

PROPERTY RIGHTS AND SOCIAL INSTITUTIONS

HOW INFORMAL INSTITUTIONS AND CHIEFS SHAPE LAND

FORMALIZATION IN URBAN AFRICA

Abstract

Formalization always takes place against a backdrop of social institutions. Yet, whether social institutions are an asset or a constraint for formalization remains unclear. We argue that, when offered the opportunity to formalize their land, citizens weigh the benefits of informal insurance against the costs of social institutions. We study a randomized land titling program in a large Congolese city that caused a substantial increase in the demand for and acquisition of land titles. Demand for formalization was more pronounced among citizens who participated more in social institutions and had closer links to city chiefs. In turn, the program crowded out participation in social institutions and worsened citizens' perceptions of chiefs. These results challenge the view that social institutions are an effective substitute for formal land property rights in urban Africa.

Word Count: 9,893

1 Introduction

Well-defined property rights are considered a cornerstone of economic development and political order (Acemoglu, Johnson and Robinson, 2001; Barzel, 2002; Boone, 2014; De Soto, 2000; North and Thomas, 1973). Insecure property rights make individuals fear expropriation, depressing incentives to invest (Demsetz, 1967; Field, 2005). Given the theoretical appeal of strengthening property rights, land titling programs have proliferated across the developing world.¹ However, despite these efforts, land formalization remains persistently low (Easterly, 2007), and formal titling does not appear to increase tenure security or agricultural productivity (Fenske, 2011; Jacoby and Minten, 2007; Lawry et al., 2017). This is particularly true in sub-Saharan Africa, where 90 percent of the land is not formally registered.² To explain these low rates of land formalization, some have proposed a demand-side explanation: communal land rights—and, more generally, social institutions—substitute effectively for formal land rights (Bromley, 2009; Deininger and Feder, 2001; Lawry et al., 2017; Sjaastad and Bromley, 1997).³ According to this view, citizens do not demand formal land property rights because they can do without them.

Policies promoting formalization are always implemented against the backdrop of pre-existent social institutions, which may shape their take up and impacts (Acemoglu and Robinson, 2019; Boone, 2014; Migdal, 1988; O'Donnell, 2006; Wang, 2022). At the heart of the issue is whether formal and informal institutions are complements or substitutes (Helmke and

¹In 2005 the World Bank supervised a portfolio of more than \$1 billion worth of land administration projects (Galiani and Schargrodsky, 2011).

²*The Economist*, Sep 12, 2020.

³For example, Lawry et al. (2017, p.16) find that the relationship between property rights and agricultural productivity is weaker in sub-Saharan Africa and argue that this “may be based on the fact that most farms in sub-Saharan Africa are held under customary tenure arrangements that provide tenure security.”

Levitsky, 2004; Henn, 2022; Van der Windt et al., 2019). Formal property rights to land—a signature of citizens’ incorporation into the state (Barzel, 2002)—are a case in point.

However, studying the relationship between social institutions and formal titling presents substantial empirical challenges since land titling is endogenous to economic development (Alston, Libecap and Mueller, 1999), social norms (Platteau, 1996), and political considerations (Albertus, 2015, 2021; Boone, 2014, 2018; Hassan and Klaus, 2023). While there is recent evidence of substitution globally (Le Rossignol, Montero and Lowes, 2022) and in African countries (Honig, 2022),⁴ the empirical record remains mixed. A convincing test would require observing both (*i*) the adoption of formal titles at different levels of participation in social institutions and (*ii*) the causal effect of formalization on engagement with social institutions. Achieving both in the same empirical context is challenging and a key reason for the divergent conclusions of the existing literature.

A second reason is theoretical. The decision to adopt formal property rights involves weighing the costs and benefits of formal and informal institutional arrangements. The substitution argument assumes that the benefits of social institutions outweigh their cost (Harris and Honig, 2023; Honig, 2022). However, social institutions can also incur high costs on citizens and create ties of dependence (Lust and Rakner, 2018; Platteau, 2012). We argue that the trade-off faced by citizens will take a different shape in urban areas. While most evidence of substitution comes from rural areas, where customary institutions are stronger (Honig, 2022), the cost of social institutions will likely outweigh their benefits in cities, where land values are higher and the benefits of membership in social institutions are lower.

In this article, we present a systematic analysis of the relationship between land titling and

⁴Le Rossignol, Montero and Lowes (2022) document a negative cross-country correlation between the success of titling programs and communal land rights. Drawing on data on Zambia and Malawi, Honig (2022) presents evidence that citizens embedded in customary institutions are less likely to demand land titles.

social institutions in an urban setting in a large developing country. To this end, in collaboration with the Provincial Government of Kasai Central, we designed a randomized land titling program in the city of Kananga, in the Democratic Republic of Congo (DRC), where only 16 percent of citizens have formal title to their land. The program was implemented by the government's cadastral and land titling offices. To our knowledge, this was the first successful land titling RCT in an urban setting. Households eligible and interested in a land title were randomly assigned to treatment and control groups. The treatment group was offered large reductions in the monetary and transaction costs of acquiring a land title. Where citizens routinely pay \$1,000 or more for a title in Kananga, the titling program capped household outlays at the official price of \$100. Moreover, government officials and program staff visited participants at their homes, reducing the transaction costs of obtaining a land title and avoiding the need for frequent trips to government offices. The control group had the option to obtain a land title as per the status quo.

The program significantly boosted demand for land titles. It caused a 44 percentage-point increase in the probability that households initiated the formalization process, and a 13.7 percentage-point increase in the actual receipt of a formal land title. The slippage between initiation and receipt of a title reflects a combination of poor coordination across government offices and deeper institutional factors creating weak incentives for bureaucrats. In the control group, only a few citizens attempted to get a title, and almost none were successful during the two-year study period. The large increase in take-up reflects citizens' high valuation of titles and the high costs of accessing the state in the status quo (Fredriksson, 2014; Rizzo, 2022).⁵

Because we observe both take-up and causal effects of land titling, this empirical setting allows us to adjudicate between competing arguments about the relationship between formal-

⁵This is a relevant finding given that a recent meta-analysis of coordinated interventions across six countries shows that a reduction in up-front transaction costs is often insufficient to generate a positive effect on formalization (De la O et al., 2023).

ization and social institutions. We first investigate which citizens are more likely to demand and acquire a formal land title. The substitution argument predicts that citizens who participate more in *horizontal* social institutions—such as churches and mutual aid societies—will have a lower demand for land titles. Our results are inconsistent with this prediction. Citizens who participate more in social institutions display a higher demand for land titles, but are not necessarily more likely to obtain them. We find similar results when studying take-up by *vertical* institutions. We focus on connectedness to urban chiefs, local elites who are key stewards of social institutions in Kananga and across sub-Saharan Africa. Citizens with closer connections to chiefs are also more likely to demand a land title, though not more likely to obtain one. We also find evidence that chiefs’ political connections have a negative effect on citizens’ obtaining a formal title.⁶ Our evidence on take up thus aligns more closely with the complements view.

We then examine the causal effects of the land titling program. The complements view predicts that by increasing demand and issuance of titles, the treatment group would display greater participation in social institutions. However, on average, the program crowded out citizens’ participation in horizontal social institutions and worsened their evaluation of city chiefs. This evidence thus aligns more closely with the substitutes view.

Taken together, our results reveal a distinctive logic of land formalization in urban areas that diverges from standard accounts of substitution or complementarity. Instead, it suggests an *imperfect substitutes* view of the relationship between formalization and social institutions, whereby, in the absence of institutional alternatives, citizens participate in and derive benefits from social institutions, but exit them when such alternatives become available. This view can account for both of our empirical results: (i) that citizens facing a higher cost of social institutions exhibit greater demand for titles as a way to exit them, and (ii) that citizens randomly

⁶This finding is consistent with the notion that informal protection is a political tool (Janvry et al., 2014; Larreguy, Marshall and Trucco, 2018) and evidence of misalignment between citizens’ and chiefs’ preferences over titling.

incentivized to formalize their land subsequently lower their engagement with social institutions. Where formal institutions are costly, formal land rights may provide an institutional bypass to exit the informal equilibrium. All told, by showing that land formalization shapes and is shaped by social and political relationships, our results affirm a deeply political conception of land property rights in sub-Saharan Africa (Bates, 1987; Boone, 2014).

