

Property rights and tax compliance

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Executive Summary

This report evaluates whether strengthening property rights can reshape the relationship between citizens and the state. Through a randomised controlled trial conducted in Quelimane, Mozambique, we test the impact of formal land titles (TOMBOS) on a range of household behaviours, attitudes, and outcomes—including tax compliance, political engagement, and household economics. The experiment included 792 households across two largely informal urban neighbourhoods, delivering legal property documentation to a randomly selected treatment group.

Politically, the intervention increased satisfaction with the local RENAMO-led municipality, boosted voter registration, and shifted voting away from the national ruling party (FRELIMO). These findings support a central tenet of social contract theory: that state legitimacy and cooperation are shaped by the visible delivery of rights. Treated households also contributed significantly more to a simulated public goods game, reflecting enhanced prosocial behaviour and willingness to support collective action.

Turning to economic effects, treated households were significantly less likely to receive remittances and more likely to send them, suggesting a shift from perceived dependence to economic contribution. They also reallocated labour towards agriculture and away from self-employment, with corresponding increases in investments in education and microenterprise. However, we find no increase in income or access to credit. Importantly, we have not yet observed significant effects on savings or investment—these may take more time to materialize, as such outcomes often evolve gradually after tenure security is established. Subjective well-being improved, with significant reductions in material deprivation and depressive symptoms.

Finally, legalisation uptake was high when administrative frictions were removed, revealing strong latent demand. These results underscore the value of accessible, low-cost titling programmes as a pathway to deepen citizen-state reciprocity in fragile urban contexts.

Research Questions and Policy Relevance

At the heart of this study lies a fundamental question: *Can strengthening property rights reshape the relationship between citizens and the state?* This question draws directly from social contract theory, which argues that state legitimacy and compliance rest on the perception of reciprocity—citizens contribute to the state (e.g., through taxes or civic duties) when the state delivers value in return (e.g., services, protection, or rights).

This project evaluates that theory in practice by testing whether providing formal property rights—in the form of municipal land titles (which we refer to by their acronym, *TOMBOS*)—to households in Quelimane, Mozambique, affects their attitudes and behaviours toward the state. The intervention provides an ideal context to test the causal link between state action (legalisation) and citizen response (tax compliance, civic engagement, political behaviour).

We ask:

1. Does the receipt of a legal land title increase citizens' willingness to pay property taxes and comply with local governance structures?
2. Does formalisation influence political expression, voter turnout, and trust in local or national government?
3. Do property rights catalyse investment in housing, education, and long-term planning at the household level?

Quelimane offers a compelling setting for this inquiry. As the capital of Zambezia Province, it has experienced decades of rapid urban growth, driven by rural-to-urban migration. With a population now exceeding 500,000 (World Population Review, 2023), the city is marked by widespread informal occupation, with many families residing on land they have inhabited for generations—without legal documentation (DPU Quelimane, 2023).

In this environment, property rights are a visible symbol of state presence. They carry both practical benefits—protection from eviction, possibly access to credit, and asset transferability—and symbolic meaning as a gesture of state recognition and inclusion.

According to social contract theory, this kind of tangible state action can enhance citizens' sense of legitimacy, fairness, and obligation, leading to greater compliance and cooperation.

This theory has far-reaching implications in low-capacity settings where service delivery is weak and the state's legitimacy is often contested. In Quelimane, where tax compliance is low and service provision limited, we hypothesise that receiving a title will trigger a psychological and behavioural shift: “the state gave me something concrete; now I am part of it, and I may respond accordingly.”

The study therefore tests one of the most fundamental propositions in political economy: *Can the state earn trust and compliance by first delivering rights?*

To answer this, we implement a randomised controlled trial (RCT) across 792 households, offering legalisation to a randomly selected group and measuring a broad range of outcomes—from tax attitudes to political behaviour, from investment decisions to perceptions of fairness.

This project contributes directly to two IGC research priorities:

- **State Effectiveness:** By exploring how legal inclusion shapes reciprocal behaviour and institutional trust;
- **Cities:** By evaluating how land governance reform affects urban fiscal capacity and long-term resilience.

