place may result from low competition for land, while in another it may result from weak enforcement of

property rights. With these limitations in mind the distance variable remains the best source of exogenous variation in land tenure security.

5.2 Analysis and discussion

I estimate a series of statistical models below to explore the effect of proximity to oil development on five land use practices. The first four land use outcomes are measured as binary variables, taking a value of 0 if the landholder has not taken the action and 1 if they have. The fifth dependent variable, whether a landholder plans to fallow a field in the future, is a five-category ordered outcome ranging from 0 - "very unlikely" to 5 - "very likely." In each case, I begin with a simple bivariate relationship between the dependent variable and landholders' distance from either the EA-2 field or Kabaale Parish. Proximity to these locations is an exogenous source of variation on landholders' land tenure security. I then add a district dummy "hoima" which takes a value of 0 for Buliisa residents and 1 for Hoima residents. Qualitative evidence described above suggests that district-level factors may jointly explain land tenure security and land use choices made by landholders.

In the third model estimation, I add a collection of individual-level covariates that are plausibly correlated with both a landholder's land tenure security and their land use behavior. These include the demographic measures (gender, age, education, wealth), and dummies for ethnic outsider status, possession of private title to land, and for chief kinship. Finally, in the fourth model I use the same covariates from the third model and interact the distance variable with the district dummy. This is to test whether the distance variable's relationship with land use varies by district. Tables 2-6 display regression results from OLS[28] estimations, with plots of marginal effects from Model 3 in each case are displayed in Figures 2, 4, 6, 8, and 10. I also include visualizations of predicted values generated from Model 4 for each dependent variable in Figures 3, 5, 7, and 9, which help to display the results from estimations that include interaction effects.

The discussion above of the effects of land competition and the district-level differences between Buliisa and Hoima in institutional rules and level of enforcement generate testable hypotheses for each outcome. Proximity to land competition should incentivize short-term decision-making, resulting in less fallowing (currently and in the future), more clearing of trees, and a smaller likelihood of putting up fences or buildings. This effect should be more pronounced in Buliisa, given the evidence that property rights enforcement there is weaker than in Hoima. Holding proximity to land competition constant, the district dummy should indicate that in Hoima, landholders make decisions consistent with longer time horizons than in Buliisa. Specifically, Hoima District should be associated with higher rates of fallowing, less clearing of trees, and

[28]I include logit estimations of these models in the Appendix but present these linear models for ease of interpreting coefficients. All models employ standard errors clustered at the village level.

Table 2: Currently fallowing land

	Model 1	Model 2	Model 3	Model 4
log(distance from threat)	-0.129	-0.111*	-0.096*	-0.127
	(0.078)	(0.056)	(0.051)	(0.067)
Hoima		-0.237***	-0.177**	-0.495
		(0.061)	(0.067)	(0.270)
age			-0.002	-0.002
			(0.002)	(0.002)
chief kin			0.101	0.093
			(0.067)	(0.068)
education			-0.015	-0.016
			(0.017)	(0.017)
female			-0.135**	-0.142**
			(0.057)	(0.059)
ethnic outsider			-0.038	-0.027
			(0.054)	(0.060)
titled			-0.191	-0.181
			(0.110)	(0.110)
wealth index			0.031***	0.031***
			(0.010)	(0.011)
log(distance from threat) X Hoima				0.101
				(0.089)
Constant	0.831**	0.893***	0.808***	0.903***
	(0.254)	(0.184)	(0.206)	(0.248)
Num.Obs.	485	485	484	484
R2	0.030	0.086	0.132	0.136
Adj.R2	0.028	0.082	0.116	0.118
N	485	485	484	484

* p < 0.1, ** p < 0.05, *** p < 0.01

more investment in fences and buildings. Chief kinship and having a title should also be associated with decisions based on longer time-horizons.