This article contributes to three strands of literature. First, we contribute to the body of work on the interaction between formal and informal institutions (Brenner, 1976; Cheema, Khwaja and Qadir, 2006; Gottlieb, LeBas and Magat, 2021; Henn, 2022; Van der Windt et al., 2019; Weigel, 2020). Concerning land titling, previous studies have shown that informal institutions can substitute for formal land property rights in rural areas (Honig, 2022; Harris and Honig, 2023). We build and expand on past literature in several ways. First, unlike observational studies, we leverage a large urban land titling field experiment that allows us to estimate credible causal effects on participation in social institutions. Second, we observe take-up and causal effects in the same empirical setting, allowing us to adjudicate between competing theories about how informal institutions affect land formalization. Third, we study both vertical *and* horizontal social institutions, while most past work focuses on only one or the other. Finally, we observe both the initiation and completion of the titling process at the individual level, which enables us to separate the factors that foster or hinder the demand for and the ultimate acquisition of titles.

Second, this article speaks to the literature on the role of local elites in governance in low-capacity states. Scholars have recently explored the importance of such elites in governance (Acemoglu, Reed and Robinson, 2014; Baldwin, 2016; Baldwin and Raffler, 2019), law and conflict resolution (Acemoglu et al., 2019), and land administration (Banerjee and Iyer, 2005; Boone, 2014; Goldstein and Udry, 2008; Honig, 2017, 2022). In the context of land politics, scholars have proposed that chiefs, as representatives of customary institutions, have a vested interest in maintaining their power within those institutions and would therefore oppose titling

(Honig, 2022). By contrast, our findings suggest caution in exporting arguments about the role of chiefs in land titling from rural areas to urban ones.

Finally, this paper adds to the literature on the effects of land titling programs (Besley, 1995; Di Tella, Galiani and Schargrodsky, 2007; Djankov et al., 2020; Field, 2005, 2007; Galiani and Schargrodsky, 2010; Goldstein and Udry, 2008; Goldstein et al., 2018; Hornbeck, 2010). Previous land titling field experiments have focused on rural areas (Goldstein et al., 2018), while the best evidence on urban titling comes from non-experimental research in slum and squatter communities in Peru and Argentina (Di Tella, Galiani and Schargrodsky, 2007; Field, 2005, 2007; Galiani and Schargrodsky, 2010). We present—to our knowledge—the first causal estimates of the social effects of land titling. Specifically, we provide field-experimental evidence from a city-wide land titling program that crowded out participation in informal institutions. This evidence suggests that formal property rights have the potential to alter social relationships (Bates, 1987). Recent results from survey experiments suggest that titling may dampen the cooperation benefits of social institutions (Harris and Honig, 2023). We see our findings as complementary, with two differences. First, we study the relationship between titling and social institutions in the context of a titling campaign. Second, we qualify the idea that the cooperation benefits of social institutions are such that citizens would refrain from titling. Exit from the informal equilibrium suggests that titling is an attractive option in contexts where the benefits of formalization outweigh those of social institutions.

2 Social Institutions and Land Formalization

Formalization efforts invariably interact with social institutions—socially embedded rules and roles that govern social relationships and structure activities within a community (Harris and Honig, 2023; Lust, 2022; Lust and Rakner, 2018). To guide our analysis, we distinguish between two types of social institutions: horizontal and vertical, depending on whether citizens hold obligations *vis-à-vis* individuals of similar or higher social standing (Lust and Rakner,

2018; Harris and Honig, 2023). While these institutions display wide variation, they share two characteristics. First, they help provide collective goods and informal insurance, as documented in diverse contexts such as Nigeria (Akinola, 2008; Udry, 1990), Tanzania (De Weerd and Dercon, 2006), India (Townsend, 1994), the Philippines (Fafchamps and Lund, 2003), and China (Tsai, 2007; Xu and Yao, 2015). Second, social institutions are costly, often requiring fiscal and in-kind obligations from citizens. In other words, they involve *social extraction* (Lust and Rakner, 2018; Olken and Singhal, 2011).

2.1 The Substitution Argument

Social institutions are often identified as a crucial factor behind variation in preferences for formal titling and frictions in the implementation of titling programs (Boone et al., 2021). Some argue that such institutions, together with communal land rights, provide sufficient tenure security (Deininger and Feder, 2001; Easterly, 2007; Honig, 2022).⁷ According to this view, social institutions and formal land titles are perfect substitutes. Furthermore, introducing formal titling might decrease the insurance pool, causing potential titleholders to avoid acquiring titles to maintain membership benefits and avoid sanctions (Harris and Honig, 2023). Empirically, the substitution argument implies that citizens who participate more in social institutions will have weaker incentives to formalize their land. Guided by the theoretical purchase of this argument, we pre-registered this hypothesis in our analysis plan. Yet, informed by our fieldwork and a richer conception of social institutions, we argue that the substitution argument is insufficient because it downplays the cost of social extraction. Indeed, scholars advancing this argument tend to assume that the costs of social institutions are negligible (at least relative to the benefits). Yet recent research has highlighted that this assumption may not hold in many settings, given the high costs of social extraction. These costs are at times pecuniary—payments, in-

⁷Deininger and Feder (2001, p.314) write that “formal documentation (i.e. titling) is not crucial where customary tenure systems provide sufficient security.”

kind or labor contributions—and at times psychological, since social institutions create ties of dependence (Lust and Rakner, 2018; Migdal, 1988; Platteau, 2012).

2.2 Formalization as an Institutional Bypass

Acknowledging that social institutions are costly implies that citizens face trade-offs when presented with the option to formalize. This trade-off involves (i) how they weigh the benefits of informal insurance against the costs of social extraction and (ii) the availability of alternatives. We argue that, in settings where social institutions are costly, social institutions are *imperfect substitutes* for formal land property rights. Substitution occurs because citizens participate in social institutions as long as they benefit and do not have access to alternatives. A lack of alternatives could reflect an absence of options or the fact that options are inaccessible in practice—for example, if the price of a formal land title is prohibitively high. Thus, in the absence of institutional alternatives, participation in social institutions is a self-enforcing equilibrium.

Alternatives can be thought of as an *institutional bypass*: an alternate institutional regime that provides citizens with a pathway around the existing institution without changing it (Prado and Trebilcock, 2018). Substitution is imperfect in that when an institutional alternative is made available that expands citizens' choice set, they will thus evaluate the costs and benefits of formal and informal institutions—and switch accordingly. Thus, the presence of such alternatives has the potential to alter the self-enforcing equilibrium.

2.3 Empirical Implications

In our context, where social institutions provide some degree of social insurance and tenure security, making formal land property rights more accessible by reducing their price and transaction costs can be thought of as an institutional bypass. We argue that, given their cost and weaker insurance benefits relative to formal titles, citizens will prefer to formalize their land when offered the chance. Specifically, those who participate more in social institutions—and

bear their cost more—will be more likely to demand formal land titles. Upon formalization, the informal insurance afforded by social institutions is no longer needed and, to avoid their cost, citizens will seek to exit the informal equilibrium. This argument entails two empirical implications:

- **Heterogeneous take-up:** Citizens who participate more in social institutions are more likely to demand formal land titles.
- **Crowding-out:** Citizens' adoption of formal land titles crowds out participation in social institutions.

This argument yields distinctive predictions, different from those that can be derived from alternative ways of conceptualizing the relationship between formal and informal institutions. Note that if social institutions were costless, citizens could enjoy the benefits of both formal and informal institutions (complementarity) or remain in the informal equilibrium (substitution). Specifically, the substitution argument predicts that higher participation in informal institutions leads to lower demand for formal land titles (Table 1). Perfect substitution creates an observational problem: if it takes place, there is no first stage and therefore the effect of titling on social institutions cannot be observed. In turn, if formal and informal institutions are complements, then higher participation in the latter predicts higher demand for land titles—without crowding out participation in social institutions. By contrast, our theory predicts that formalization will cause *both* higher demand by individuals who are more engaged with informal institutions and the crowding-out of informal institutions.

In what follows, we inform our argument by introducing the logic of horizontal and vertical institutions and by describing their operation in our setting.

Table 1: Theoretical expectations

| | Complementarity | Substitution | Imperfect substitution |
|---|-----------------|--------------|------------------------|
| Effect of social institutions on land formalization | + | – | + |
| Effect of land formalization on social institutions | Reinforcement | ∅ | Crowding-out |

Notes: This figure displays the theoretical expectations about the relationship between land formalization and social institutions. + and – denote, respectively, positive and negative effects. ∅ means that the relationship is not observed.