Beyond tax revenues or housing upgrades, this study speaks to the deeper institutional question of how rights, recognition, and responsibilities interact in fragile states. Can a title create not just homeowners, but citizens?

Literature Review

A growing body of research in development economics and political economy has examined how property rights shape citizen behaviour and state capacity. In many developing countries, formalising land tenure is seen as a key institutional reform, with the potential to bring a

range of benefits, from encouraging investment and improving access to credit, to reducing land disputes (Besley & Ghatak, 2010; De Soto, 2000).

Evidence from various field studies suggests that secure property rights can influence how households make decisions about their assets. Research conducted across Latin America, Africa, and Asia shows that when people hold formal titles to their land, the risk of losing it to expropriation decreases. As a result, households are more likely to invest in their homes and land, and property values tend to rise (Field, 2007; Galiani & Schargrodsky, 2010). In urban Mozambique, where most households live under informal tenure arrangements and legal insecurity is common, formalisation could encourage people to improve their housing conditions and living standards.

But the effects of property rights go beyond the economic sphere. They can also have social and political consequences. This project is grounded in social contract theory (Levi, 1988; Tilly, 1992), which argues that state authority and citizen compliance are built on a reciprocal relationship: citizens are more likely to follow rules and pay taxes when they feel the state is providing rights and public goods in return. In this sense, property rights are more than a private asset—they can signal recognition by the state, fostering a sense of belonging and responsibility.

In recent years, researchers have started to look more closely at the link between formal property rights and civic behaviour. For example, a study in Peru found that when households received formal titles, they were more likely to get involved in local politics (Di Tella et al., 2007). Similar patterns have been found in parts of Africa, where secure tenure has been associated with higher levels of political engagement and demands for accountability (Lawry et al., 2017). Still, the causal evidence is mixed, especially in fragile urban contexts where state capacity is limited.

At the same time, research on tax compliance in developing countries has highlighted a persistent gap between what citizens are expected to pay and what they actually pay (Pomeranz, 2015; Fjeldstad & Semboja, 2001). This gap is often linked to weak enforcement, lack of trust in government, and perceptions that public spending is unfair. Recent studies suggest that when the state is seen as more legitimate—whether through better services, clearer information, or formal recognition of rights—citizens may be more willing to comply (Berens et al., 2023; Paler, 2013).

This project adds to this growing literature by testing whether formal property rights can influence both fiscal behaviour and political engagement in a low-income, urban African setting. Unlike many previous studies, it brings together different sources of data: administrative records, household surveys, behavioural experiments (such as a public goods game), and observable indicators of political participation like ink-stained fingers after voting and the display of political stickers. By doing so, it addresses an important gap in the literature: the lack of causal evidence on whether recognising property rights can help reshape the relationship between citizens and the state in places marked by informality, weak institutions, and contested political authority.

Methodology

We implement a randomised controlled trial (RCT) involving 792 households, measuring outcomes through surveys, behavioural observation, and administrative follow-up.

Eligible households were randomly assigned to either a treatment group, which received formal property documentation (*despacho*), or a control group, which received no intervention. The primary estimation strategy uses the following intent-to-treat (ITT) specification:

$$Y_{\{iq\}} = \alpha + \beta \cdot Treatment_{\{iq\}} + \gamma_q + \varepsilon_{\{iq\}}$$

Where:

- $Y_{\{iq\}}$ denotes the outcome of interest for household i in stratum q
- $Treatment_{\{iq\}}$ is a binary indicator equal to 1 if household i was randomly assigned to receive the intervention, and 0 otherwise
- γ_q represents stratum fixed effects, accounting for neighbourhood-level variation and preserving the integrity of the blocked randomisation
- $\varepsilon_{\{iq\}}$ is the error term

Estimates are produced using the `reghdfe` command in Stata, with robust standard errors. Strata consist of groups of four geographically and socioeconomically similar households. They were constructed using a housing quality index—including variables such as roofing material and sanitation—following guidance from McKenzie (2021). This approach improves balance across treatment arms and reduces residual variance, increasing statistical power.