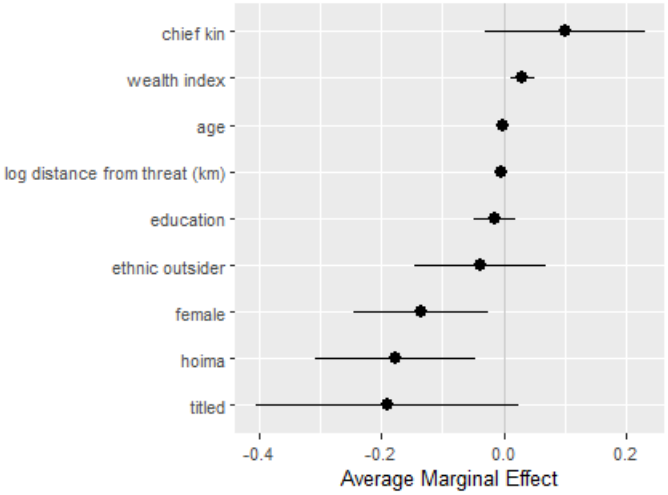

Figure 2: Marginal effects: currently fallowing, model 3

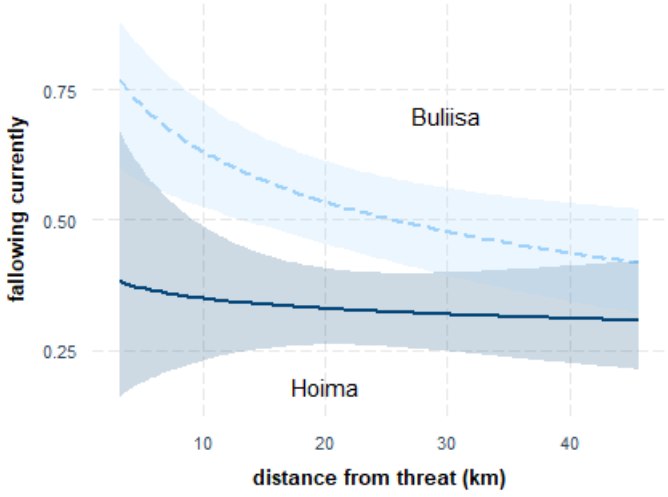

Figure 3: Predicted values: currently fallowing, model 4

Table 3: Have cut down trees, last 3 mo.

	Model 1	Model 2	Model 3	Model 4
log(distance from threat)	-0.117	-0.072	-0.071	-0.059
	(0.099)	(0.055)	(0.057)	(0.072)
Hoima		-0.567***	-0.492***	-0.358
		(0.072)	(0.081)	(0.465)
age			0.003	0.003
			(0.002)	(0.002)
chief kin			0.059	0.062
			(0.061)	(0.058)
education			0.004	0.004
			(0.020)	(0.021)
female			-0.018	-0.016
			(0.046)	(0.044)
ethnic outsider			0.054	0.050
			(0.053)	(0.056)
titled			0.047	0.043
			(0.088)	(0.087)
wealth index			0.017	0.017
			(0.010)	(0.010)
log(distance from threat) X Hoima				-0.043
				(0.143)
Constant	2.861***	3.006***	2.722***	2.682***
	(0.306)	(0.161)	(0.173)	(0.246)
Num.Obs.	482	482	481	481
R2	0.024	0.336	0.350	0.350
Adj.R2	0.022	0.333	0.337	0.336
N	482	482	481	481