2.4 Horizontal Social Institutions

Networks and groups outside of formal state structures play a vital role in public life in Africa (Chazan et al., 1999; Gulliver, 1971; Hyden and Williams, 1994). Horizontal social institutions facilitate risk sharing, provide social insurance, and support collective action (Akinola, 2008; Kpessa-Whyte, 2018; MacLean, 2010; Ostrom, 1990). Access to scarce resources, chiefly land, is determined by membership and status within these institutions (Berry, 1989, 1993).⁸ Social institutions may confer tenure security absent formal titles (Bromley, 2009; Durand-Lasserve and Royston, 2002; Lawry et al., 2017; Deininger and Feder, 2001; Honig, 2022). In D.R. Congo, local actors—such as chiefs, family members, churchgoers, neighbors and friends—typically take part in *defensive coalitions* to advance ownership claims against property threats (Peyton, 2020).

While participation in social institutions confers benefits, they come at a cost. Cooperation in these institutions is founded on reciprocity (Kpessa-Whyte, 2018; MacLean, 2010), creating ties of mutual dependence (Harris and Honig, 2023), and exerting distributive pressures. To enjoy the gains from cooperation, citizens must comply with institutional rules. Participation in informal institutions typically requires monetary obligations and is enforced through social and economic sanctions and control (Barkan and Holmquist, 1989; Dercon et al., 2006; Lust and

⁸Scholars have documented a variety of institutional arrangements to manage land (Boone, 2014; Bromley, 1989; Goldstein and Udry, 2008; Le Rossignol, Montero and Lowes, 2022; Ostrom, 1990).

Rakner, 2018; Migdal, 1988). Furthermore, some of these institutions encode egalitarian norms that penalize investment (Kennedy, 1988; Platteau, 2012).

These costs create an incentive for citizens to seek out alternatives. For example, citizens often resort to coping strategies, such as concealing assets, migrating, or changing religious denominations to mitigate these pressures (Platteau, 2009, 2012). Moreover, the cost of social institutions is likely higher in urban settings. First, the market value of land is higher in urban areas (Lall, Henderson and Venables, 2017).⁹ Second, in such areas the insurance benefits of horizontal institutions are likely lower and customary institutions are less prominent (Honig, 2022), depressing the status of chiefs and thus also the benefits to citizens of maintaining social links to them. Therefore, incentives to formalize land and exit informal institutions should be stronger in urban areas. Section 3.2 provides an estimate of the cost of participating in such institutions in Kananga. As a result, we expect that citizens' participation in social institutions increases the demand for formal land titles.

2.5 Vertical Social Institutions

In sub-Saharan Africa, traditional and urban chiefs play an important role in local governance (Baldwin and Raffler, 2019; Baldwin and Holzinger, 2019; Logan, 2009), contributing to public goods provision (Baldwin, 2016), participating in the administration of justice (Sheely, 2013), and exerting control over land (Baldwin, 2014; Boone, 2014; Honig, 2017, 2022). Urban chiefs, a common institution in Francophone Africa, frequently play complementary roles *vis-à-vis* the formal state (Henn, 2022), are endowed with authority stemming from customary legitimacy—the institution was modeled on the village chieftaincy—and enjoy high levels of trust (Logan and Katenda, 2021). In the context of land titling, two characteristics of chiefs are worth high-

⁹In our sample, properties of eligible respondents located inside the borders of the former colonial city of Luluabourg have an average value of \$5,902. Estimates of property values come from machine learning and computer vision algorithms as described in Section 6.1.

lighting: (i) their connections with citizens and (ii) their connections with politicians and political alignment. Comparative evidence indicates that chiefs selectively provide protection and tenure security (Goldstein and Udry, 2008; Honig, 2017, 2022) in exchange for rents and state recognition of their neo-customary status (Acemoglu, Reed and Robinson, 2014; Boone, 2014). Previous work has emphasized chiefs' role as development brokers with the capacity to deliver collective goods (Baldwin, 2013). However, informal protection afforded by chiefs comes at a cost: it is provisional and contingent on chiefs' incentives and, therefore, may be used to build clientelistic relationships that foster citizens' dependence (Janvry et al., 2014; Mattingly, 2016; Larreguy, Marshall and Trucco, 2018). In our context, because of their position of intermediaries between citizens and the provincial government, city chiefs have multiple principals. As a consequence of this dual position, they face competing demands. This generates distinctive predictions for the demand for and the acquisition of land titles.

- **Demand:** We expect citizens who are closer to chiefs to be more likely to demand formal land titles. First, consistent with the notion of chiefs as development brokers, citizens may see them as a vehicle to obtain a land title or speed up the titling process. Second, according to our argument, the protection afforded by social institutions—including chiefs—is costly, giving citizens closer to chiefs further reason to seek formalization. By contrast, the substitution argument predicts that connections to chiefs should lower demand for titles.
- **Acquisition:** Whether chiefs facilitate or block titling depends on their incentives. For rural areas, there is evidence that chiefs embedded in customary institutions would oppose titling programs that threaten to erode their power (Honig, 2022). In urban settings like the one we study, chiefs' incentives are likely driven by politics rather than customary status. Specifically, we predict that chiefs who are closer to power might attempt to stifle the titling process, fearing retaliation by government officials or seeking to maintain clientelistic ties.

3 Land and Social Institutions in Kananga, D.R. Congo

3.1 Land Formalization and Tenure Regime

The D.R. Congo is the fourth most populous country in Africa and one of the poorest. It is considered a low-capacity “fragile state,” with tax-GDP ratio ranking 188 of 200 countries. Less than 1 percent of the land is formally registered (Huggins et al., 2004). Kananga, the capital of the Kasai Central Province and the setting for this study, is a city with roughly 1.6 million inhabitants—the fourth largest in D.R. Congo—and an average monthly household income of \$106 (PPP\$168). Because of its size and urban form, Kananga can be considered a typical city in Francophone Africa, with an administrative center built around the colonial city of Luluabourg, and an expanding patchwork-like periphery (Baruah, Henderson and Peng, 2021).

Citizens of Kananga are well aware of the legal benefits of land titles. Titles are highly valued, and some citizens undertake great efforts to obtain one, sometimes paying high legal fees.¹⁰ However, very few citizens—only 16 percent, according to our baseline data—have a formal land title.¹¹ This low rate of formalization reflects the fact that the current procedure for obtaining title is difficult and costly.¹² Citizens seeking to obtain a land title face byzantine administrative procedures and a range of informal fees. There are at least six distinct steps in the

¹⁰Language is reflective of this high subjective valuation. During our focus group interviews, citizens would usually mention that the land title that carries the highest legal weight, known as *Certificat d’Enregistrement*, is “unattackable”—as it is officially described in Congolese law. See Peyton (2020) for qualitative evidence on the demand for titles in D.R. Congo. Ferree et al. (2022) show that citizens in Malawi value land titles regardless of the authority granting them.

¹¹Across sub-Saharan Africa, only 2 to 10 percent of land is privately held. Comprehensive land registries and legal markers of land ownership are extremely rare (Boone, 2014; Deininger, 2005).

¹²See SI Section B for more details on the history of land titling in DRC.

titling production process, each of which represents a potential bottleneck. During focus group interviews some citizens reported hiring a lawyer to help them with the process. To keep the process moving, citizens must pay a range of “administrative fees” for tasks such as measuring the plot, producing an array of intermediate documents, and installing cornerstones. Some citizens report paying up to \$1,000 for a land title, when the official price is around \$100.¹³

The absence of formal land ownership creates a wide range of problems for citizens and the government. On the government’s side, the dearth of property ownership information inhibits tax collection and public goods provision (Weigel, 2020). In turn, citizens face the risk of expropriation—over 25 percent of respondents in our sample reported experiencing at least one property dispute and over 60 percent knew at least one person who did. Lastly, while banks in Kananga accept land titles as collateral for loans, the great majority of the population is effectively barred from the formal financial sector given the scarcity of official land titles.

3.2 Horizontal Social Institutions

Citizens of Kananga participate in several overlapping sets of horizontal social institutions. In urban areas, churches and burial societies serve as a nexus for risk sharing (Auriol et al., 2020; Dehejia, DeLeire and Luttmer, 2007; Dercon et al., 2008). Like elsewhere in sub-Saharan Africa, religious institutions of several denominations feature prominently in Kananga. Church attendance is high: 64.5 percent of citizens in our sample report attending every day and 24 percent report attending multiple times per week.¹⁴ Citizens also participate in mutual aid societies and rotating savings and credit associations (ROSCAs). Other horizontal obligations include monetary contributions to community events such as weddings and funerals.