The baseline survey was conducted across two informal neighbourhoods in Quelimane—Bazar and Murropue—which were identified in collaboration with the Department of Urban Planning (DPU) as areas with high concentrations of informal tenure and strong potential for legalisation. Among the 1,152 households initially mapped, 792 met the eligibility criteria: they lacked legal title, were not located in areas that were ineligible for regularisation, and had dwellings deemed stable by DPU officials. The baseline survey collected rich information on household demographics, land tenure, tax knowledge, civic attitudes, and political preferences. Approximately 75 percent of respondents reported being literate, 45 percent were women, and the average age was 37. Most respondents were born in Quelimane or elsewhere in Zambezia Province, and 26 percent identified as Muslim. Only 18 percent of respondents reported having access to running water in their homes, highlighting the low baseline level of municipal service provision. In terms of tenure, 77 percent of respondents built their homes themselves. Thirty-five percent had no documentation of ownership, while the majority held informal declarations of purchase, which are not legally binding under Mozambican law. Only 20 percent had ever heard of the TOMBO—the official land title issued by the municipality. Nearly all respondents considered obtaining a title to be very important. The most commonly cited motivation was using the title as collateral for credit, followed by securing inheritance and ensuring protection from eviction.

Civic and political attitudes revealed a similar pattern of weak institutional connection. Only 17 percent of respondents had paid property tax in the past year, although 46 percent said they would be willing to pay if visited by a tax inspector. Over 90 percent reported that the city had never collected garbage, repaired roads, or improved drainage on their street. Politically, 58 percent voted for RENAMO in the most recent municipal election, and 52 percent in the last presidential election, indicating widespread opposition support in the study area.

The core of our intervention consisted of providing randomly selected households with a *despacho*—an official document signed by the Director of Urban Planning, the Urban Planning Councilor, and the Mayor of Quelimane. The despacho affirmed the legal identity of the landholder, certified the plot's boundaries and legal eligibility for regularisation, and authorised the bearer to apply for a TOMBO at the DPU. This was a high-level intervention in the legal status of property, achieved through close collaboration with the municipal authorities. A total of 397 households were assigned to the treatment group, of which 375

successfully received their despacho through hand delivery in late 2023, shortly after the municipal elections. The remaining eligible households formed the control group and received no such support during the study period.

Following the intervention, many treated households did not proceed to convert their despachos into TOMBOs. A rapid phone survey revealed that 58.6 percent of non-applicants cited the high opportunity cost of time, particularly during the harvest season, as their primary constraint. An additional 20 percent stated that they lacked the financial means of transport to travel to the DPU. In response, the research team suspended the planned midline survey and reallocated those resources to direct facilitation. Working alongside neighbourhood chiefs and DPU staff, a field team visited households, collected the necessary documents, and submitted TOMBO applications on behalf of residents, with their informed consent.

By March 2024, the DPU had processed 310 TOMBO applications from treated households. Of these, 285 were approved and signed by the Mayor, the DPU Director, and the Councilor. A total of 273 TOMBOs were physically delivered to households. Once administrative and logistical barriers were removed, treated households responded positively, showing that informal tenure was more a matter of constrained access than of disinterest or resistance.

Endline Survey and Election-Period Outcomes

Timing and Strategic Design

The endline survey was conducted immediately after the 2024 national elections in Mozambique, strategically timed to isolate the effects of the intervention on political participation, tax morale, and civic attitudes. By ensuring that the intervention was fully implemented prior to the election—including the distribution of *despachos* and facilitation of TOMBO applications—we were able to observe behavioural outcomes in a politically salient moment, free from confounding pre-election dynamics or anticipation effects.

This sequencing is central to the study's objectives. One of the core hypotheses, grounded in social contract theory, is that formalising property rights may reshape how citizens relate to the state—particularly in contexts where trust in institutions is low and tax compliance is

fragile. The post-election timing allows us to test whether newly legalised households responded with greater political participation, expression of civic alignment, or enhanced cooperation with public institutions.