* p < 0.1, ** p < 0.05, *** p < 0.01

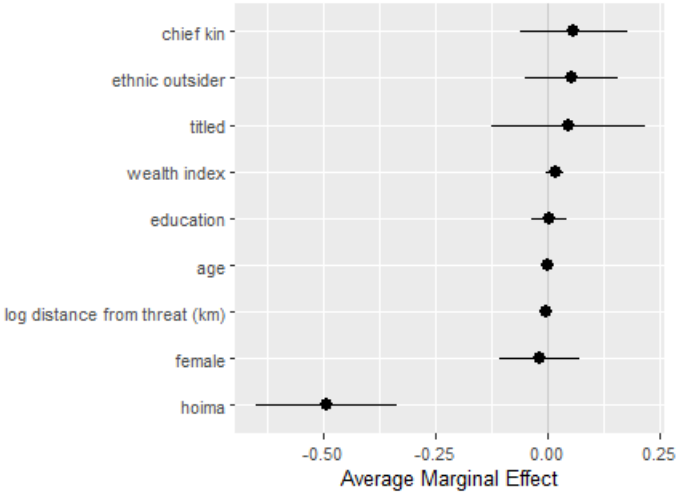

Figure 4: Marginal effects: have cleared trees, model 3

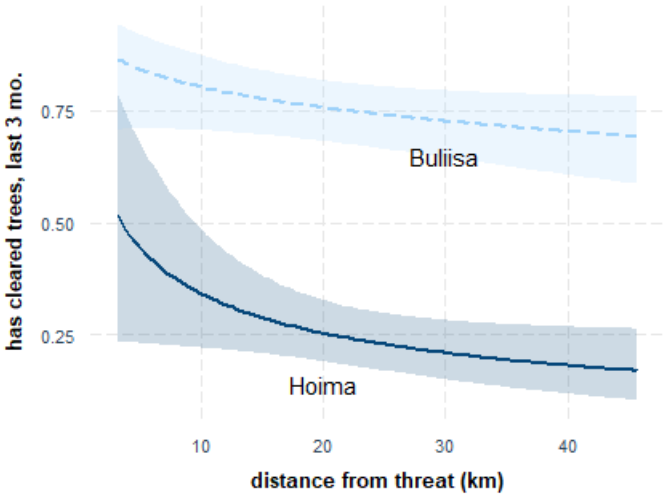

Figure 5: Predicted values: have cleared trees, model 4

Table 4: Have put up a new building, last 3 mo.

	Model 1	Model 2	Model 3	Model 4
log(distance from threat)	0.008	0.026	0.025	0.031
	(0.045)	(0.037)	(0.039)	(0.045)
Hoima		-0.226***	-0.208**	-0.139
		(0.062)	(0.076)	(0.355)
age			0.004**	0.004**
			(0.002)	(0.002)
chief kin			-0.010	-0.008
			(0.083)	(0.084)
education			-0.036*	-0.036*
			(0.019)	(0.019)
female			0.005	0.007
			(0.040)	(0.040)
ethnic outsider			0.041	0.039
			(0.069)	(0.073)
titled			-0.067	-0.069
			(0.105)	(0.104)
wealth index			0.006	0.006
			(0.016)	(0.016)
log(distance from threat) X Hoima				-0.022
				(0.110)
Constant	2.406***	2.463***	2.309***	2.288***
	(0.130)	(0.089)	(0.175)	(0.180)
Num.Obs.	481	481	480	480
R2	0.000	0.050	0.071	0.071
Adj.R2	-0.002	0.046	0.053	0.051
N	481	481	480	480

* p < 0.1, ** p < 0.05, *** p < 0.01

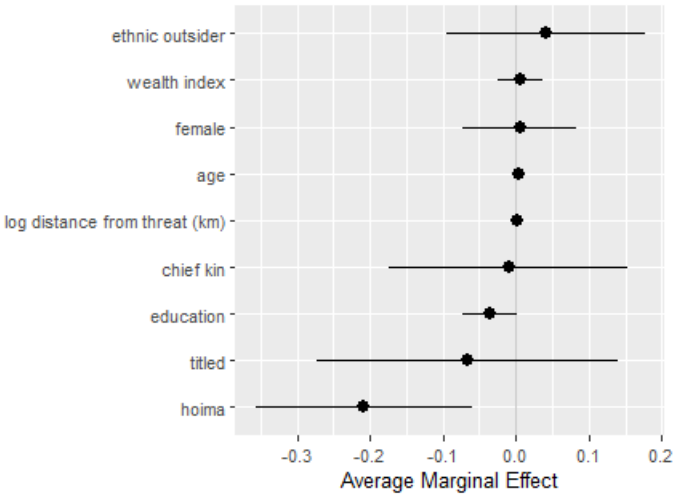

Figure 6: Marginal effects: have put up a building, model 3

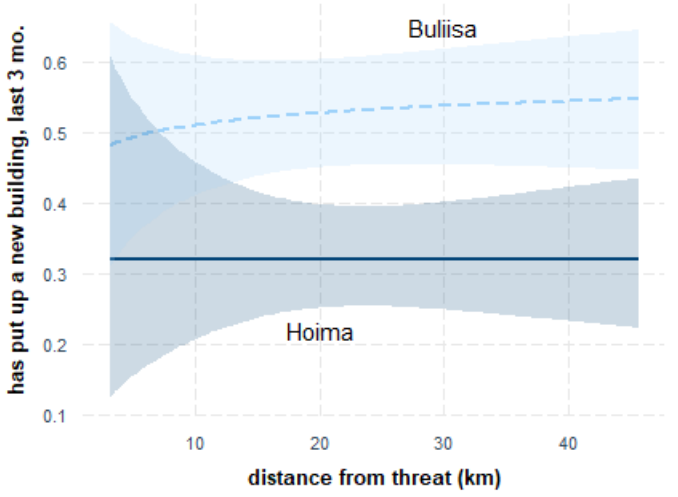

Figure 7: Predicted values: have put up new building, model 4

Table 5: Have put up a new fence, last 3 mo.