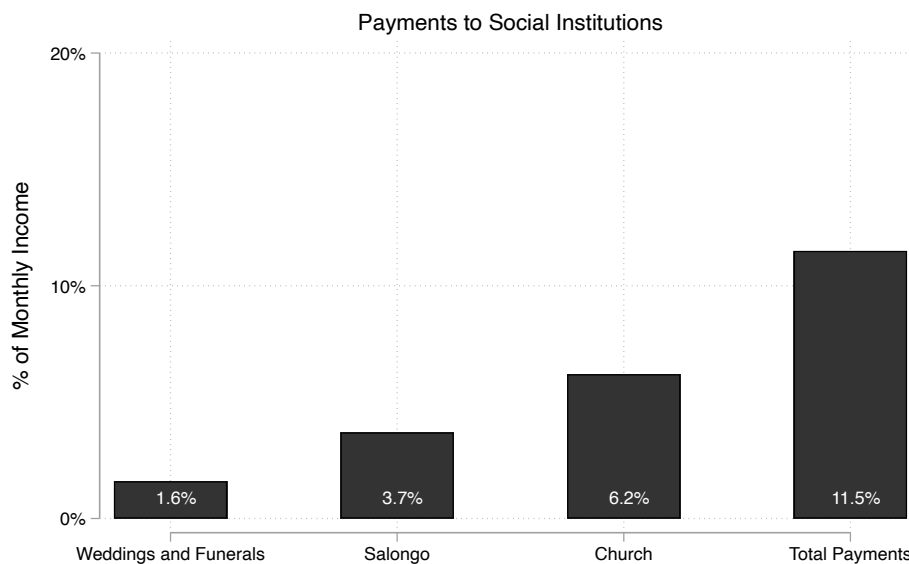
¹³Land values have been increasing in Congolese cities. In our sample, among respondents eligible for the land titling campaign the average property value is \$5,700.

¹⁴There is some evidence that citizens obtain insurance by participating in religious institutions (Kapepula, Konshi and Weigel, 2022).

3.2.1 Quantitative Evidence on the Cost of Social Institutions

Citizens of Kananga typically make monetary or in-kind payments towards horizontal institutions. Payments to churches, weddings and funerals, and an informal labor tax known as *salongo*—during which citizens help repair roads, bridges, and other local public goods—amount to roughly 11.5 percent of citizens’ monthly income (Figure 1).¹⁵

Figure 1: Payments to social institutions as a percentage of citizen’s monthly income



Notes: Each column represents the expenditures in each category as a fraction of monthly income. All measures of expenditure and income are winsorized by trimming the top and bottom 5th percentile of observations.

Notably, horizontal social institutions in Kananga do not appear to provide an effective substitute for secure land rights, since citizens frequently experience tenure insecurity. Moreover, there is no correlation between participation in such institutions and a range of indicators including tenure security, access to health care, education, or having a retirement fund (SI Table

¹⁵These are conservative estimates obtained by winsorizing each measure of expenditure and income by trimming the highest and lowest 5th percentile. For comparison, the fraction of monthly income spent in transportation—one of the main expenditures of citizens in Kananga—amounts to about 11.4 percent.

D.3).¹⁶

3.2.2 Qualitative Evidence on the Cost of Social Institutions

Qualitative evidence from focus group discussions helps illuminate the logic and cost of contributions to social institutions. They reveal three characteristics: (i) progressivity; (ii) social sanctions; and (iii) asset-concealing behavior. In general, contributions are associated with a “spirit of solidarity” deemed characteristic of Congolese culture. Focus group respondents also point to an insurance motive: contributions are typically triggered by external circumstances such as weddings, mourning, damaged ravines, community needs, and natural disasters. Contributions are typically raised by door-to-door soliciting, especially by local notables or people linked by social ties. Furthermore, not everyone is expected to contribute equally—the expectation to contribute is driven by a progressivity norm, and door-to-door solicitations tend to target wealthier households. Notably, some respondents mention that wealthier citizens tend to hide their assets (“salary is secret”). In this context, a land title may be seen as a wealth-signaling asset. While respondents emphasize that citizens are not expected to contribute beyond their means, they mention social consequences of failing to contribute, including mistrust, losing community ties, gossip, and ostracism. One respondent highlighted that those who do not contribute “will not be trusted by the community”; another one mentioned losing community ties and isolation from community events. Yet another respondent highlighted a “burden of conscience”—especially among people with financial means.

¹⁶However, there is a negative correlation between participation in social institutions and experiencing hunger, which can be interpreted as suggestive evidence of an insurance function. Considering the full sample, participation in social institutions is positively correlated with some such outcomes, but predicts *higher* frequency of land disputes.

3.3 Vertical Social Institutions: City Chiefs

Like in many urban areas of Francophone African countries, in Kananga local elites known as city chiefs (*chefs d'avenue*, *chefs de quartier*, *chefs de localité*) are a distinctive social institution. These chiefs are local notables whose main responsibilities include: (i) mediating local disputes, especially over property, and (ii) helping maintain local infrastructure through *salongo*.

While nominally integrated to the state apparatus¹⁷ city chiefs share many characteristics with customary chiefs in terms of their activities, nomination process, and social standing. Chiefs are nominated by elders in the neighborhood—typically for being longstanding and respected residents—and then rubberstamped by the government. Chiefs have indefinite and often lifelong tenure, which at times passes through families, and deposition is very rare.¹⁸ Chiefs do not receive regular salaries, and most hold other remunerative positions, e.g., as teachers or pastors. The main benefit of being chief is the status it confers.

4 Intervention Description

4.1 Formal Land Titles

In collaboration with the provincial government of Kasai Central, we subsidized the three main land titles in the DRC: *Certificat d'Enregistrement* (CE), *Contrat de Location* (CL), and *Acte de Vente Notarié* (AVN). These are listed in decreasing legal weight. All three titles grant higher tenure security. The program randomly offered households the opportunity to obtain one of

¹⁷The position was formally created in 1972 after a national law abolished traditional authority, seeking to integrate chiefs to the state apparatus (Nzongola-Ntalaja, 1975).

¹⁸The average city chief in Kananga had worked in the position for 10 years, and 19 percent of chiefs inherited the position from a family member.

these three formal titles for the prices listed in Table 2 below.¹⁹ The reduced prices imply a substantial subsidy. Given that citizens pay up to \$1,000 for the CE, the title with the highest legal value, an average subsidized price of \$75 implies a 92.5% price decrease. Field activities began in July 2017 and continued until February 2020 (SI Figure A.1).

The magnitude of the subsidy offered through the program is comparatively large. The costs of registering property in Africa are the highest in the world—estimates range from 9 percent (Lall, Henderson and Venables, 2017) to about 15 percent (Toulmin, 2009) of the property value. Given that the average price for a *Certificat d’Enregistrement* offered during the program was 75 USD and the average property value in the eligible sample is about 2,900 USD, the cost of a title represents 2.5 percent of the average property value—closer to the cost of registering property in Europe (2.8 percent) (Lall, Henderson and Venables, 2017).

1. *Certificat d’Enregistrement*. The CE represents the government’s formal recognition of a property owner’s rights to their plot of land. The acquisition of a CE requires that the land is sufficiently put to use—10 percent of the plot must contain buildings made of solid materials. Having a CE implies that the property owner faces no legal challenges to their property rights.

2. *Contrat de Location*. A CL also entails the government’s recognition of the owner’s right to the land. However, the CL is a contract with the government whereby the property owner is expected to make annual payments over the course of three years. At the end of this period, if the land is sufficiently put to use, the government will grant the owner a CE.

3. *Acte de Vente Notarié*. An AVN constitutes proof of the acquisition of a plot but does not offer legal protection. The notarization of an AVN renders it a legal document, which can prove useful if the owner plans to sell the plot, and may have more legal weight in case of a land dispute.

¹⁹For each treated respondent, we also randomized the magnitude of the subsidy, creating three price levels for each land title. This paper does not exploit the variation induced by the random subsidies.

Table 2: Average subsidized price of each formal land title

| DOCUMENT | AVERAGE PRICE |
|----------------------------|----------------------|
| Certificat d'Enregistrment | 75 USD |
| Contrat de Location | 40 USD |
| Acte de Vente Notarié | 20 USD |

Notes: This figure displays the average price levels for each land title concerned by the program.