Of the original 792 households enrolled in the study, 770 were successfully re-surveyed at endline, yielding a follow-up rate of 97.2 percent. A regression of endline response status on treatment assignment reveals a slightly higher attrition rate in the treatment group—approximately 3 percentage points lower than the control group ($p = 0.009$). While this difference is statistically significant, it is substantively small. To address any potential biases introduced by this differential attrition, we plan to apply a series of robustness checks, including inverse probability weighting, covariate adjustment, and, where appropriate, Lee bounds.

Measurement Strategy

To capture a broad set of behavioural and attitudinal outcomes related to property rights, political engagement, and fiscal cooperation, we implemented a four-pronged endline measurement strategy, combining direct observation, survey instruments, and behavioural games.

Ink-Stained Finger Check (Objective Voting Measure):

Enumerators visited households in the days following the national election to visually inspect respondents' fingers for indelible ink, a standard marker used by Mozambican electoral authorities to indicate that an individual has voted. This method provided a non-self-reported, observable measure of electoral participation and allowed for accurate capture of turnout behaviour, avoiding social desirability bias.

Sticker Observation (Political Expression):

Prior to the election, each respondent was given a sticker featuring the image of Manuel de Araújo, the current mayor of Quelimane. Enumerators returned on election day to record whether the sticker had been visibly displayed on the household's exterior. This subtle behavioural measure was designed to capture political alignment or support without requiring individuals to report their political preferences directly.

Structured Endline Survey (Attitudes, Behaviour, and Knowledge)

The digitally administered endline survey was designed to mirror the baseline instrument while integrating key post-election modules and capturing behavioural changes relevant to the intervention. The final structure included:

- Property regularisation outcomes: including receipt of the *despacho*, TOMBO application status, and both intended and actual use of the title;
- Perceptions of state institutions: measuring trust and satisfaction with municipal versus national government, perceived fairness in service delivery, and the credibility of local authorities;
- Fiscal awareness and attitudes: assessing knowledge of property tax obligations, willingness to comply with municipal tax rules, and perceived access to credit following legalisation;
- Service delivery evaluation: capturing household perceptions of garbage collection, road and drainage maintenance, and overall access to urban services;
- Political engagement and identity: including voting history and behaviour in the 2024 national elections, symbolic expressions of political affiliation (e.g. possession of party-related items), and motivation for party support or opposition.

This comprehensive structure allowed for direct comparison with baseline responses while also capturing the subtle political, fiscal, and institutional shifts associated with property formalisation during a politically salient period.

Public Goods Game (Behavioural Measure of Fiscal Cooperation):

To measure respondents' willingness to contribute to collective resources, we conducted a Public goods game framed around local taxation. Each respondent was given 100 Meticais and asked how much they wished to contribute to a public pot. Contributions were doubled by the research team. The total pot—aggregated across 10 randomly selected participants—was then evenly redistributed to all group members, regardless of individual contribution. This simple but powerful design mirrored the structure of Public goods and redistribution, offering insights into cooperation, trust, and reciprocity in a simulated tax environment. Framing the game explicitly in terms of municipal services allowed us to assess whether access to formal property rights influenced pro-social behaviour and fiscal norms.

Together, these four measurement strategies provide a robust and multi-dimensional dataset, allowing us to rigorously test the core theoretical proposition of the project: that recognition by the state—through the formalisation of property rights—can reshape citizens’ political and fiscal behaviour.

Balance Table

Table 1: Balance Table: Baseline Covariates by Treatment Status

Variable	Control Mean	Treat. Mean	Control SD	Treat. SD	Std. Diff	p-value
Completed Secondary	0.400	0.358	0.491	0.480	-0.086	0.220
Voted RENAMO 2018	0.571	0.602	0.496	0.490	0.063	0.422
Female	0.436	0.437	0.497	0.497	0.002	0.979
Literate	0.759	0.748	0.428	0.435	-0.025	0.710
Age	37.28	37.54	13.29	14.52	0.019	0.797
Weekly Income (MZN)	7494	6571	10265.6	9422.5	-0.093	0.222
Residential	0.924	0.945	0.265	0.229	0.084	0.244
Born in Quelimane	0.615	0.635	0.487	0.482	0.042	0.570

Notes: Standardized differences are computed as the difference in means divided by the pooled SD. Differences < 0.1 are generally considered negligible.