	Model 1	Model 2	Model 3	Model 4
log(distance from threat)	0.027	0.046	0.045	0.056
	(0.044)	(0.031)	(0.032)	(0.042)
Hoima		-0.256***	-0.025	0.085
		(0.029)	(0.049)	(0.217)
age			0.003*	0.003*
			(0.002)	(0.002)
chief kin			0.300***	0.302***
			(0.059)	(0.059)
education			0.029	0.030
			(0.023)	(0.024)
female			0.048	0.050
			(0.037)	(0.037)
ethnic outsider			0.126***	0.122***
			(0.038)	(0.037)
titled			0.276**	0.273**
			(0.117)	(0.118)
wealth index			-0.004	-0.004
			(0.015)	(0.015)
log(distance from threat) X Hoima				-0.035
				(0.063)
Constant	2.285***	2.353***	1.854***	1.822***
	(0.140)	(0.109)	(0.155)	(0.189)
Num.Obs.	481	481	480	480
R2	0.001	0.070	0.160	0.160
Adj.R2	-0.001	0.066	0.144	0.142
N	481	481	480	480

* p < 0.1, ** p < 0.05, *** p < 0.01

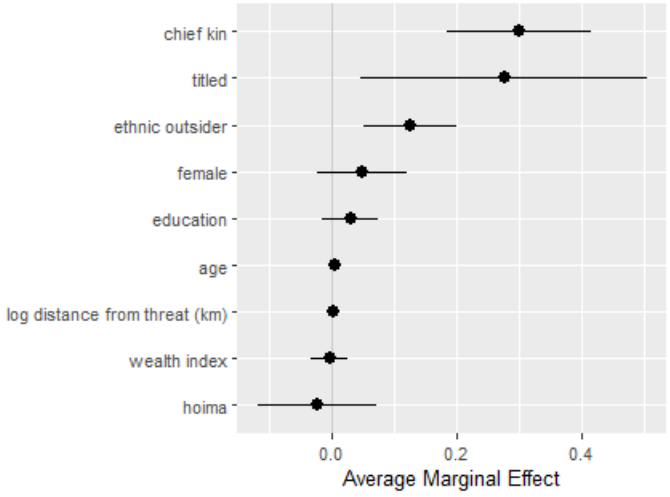

Figure 8: Marginal effects: have put up a fence, model 3

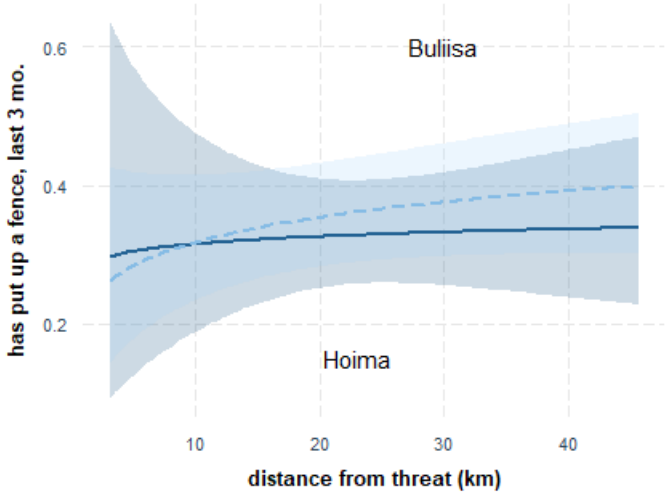

Figure 9: Predicted values: have put up new fence, model 4

Table 6: plan to fallow land in the future

	Model 1	Model 2	Model 3	Model 4
log(distance from threat)	-0.211	-0.035	-0.014	-0.020
	(0.424)	(0.187)	(0.174)	(0.231)
Hoima		-2.020***	-1.666***	-1.735
		(0.207)	(0.263)	(1.149)
age			-0.005	-0.005
			(0.004)	(0.004)
chief kin			0.615**	0.614**
			(0.270)	(0.270)
education			-0.057	-0.057
			(0.049)	(0.048)
female			-0.195	-0.196
			(0.213)	(0.217)
ethnic outsider			-0.003	-0.001
			(0.231)	(0.237)
titled			0.059	0.061
			(0.352)	(0.350)
wealth index			0.012	0.012
			(0.040)	(0.040)
log(distance from threat) X Hoima				0.022
				(0.356)
Constant	2.511	2.951***	2.723***	2.742***
	(1.329)	(0.615)	(0.643)	(0.796)
Num.Obs.	469	469	468	468
R2	0.006	0.323	0.342	0.342
Adj.R2	0.004	0.320	0.329	0.328
N	469	469	468	468

* p < 0.1, ** p < 0.05, *** p < 0.01

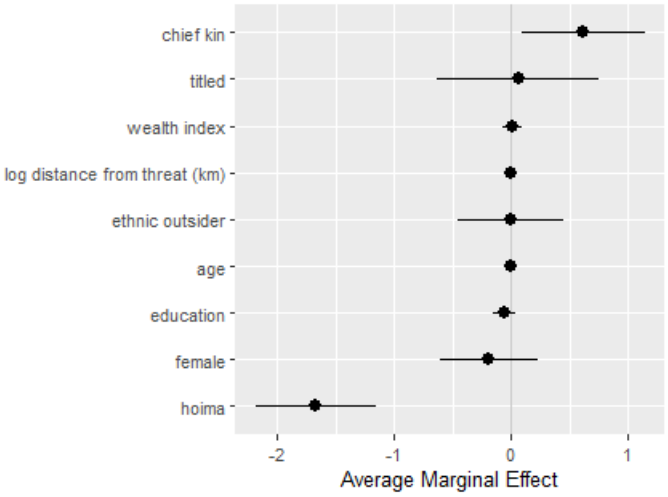

Figure 10: Marginal effects: will fallow in the future, model 3

There are a number of interesting results. Proximity to land competition, a proxy for land tenure security, is both statistically and substantively insignificant on its own across nearly all model estimations. Instead, the district dummy is a strong predictor of landholder behavior, consistent with the qualitative evidence above suggesting that there are important distinctions in the nature of land rights between the districts. Surprisingly, residents in Buliisa (more communal land and weaker rights enforcement) are more likely to report currently fallowing land; this is possibly because