4.2 Randomization

Randomization was implemented at the household level. Units are households located in polygons (or neighborhoods). Each polygon was defined using a satellite to approximate the finest administrative unit, the *localité*, using boundaries such as roads, ravines, and other natural features easily identifiable from the ground. There are 364 neighborhoods in Kananga. The randomization achieved balance: only 1 of 17 variables in Table 3 (years of education) is imbalanced, as one would expect under random assignment.²⁰

²⁰See SI Section G for more details on the randomization protocol.

Table 3: Descriptive Statistics and Randomization Balance

| | Control | | | Treatment | | | Difference in Means |
|--------------------------------|--------------|---------|---------|--------------|---------|---------|---------------------|
| | Observations | Mean | SD | Observations | Mean | SD | |
| Age | 228 | 54.43 | 15.91 | 254 | 55.65 | 15.00 | 1.215 |
| Female | 229 | 0.26 | 0.44 | 254 | 0.20 | 0.40 | -0.053 |
| Years of Education | 229 | 10.72 | 3.54 | 254 | 11.45 | 3.62 | 0.724** |
| Household Size | 228 | 6.33 | 4.08 | 254 | 6.78 | 4.52 | 0.447 |
| Years Residing in Kananga | 194 | 45.75 | 19.77 | 234 | 46.98 | 17.85 | 1.231 |
| On Electrical Grid | 229 | 0.03 | 0.16 | 254 | 0.05 | 0.21 | 0.021 |
| House Near Ravine | 227 | 0.20 | 0.40 | 254 | 0.19 | 0.39 | -0.014 |
| Predicted Property Value (USD) | 219 | 2630.96 | 3872.13 | 244 | 3144.73 | 3707.23 | 513.776 |
| Monthly Income (USD) | 227 | 123.48 | 445.77 | 254 | 123.08 | 230.83 | -0.408 |
| Recent Expenditure (USD) | 228 | 3.99 | 19.85 | 254 | 3.37 | 5.90 | -0.616 |
| Business Owner | 229 | 0.22 | 0.41 | 254 | 0.19 | 0.39 | -0.029 |
| Trust in Provincial Government | 215 | 2.56 | 1.24 | 241 | 2.44 | 1.27 | -0.118 |
| Political Party Member | 229 | 0.30 | 0.46 | 254 | 0.33 | 0.47 | 0.025 |
| Frequency of Land Disputes | 229 | 0.95 | 6.04 | 254 | 0.66 | 1.46 | -0.286 |
| Helps with Community Security | 229 | 2.22 | 9.55 | 254 | 1.28 | 3.47 | -0.943 |
| Ever Paid Property Tax | 229 | 0.37 | 0.48 | 254 | 0.44 | 0.50 | 0.066 |
| Affected by Militia Violence | 227 | 0.35 | 0.48 | 253 | 0.41 | 0.49 | 0.055 |

Notes: This table shows averages at baseline for the treatment and control groups. The last column is the coefficient of a bivariate regression of treatment assignment each variable measured at baseline. Militia Violence refers to a fighting that broke out in 2017 between the national government and *Kamuina Nsapu* militias, leaving thousands dead and hundreds of thousands displaced.

4.3 Title Production Process

The production of the land titles issued during the program comprised the following steps:

- 1. Technical visit.** Respondents assigned to the treatment group were invited to sign up for a technical visit by agents of each division involved in the program: the provincial cadastral and land titling offices. Agents were accompanied by an enumerator to ensure compliance with the randomization protocol. During this visit, cadastral agents would measure the plot, draw a sketch, and determine the number of required cornerstones. Cadastral agents would then produce a set of official intermediate documents describing the technical and legal aspects of the plot and containing information on the full list of previous owners, the materials used to build the compound, etc. This step was an important source of attrition. In many cases, properties were determined to be ineligible for an official land title for technical reasons.²¹

²¹This happened for a variety of reasons, including proximity to a ravine, indirect street access, insufficient

Other respondents dropped out even before the first visit due to a loss of interest or long waiting times.

2. Cadastral office. A typist at the cadastral office was responsible for producing an official document—*procès verbal*—on the basis of the reports created during the technical visit and writing a transmission letter describing the title requested, the contents of the file, the respondent’s personal details, and reproductions of the plot sketches. The cadastral agent would review and sign the document, verifying that it reflected their observations during the visit. The head of the cadastral office would then examine the file and determine the eligibility of the respondent for the requested title. If no problems were detected, the cadastral office would transfer a copy to the titling office. This step was also a source of attrition and delays. By the time the files would reach the titling office, many respondents had moved, sold their plot, or simply lost interest.

3. Land titling office. Each file was sent for legal review to the land titling office, the government office in charge of matters related to land law, which would determine if the plot satisfied the technical requirements to be eligible for the title selected by the respondent. This step was a significant source of discretion by titling officials, who would study the full history a plot’s ownership and verify the authenticity of signatures contained in extant documents. Files were often rejected due to issues with these documents—the most common reason was insufficient proof of ownership by the former occupant.

4. Title payment and official signature. The land titling office would then produce a document detailing the amount to be paid to the provincial tax ministry. Respondents would take this document to the bank, pay the fee and, in return, obtain a receipt to be taken to the land titling office and attached to the their file. The head of the land titling office would then sign the official copies of the titles, which would be delivered to the respondent by an enumerator.

area, or insufficient construction on the plot. See SI Section [H](#).

Finally, a cadastral agent would visit the plot to install the cornerstones.

5 Data

Our data come from the following sources:

1. Respondent baseline survey. We administered surveys at baseline to 4,343 randomly selected households—12 per neighborhood—between July and December 2017. Independent enumerators randomly sampled compounds following skip patterns while walking down each avenue in a neighborhood: e.g. visit every X th property in the neighborhood, where X was determined by the estimated number of properties and a target of 12 per neighborhood. The survey instrument covered a range of topics, including, but not limited to, demographics, property characteristics, governance, public goods, experience with taxation and other payments to the state, city chiefs, political beliefs, and participation in social institutions. Following a change in the eligibility criteria decided by the government, we restricted our sample based on baseline characteristics. The new sample included 483 households. Although this eligibility restriction was costly in terms of sample size, it did not hurt balance (Table 3) and homed in on the population relevant for understanding the demand for land titling in urban Africa.²²

2. Respondent endline surveys. Two surveys were conducted after the titling program. Round 1 was implemented in March-September 2019 and round 2 was implemented between December 2019 and February 2020. These surveys contained questions about tax compliance, use of formal and informal sectors, property disputes and tenure security, saving and investment

²²The initially eligible sample is balanced across owner and household characteristics (SI Table H.1). While attrition was slightly higher among control households, we do not find that attriters substantially differed in their characteristics across treatment groups (SI Table H.2). Our main results are robust to attrition-weighting and including controls selected by the double LASSO algorithm (Belloni, Chernozhukov and Hansen, 2014) (SI Figure H.1). We discuss eligibility and attrition in more detail in SI Section H.

behavior, participation in social institutions, and views on and engagement with the government and city chiefs.

3. Chief survey. We administered surveys to over 1,000 city chiefs, measuring a set of characteristics including, but not limited to, level of education, official duties, relationship with city authorities, knowledge of citizens in their jurisdiction, power over land allocation, past experience collecting taxes, preferences for redistribution and public goods, and the organization of *salongo*. We exactly match chiefs to citizens based on who citizens reported to be their chief during endline and unique identifiers.

4. Administrative data on land titling. We employ administrative data from the cadastral and land titling offices of the Provincial Government of Kasai Central. The data contain information on all landowners who opened a file, irrespective of whether they finished the process and received a title. We define two variables:

- **Initiation of titling process.** An indicator of whether households initiated the land titling process during the study period. Importantly, this was a costly step individuals needed to undertake by (i) scheduling a technical visit from government land surveyors to their house and (ii) being present during this visit such that the government agents could open a file for the household. For the control group this variable was measured by bringing a list of all control respondents to the titling office and verifying whether they had any record of starting a file.
- **Receipt of land title.** An indicator of whether households received a land title during the study period. We merged the government's administrative data on recently finalized titles with our household surveys. We also coded this variable as a 1 if a respondent—in treatment or control—reported getting a new title at endline since the start of the land titling program and was able to show the title to an enumerator.

6 Results

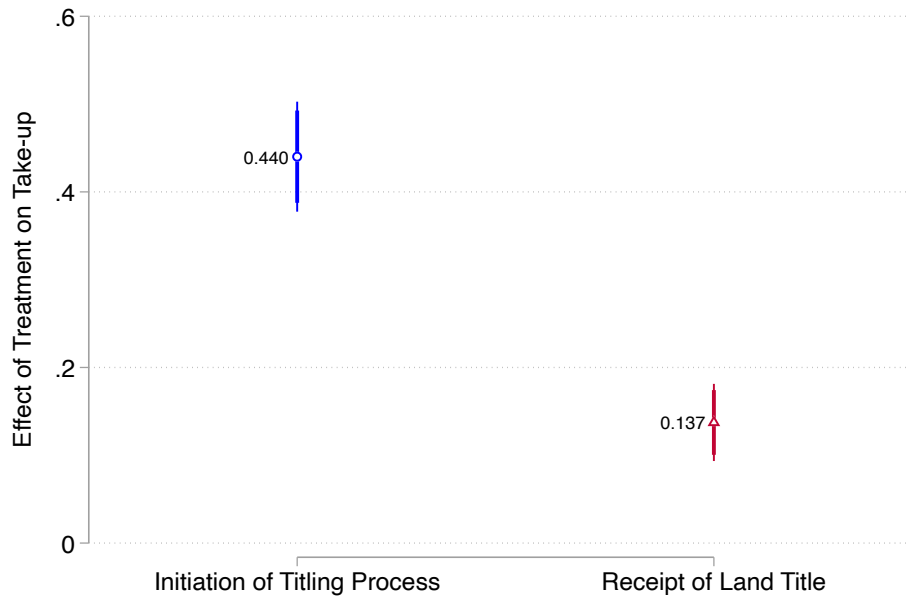
6.1 First Stage: Effects of the Titling Program on Land Formalization

We first study the effect of assignment to the land titling program on the probability that citizens formalize their property. As noted, we examine whether citizens initiated the titling process and whether they ultimately received a title in the time window considered. We estimate the following equation:

$$Y_i = \beta_0 + \beta_1 Program_i + u_i \quad (1)$$

where Y_i denotes our two measures of take-up, i denotes households and $Program_i$ is an indicator denoting citizens randomly assigned to the program. We report robust standard errors throughout, since randomization was conducted at the household level.

Figure 2: Treatment effects of the land titling program on initiation of the titling process and receipt of land titles



Notes: ITT estimates from Equation 1. Thicker and thinner lines are 90 and 95 percent confidence intervals, respectively. $N = 483$. See SI Table C.1 for more details.

Assignment to the land titling program caused a 44 pp increase in citizens' efforts to initiate the titling process (Figure 2). Citizens assigned to the program were 13.7 pp more likely to obtain a title during the time period considered (from July 2017 to July 2019). Very few individuals in the control group tried to open a file in the titling office.²³ By contrast, when selected by the door-to-door titling program, nearly half of citizens initiated the titling process by scheduling a visit from government land surveyors. This stark difference suggests that the monetary and transaction costs of obtaining a title were binding constraints on land formalization before the program.²⁴

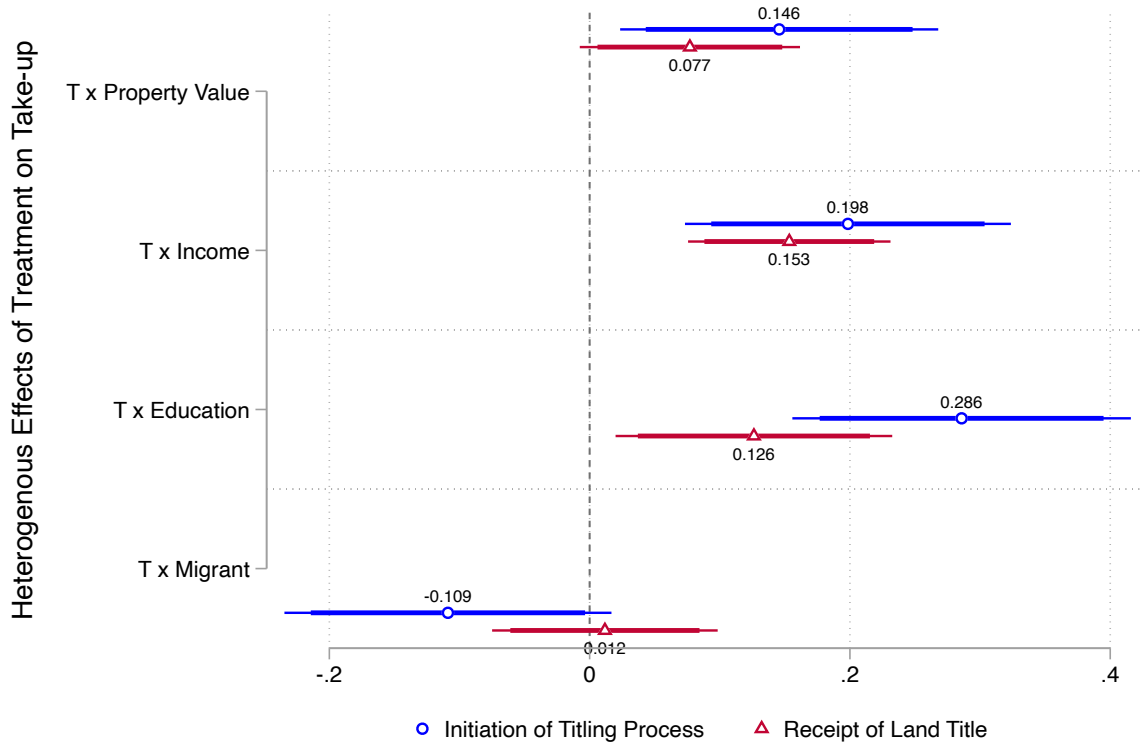
²³Two individuals in the control group initiated the titling process (0.87 percent), and one individual in the control group obtained a land title during the study period (0.44 percent). Thus, the treatment effects represent, respectively, a 5,000 percent and a 3,100 percent increase.

²⁴SI Figure F.1 shows the distribution of titles delivered by the program.

Next, we study whether the demand for and adoption of formal land titles depends on socioeconomic factors. The estimates in Figure 3 confirm that socioeconomic factors—income, education and property value—have a large and positive effect on the likelihood of formalization, consistent with economic models of land property rights (Alston, Libecap and Schneider, 1996; Miceli, Sirmans and Kieyah, 2001).²⁵ Notably, for every significant coefficient in this figure—property value, income, and education—there is a gap between demand and actual completion of the formalization process, which likely reflects the bureaucratic obstacles mentioned in Section 4. The analysis also reveals that migrants are marginally less likely to demand a land title, possibly because they participate less in—and are thus less dependent on—social institutions.

²⁵Estimates of property values come from machine learning and computer vision algorithms based on a training set of nearly randomly selected 2,000 properties evaluated by the top expert in the cadastral office of the provincial government (Bergeron et al., 2020).

Figure 3: Heterogeneous treatment effects of the land titling program on initiation of the titling process and receipt of land titles, by socioeconomic characteristics



Notes: OLS estimates from Equation 2. Point estimates represent the interaction term between assignment to the program and dichotomous measures of respondents' and households' characteristics. Thicker and thinner lines are 90 and 95 percent confidence intervals, respectively. See SI Table C.2 for more details.

6.2 Heterogeneous Adoption of Titling: Land Formalization Depends on Social Institutions

In this section, we test the first empirical implication of our argument by studying what type of citizens were more responsive to an exogenous offer to formalize their property. We estimate heterogeneous effects of treatment assignment on our two measures of take-up—initiation and completion of the land formalization process—using the following equation:

$$Y_i = \beta_0 + \beta_1 \text{Program}_i + (\text{Program}_i \times \mathbf{Z}_i) \beta_2 + \mathbf{Z}_i \beta_3 + u_i \quad (2)$$

where Y_i denotes our two measures of take-up, Z_i is a vector of individual or household characteristics. All specifications interactively control for income, gender, education, and predicted property value.²⁶