the pooling of land across a clan may allow for economies of scale that leave some land that does not need to be planted in a season. This pattern is echoed in the results for fallowing land in the future. Buliisa residents are also more likely to have constructed new buildings. The clearing of trees is more consistent with expectations: Hoima residents (more secure rights) are less likely at baseline to deforest, and proximity to land competition increases the likelihood in both districts. The models for putting up fences do not show meaningful distinction for the most part between districts, nor any causal impact of land competition.

The models for putting up fences and for fallowing the future support theoretical expectations regarding the value of land titles on the one hand, and of being kin to customary elites on the other. Both variables are associated with investing in fences, and the chief kin variable is also associated positively with future fallowing. Both measures are theoretically linked with greater tenure security, though operating in different land tenure systems: kinship with customary elites is a marker of high status in that system, while a title represents investment in the state-backed private property rights system.

The significance of these results is two-fold. First, there is broad support for the argument that political institutions – in this case property rights – shape landholder's decisions with regard to land use, as evidenced by the important differences in outcomes between the two study districts. This is true both for baseline comparisons of landholder behavior across the districts, and when taking into account landholders' exposure to land competition. Secondly, the results suggest caution for researchers who assume that institutional rules are basically uniform throughout a customary community. Both Buliisa and Hoima Districts fall squarely within the Bunyoro Kingdom, yet land tenure practices vary in important ways between the two areas. The data presented here suggest that, when combined with variation in enforcement of these property rights, these differences result in different incentives that landholders face in the context of a rapidly changing economic context.

6 Conclusion

This paper uses original survey and interview data from Uganda to analyze land use decisions made by rural landholders, and shows how property rights institutions shape the incentives these individuals face.