6.2.1 Horizontal Social Institutions

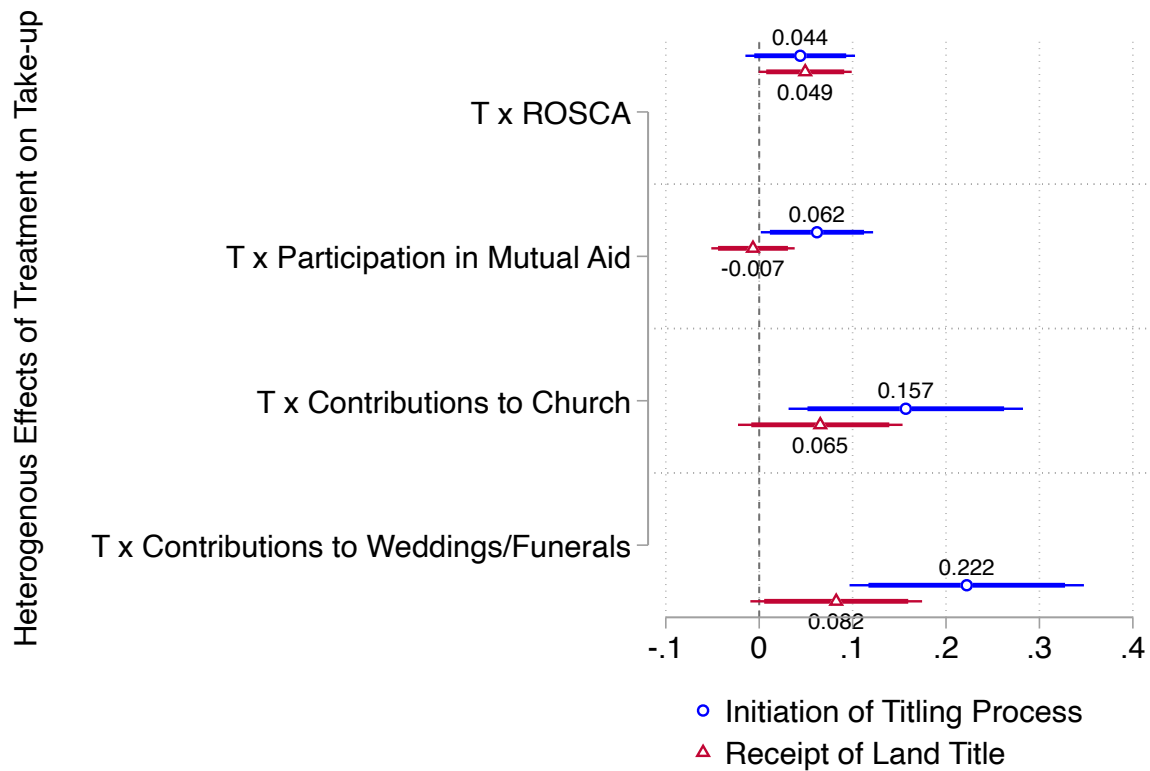
We now study how formalization is affected by citizens' participation in horizontal social institutions. We consider four of the most important such institutions in Kananga—participation in ROSCAs, participation in mutual aid societies, and contributions to churches, as well as to weddings and funerals. Participation in all but one of these institutions is highly predictive of demand for titles—but none predict completion of the formalization process (Figure 4). This is consistent with the idea that these institutions entail a cost for citizens, such that more participation in these institution induces a higher demand for formalization.

The fact that participation in social institutions are predictive of demand but not of completion does not support a social capital interpretation, where such networks would help citizens to navigate the titling process and also to obtain a title. We similarly rule out an information channel whereby social networks help diffuse information about the program, since participation in social institutions predicts interest in the titling campaign before its onset (SI Section E.1).²⁷

²⁶Since the elements of Z_i are not randomly assigned, each characteristic is interacted with the treatment indicator. Property values were estimated using machine learning and computer vision algorithms. See [Bergeron et al. \(2020\)](#). Education and predicted property valued are balanced in the analysis sample but show imbalance in the initially eligible sample. See SI Section H for details.

²⁷We also explore the role of social preferences, since these could be predictive both of institutional participation and the demand for formalization, but coefficients are noisy (SI Section E.2).

Figure 4: Heterogeneous effects of treatment assignment on initiation of the titling process and receipt of land titles, by participation in horizontal social institutions.



Notes: OLS estimates from Equation 2. Point estimates are the interaction term between assignment to the program and dichotomous measures of respondents' participation in ROSCAs, mutual aid societies, contributions to church, and contributions to weddings and funerals. All specifications are estimated using OLS and interactively control for income, gender, and education. Thicker and thinner lines are 90 and 95 percent confidence intervals, respectively. See SI Table C.3 for more details.

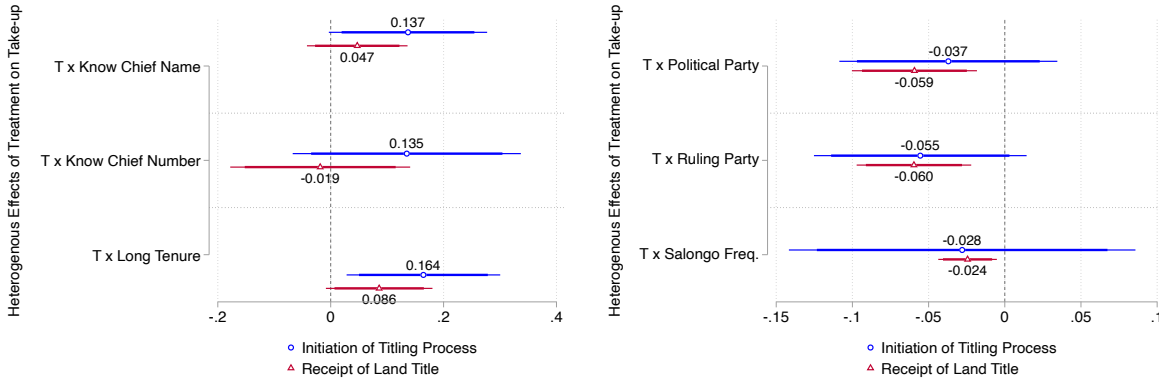
6.2.2 Vertical Social Institutions

Connections to chiefs. We now study the heterogeneity of the treatment effect along measures of citizens' connections with chiefs by exactly matching each respondent to the person they report to be their chief based on unique identifiers. Connections to chiefs are generally predictive of demand for titles, but not of land formalization (Figure 5, left panel). Treated citizens who know their chief's name are more likely to initiate the titling process. The coefficient on knowing a chief's phone number is positive but noisy. The same is true for citizens whose chief

has enjoyed long tenure in the neighborhood—more than ten years—which makes them well-known to citizens. Notably, trust in chiefs does not predict demand for or acquisition of land titles (SI Table E.3). Thus, in contrast to the substitution view, which predicts that citizens-chief connections would lead to lower demand for titles, these results lend support to the idea that citizens may view chiefs as brokers who may be well-positioned to deliver benefits (Baldwin, 2013).

Chiefs’ political connections and power. Chiefs’ political connections and power may also affect the demand and success of formalization. Notably, none of these characteristics are predictive of demand, but they affect whether citizens in fact obtained a land title (Figure 5, right panel). Chiefs who are party members decrease the likelihood of citizens obtaining a land title—the effect is more pronounced for those affiliated with the ruling party, the PPRD. Moreover, citizens whose chiefs more active in the organization of *salongo*—a proxy for chiefs’ social power—are less likely to succeed in obtaining a land title. While citizens may think that chiefs can help them obtain a title, the fact that politically connected and more powerful chiefs stifle titling suggests a divergence between citizens’ and chiefs’ incentives, consistent with the idea that chiefs may be offering protection in the context of clientelistic relationships (Acemoglu, Reed and Robinson, 2014; Janvry et al., 2014; Peyton, 2020).

Figure 5: Heterogeneous effects of treatment assignment on initiation of the titling process and receipt of land titles, by citizens’ connections to chiefs and chiefs’ political connections and power.



Notes: OLS estimates from Equation 2. Point estimates are the interaction term between assignment to the program and dichotomous measures of citizens’ or chiefs’ characteristics. All specifications are estimated using OLS and interactively control for income, gender, and education. Thicker and thinner lines are 90 and 95 percent confidence intervals, respectively. See SI Table C.4 and Table C.5 for more details.

6.3 Reduced-Form Effects of the Titling Program on Social Institutions

This section tests the second implication of our theory: that the titling program will crowd-out—rather than reinforce—participation in social institution. We present reduced-form effects of the program on participation in horizontal and vertical social institutions using Equation 1 (Y_i denotes outcomes of the titling program). We measure outcomes at two points in time. The first endline survey (round 1) was conducted from May 2019 to August 2019, immediately after the delivery of most land titles. A second endline survey (round 2) was conducted from December 2019 to February 2020, an average of 6-8 months after delivery of titles.