The evidence is supportive of the argument that the structure of these rights, along with the credibility of their enforcement, do matter: Hoima District's individually held, well-enforced rights are for the most part associated with landholder behavior that is consistent with the claim that these landholders have long time-horizons that facilitates investment in their property. The exception is fallowing land, where Buliisa's more communal and less-enforced property rights are associated with higher reported rates of fallowing fields both currently and in the future.

These findings should be relevant to the set of actors with interests in how resource extraction projects interact with local communities. This includes resource firms, the communities themselves, along with states, NGOs, and international organizations. A key dilemma among these actors is how to simultaneously facilitate productive firm operations, mitigate social conflict around extraction sites, secure state revenues from projects, minimize environmental harm, and enable local communities to share in the economic benefits of these activities. This problem has become easier in some respects as states rely on non-state actors like firms to supply public goods in these communities (Cammett & MacLean 2014) and firms have chosen to finance social welfare and prioritize good environmental outcomes, whether because it is good for the bottom line (Green et al. 2012) or as a result of the advocacy of select managers within firms (Prakash 2000). Yet substantial variation remains in practice along all the outcomes mentioned above, and where bad outcomes persist it is costly for for firms, states, and communities alike (Steinberg 2019), and remains a nagging dilemma for NGOs and international organizations. This study moves beyond the customary versus private property rights debates and highlights how the fine details of customary tenure systems can create incentives for landholders that result in economically productive and environmentally friendly behavior in the wake of a resource boom.

By focusing on communities that are experiencing a significant oil and gas boom, this paper contributes to a new set of literature in political science on the local-level effects of natural resource extraction. This scholarship draws on older literature in political science on the "resource curse" and on the work of political ecologists, but adds a focus on very local-level institutional rules, as well as a recognition of the variation in outcomes rather than assuming that they are uniformly negative for local communities. Both of these theoretical insights are rooted in the view that the characteristics of local communities matter, that they are not powerless subjects of resource booms, and that there are local winners and losers of this type of economic activity. Future work in this area will, I hope, push this framework further by showing how resource booms are not categorically different from other kinds of big economic changes. While these booms are remarkable for the magnitude of economic change they can produce, the effects of these changes are not unique to natural resource extraction. Similar pressure on land rights can result from the entry of a new industry in a community, a tourism boom, or any other development that entails land acquisitions in

contexts of uncertain property rights.

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8 Appendix

Table 7: Logit estimation: currently fallowing land

	Dependent variable:			
	currently fallowing land			
	(1)	(2)	(3)	(4)
log(distance from threat)	-0.530^{***}	-0.474^{***}	-0.434^{***}	-0.572^{***}
	(0.142)	(0.146)	(0.153)	(0.189)
hoima		-1.008^{***}	-0.784^{***}	-2.190^{*}
		(0.192)	(0.259)	(1.125)
age			-0.010	-0.010
			(0.008)	(0.008)
female			-0.654^{***}	-0.688^{***}
			(0.224)	(0.226)
education			-0.074	-0.078
			(0.080)	(0.080)
wealth index			0.144^{***}	0.144^{***}
			(0.053)	(0.053)
ethnic outsider			-0.159	-0.115
			(0.232)	(0.234)
titled			-0.909	-0.862
			(0.617)	(0.616)
chief kin			0.479^{*}	0.446^{*}
			(0.265)	(0.266)
log(distance from threat) X hoima				0.447
				(0.347)
Constant	1.355^{***}	1.679^{***}	1.428^{*}	1.869^{**}
	(0.446)	(0.468)	(0.731)	(0.816)
Observations	485	485	484	484
Log Likelihood	-324.353	-310.210	-297.080	-296.238
Akaike Inf. Crit.	652.706	626.419	614.159	614.476
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 8: Logit estimation: clearing trees

	Dependent variable:			
	has cleared trees, past 3 months			
	(1)	(2)	(3)	(4)
log(distance from threat)	-0.494^{***}	-0.475^{***}	-0.467^{**}	-0.387^{*}
	(0.143)	(0.180)	(0.182)	(0.225)
hoima		-2.645^{***}	-2.247^{***}	-1.539
		(0.226)	(0.284)	(1.242)
age			0.016^{*}	0.016^{*}
			(0.009)	(0.009)
female			-0.159	-0.145
			(0.256)	(0.257)
education			0.017	0.019
			(0.091)	(0.091)
wealth index			0.111^{*}	0.110^{*}
			(0.062)	(0.062)
ethnic outsider			0.359	0.339
			(0.265)	(0.268)
titled			0.253	0.241
			(0.623)	(0.628)
chief kin			0.390	0.411
			(0.294)	(0.297)
log(distance from threat) X hoima				-0.225
				(0.384)
Constant	1.513^{***}	2.784^{***}	1.013	0.755
	(0.454)	(0.596)	(0.849)	(0.945)
Observations	482	482	481	481
Log Likelihood	-327.888	-243.777	-237.667	-237.497
Akaike Inf. Crit.	659.776	493.554	495.334	496.995

Note: *p<0.1; **p<0.05; ***p<0.01

Table 9: Logit estimation: new buildings

	Dependent variable:			
	Has put up new building, past 3 months			
	(1)	(2)	(3)	(4)
log(distance from threat)	0.006	0.081	0.071	0.097
	(0.139)	(0.142)	(0.147)	(0.173)
hoima		-0.937^{***}	-0.878^{***}	-0.573
		(0.191)	(0.260)	(1.099)
age			0.018^{**}	0.018^{**}
			(0.007)	(0.007)
female			-0.003	0.003
			(0.213)	(0.214)
education			-0.171^{**}	-0.170^{**}
			(0.080)	(0.080)
wealth index			0.024	0.024
			(0.051)	(0.051)
ethnic outsider			0.207	0.197
			(0.226)	(0.229)
titled			-0.256	-0.265
			(0.542)	(0.543)
chief kin			-0.040	-0.034
			(0.265)	(0.266)
log(distance from threat) X hoima				-0.097
				(0.339)
Constant	-0.317	-0.095	-0.767	-0.849
	(0.441)	(0.448)	(0.704)	(0.759)
Observations	481	481	480	480
Log Likelihood	-328.143	-315.735	-308.966	-308.926
Akaike Inf. Crit.	660.287	637.469	637.932	639.851
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 10: Logit estimation: new fence

	Dependent variable:			
	Has put up new fence, past 3 months			
	(1)	(2)	(3)	(4)
log(distance from threat)	0.103	0.191	0.197	0.231
	(0.145)	(0.147)	(0.156)	(0.177)
hoima		−1.157***	−0.152	0.359
		(0.200)	(0.263)	(1.259)
age			0.016**	0.016*
			(0.008)	(0.008)
female			0.205	0.214
			(0.231)	(0.233)
education			0.153*	0.155*
			(0.083)	(0.083)
wealth index			−0.018	−0.018
			(0.056)	(0.056)
ethnic outsider			0.678***	0.663***
			(0.248)	(0.250)
titled			1.405**	1.397**
			(0.657)	(0.658)
chief kin			1.457***	1.467***
			(0.278)	(0.279)
log(distance from threat) X hoima				−0.162
				(0.389)
Constant	−0.869*	−0.604	−3.168***	−3.275***
	(0.461)	(0.463)	(0.769)	(0.812)
Observations	481	481	480	480
Log Likelihood	−315.640	−298.056	−272.753	−272.667
Akaike Inf. Crit.	635.279	602.111	565.505	567.335
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 11: Probit estimation: fallowing in the future

	Dependent variable:			
	Plan to fallow in future			
	(1)	(2)	(3)	(4)
log(distance from threat)	-0.144^{*}	-0.032	-0.018	-0.022
	(0.081)	(0.086)	(0.089)	(0.103)
hoima		-1.473^{***}	-1.220^{***}	-1.268^{*}
		(0.116)	(0.155)	(0.693)
age			-0.004	-0.004
			(0.004)	(0.004)
female			-0.184	-0.185
			(0.125)	(0.126)
education			-0.044	-0.044
			(0.046)	(0.046)
wealth index			0.015	0.015
			(0.031)	(0.031)
ethnic outsider			0.008	0.009
			(0.135)	(0.136)
titled			0.0002	0.002
			(0.318)	(0.319)
chief kin			0.479^{***}	0.478^{***}
			(0.156)	(0.157)
log(distance from threat) X hoima				0.015
				(0.214)
Observations	469	469	468	468
Note:				*p<0.1; **p<0.05; ***p<0.01