The estimates in Figure 6 show that the program had a negative impact on participation in and evaluation of horizontal and vertical social institutions—the latter becomes marginally significant in round 2. The two top coefficients show the reduced-form effect of the program on an index comprising participation in mutual aid societies, ROSCAs, contribution to churches, and contributions to weddings and funerals. The bottom coefficient corresponds to an index of

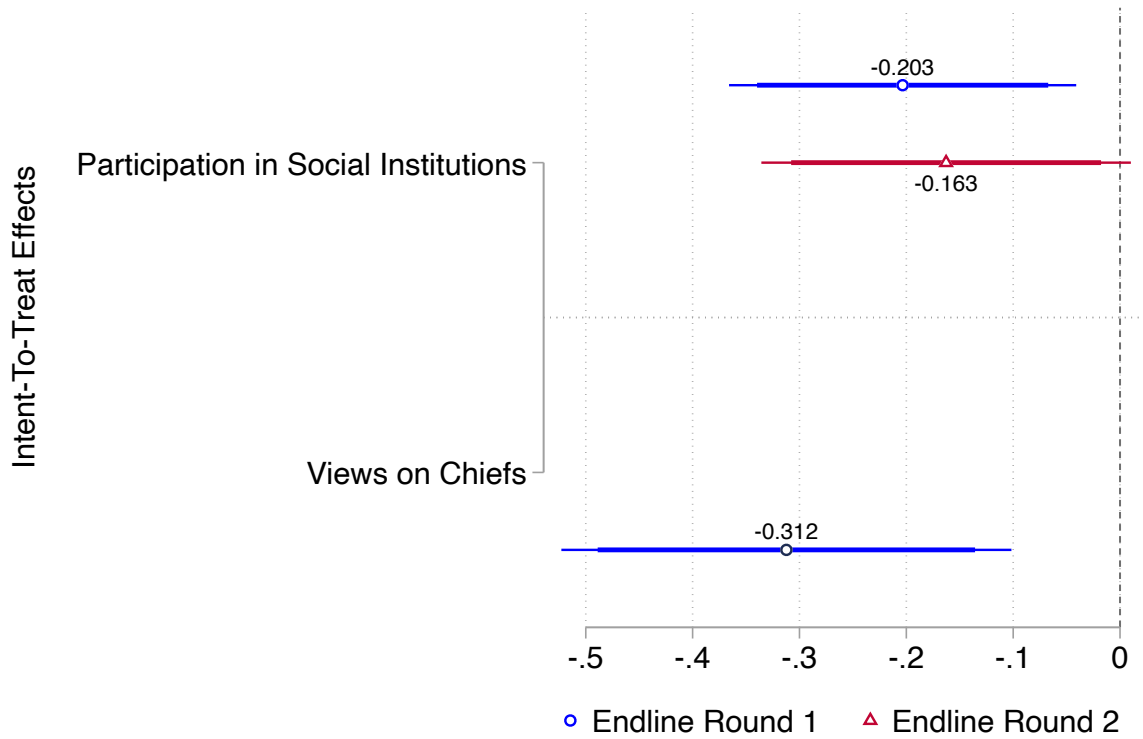
views on chiefs, which were only measured during round 1, and participation in *salongo*.²⁸ As can be seen in Figure 7 (left panel), the crowding-out effects are concentrated in participation in mutual aid, ROSCAs, and contributions to church. For example, the program caused roughly a 6 pp decrease in the probability that an individual takes part in a mutual aid society—a 24 percent decrease. Treated citizens also view chiefs as less responsive, less important, and worse overall—they also participate less in *salongo* (Figure 7, right panel). Interestingly, these sizable effects are manifested despite the relatively short the time elapsed between title delivery and outcome measurement.²⁹ Notably, the program did not alter citizens’ evaluation of provincial government, although they deem it less responsive, and made citizens’ more willing to appear legible to the state (SI Table D.1).

These crowding-out results are, to our knowledge, the first evidence of social effects of land titling: formalization erodes participation in local social institutions. By contrast, the program shows no effects on civic participation, engagement with formal or informal authorities, or beliefs (SI Table D.2). Instead, it affected participation in those institutions that are thought to provide informal insurance and protection. Overall, these results challenge the idea that land titling and formal land titling and social institutions are complements. Instead, they suggest that citizens prefer formalization over social institutions, consistent with the idea that treated citizens exit the informal equilibrium.

²⁸SI Tables C.7 and C.8 show treatment effects for each index component.

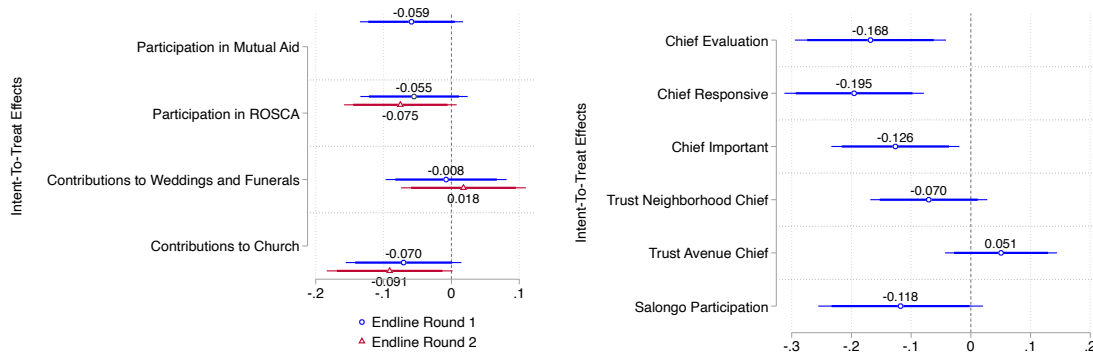
²⁹This time frame is shorter than the one used in most studies of land titling. Indeed, investments are unlikely to materialize in a short time period. For example, Field (2005) measures investment outcomes one to four years after a titling intervention in Peru, whereas Galiani and Schargrodsky (2010) measure human and physical capital investment between nine and eighteen years after the natural experiment they study. Table D.2 shows the effect of the program on additional pre-registered social outcomes. The program had no effect on different forms of civic and political participation, did not make citizens shift from informal to formal mechanisms of conflict resolution, or increase the likelihood that citizens obtain other formal documents.

Figure 6: Reduced-form effects of the program on indexes of participation in social institutions and views of chiefs



Notes: ITT estimates from Equation 1. The two top rows display estimates of a regression of a standardized index of participation in social institutions. The bottom row displays estimates of a regression of a standardized index of citizens' views of chiefs and citizens' participation in and evaluation of *salongo*. All specifications are estimated using OLS and control for income, gender, and education, as well as for baseline measures of the outcome when available. Thicker and thinner lines are 90 and 95 percent confidence intervals, respectively. Views on chiefs were measured at endline 1 only. See SI Table C.6 for more details.

Figure 7: Reduced-form effects of the program on participation in social institutions and views of chiefs



Notes: ITT estimates from Equation 1. Point estimates are standardized coefficients. All specifications are estimated using OLS and interactively control for income, gender, and education. Thicker and thinner lines are 90 and 95 percent confidence intervals, respectively. Views on chiefs were measured at endline 1 only. See SI Table C.7 and Table C.8 for more details.

7 Conclusion

Studying a randomized land titling program in a large Congolese city, this paper argued that social institutions are an imperfect substitute for formal land rights in urban Africa. Citizens who participate more in horizontal social institutions and who are more closely connected to city chiefs were more, not less, likely to demand formalization. We also showed evidence that more powerful and politically connected chiefs can stifle land titling. Our results reveal a distinctive logic of land formalization in urban areas, where the costs of social extraction exceed the benefits provided by social institutions. In doing so, they complement and expand on recent work on titling in rural areas (Honig, 2022). Thus, when urban dwellers are offered the opportunity to formalize their land, they seek to exit the informal equilibrium. Indeed, we document negative causal effects of the land titling program on participation in social institutions: treated citizens engage less with horizontal social insurance and view their chiefs more negatively.

As urbanization proceeds at a sweeping pace in sub-Saharan Africa, cities face formalization

bottlenecks. From a policy perspective, the marked increase in take-up induced by the program indicates that carefully designed reforms aimed at simplifying the land titling process and reducing bureaucratic discretion can expand formalization significantly. Our findings suggest that the costly nature of social institutions in urban areas may be an asset for land formalization. Policymakers could therefore benefit from factoring this heterogeneity when designing land formalization programs.

Lastly, while we study a formalization program in a specific city, land titling remains a significant challenge in Africa and elsewhere, and the social institutions we study are present across the developing world (Bouman, 1983; Baldwin and Holzinger, 2019; Lust, 2022). Therefore, our findings add to an expanding agenda on how formalization interventions interact with social institutions, thereby conceptualizing state-building as a relational process (Migdal, 1988; Wang, 2021).

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