Table 1 presents the baseline characteristics of the treatment and control groups. Across all observed covariates—including education (completed secondary school), prior voting for RENAMO, gender, literacy, age, weekly income, residential status, and birthplace—there are no statistically significant differences between the groups at baseline.

All standardized differences are well below the conventional threshold of 0.1 in absolute value, and none approach statistical significance (all p-values exceed 0.2). The largest standardized difference, for weekly income (−0.093), remains negligible, and all other variables are balanced to a similar or greater degree. This pattern confirms that the randomization procedure was effective in producing comparable groups.

In summary, the treatment and control groups are highly similar across all measured dimensions prior to the intervention. This ensures that any observed post-intervention differences in outcomes can be credibly attributed to the effects of the property rights intervention, rather than to pre-existing differences between groups.

RESULTS

Overview of Effects

This section summarizes the main effects of the property rights intervention across legal formalization, political attitudes, civic behavior, economic role, investment, and subjective well-being. The intervention—delivered at no cost and with direct facilitation to remove administrative and logistical barriers—had a range of substantial and policy-relevant impacts. First and most prominently, the intervention dramatically increased the actual uptake of formal land rights: nearly all households expressed a desire for legal tenure, but only those in the treatment group, who faced no bureaucratic or financial hurdles, succeeded in obtaining a TOMBO at much higher rates.

Politically, the intervention fostered greater satisfaction and support for local government (RENAMO), shifting both symbolic and electoral allegiance away from the national ruling party (FRELIMO) and toward the municipality responsible for delivering property rights. Treated households realigned their voting behavior and reduced visible support for FRELIMO, confirming that credit accrues specifically to those seen as delivering tangible benefits.

In the civic domain, the program strengthened pro-social norms and willingness to contribute to collective goods, as evidenced by higher contributions in the Public goods game. However, it did not significantly change observable acts of political participation, such as voting or public endorsement of politicians.

Economically, the intervention altered household roles and resource flows: treated households became less likely to receive remittances, shifted labor toward agriculture and away from precarious self-employment, and reported large increases in asset value, but not in income or access to credit.

Finally, property rights formalization improved subjective well-being: treated households experienced lower material deprivation and fewer depressive symptoms, even as immediate financial gains remained limited.

Formalization Behavior

The intervention's most immediate and salient effect was observed in the uptake of formal land tenure. As indicated in Table 2, which includes respondents who knew what a TOMBO was, the vast majority of respondents—both in the treatment and control groups—expressed a

desire to obtain a TOMBO, with the control mean at 0.901. The intervention had no statistically significant effect on this measure of latent demand (treatment effect = 0.037; SE = 0.047), underscoring that the prevailing constraint was not a lack of interest in formalization.

Table 2: Tombo Registration Outcomes and Treatment Effect

	Wants TOMBO	Attempted to Get TOMBO	Successfully Got TOMBO
Treatment	0.037 (0.047)	0.130 (0.083)	0.233** (0.072)
Control Mean	0.901	0.377	0.657
Observations	375	315	352

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

By contrast, the probability of successfully obtaining a TOMBO increased by 23.3 percentage points among treated households (treatment effect = 0.233; SE = 0.072; $p < 0.01$). This represents a substantial and statistically significant impact, directly attributable to the intervention. The effect on attempting to obtain a TOMBO, while positive (0.130), did not reach statistical significance (SE = 0.083), likely reflecting remaining logistical and informational barriers.

It is important to emphasize the nature of the intervention: property rights were delivered at no cost and with direct facilitation, eliminating bureaucratic and financial obstacles that typically impede uptake. This design feature makes it possible to attribute the observed increase in formalization to the removal of institutional and practical barriers, rather than to changes in demand or underlying preferences.

Political Alignment and Institutional Trust

One of the most politically consequential dimensions of this study is whether formal property rights influence how citizens perceive and engage with the state—both locally and nationally. The results suggest that formalisation does not simply increase civic participation in a general sense, but rather reshapes political allegiance in highly localised and targeted ways.

Table 3: Political Attitudes and Electoral Behavior Outcomes (Panel A)

	Country Direction Positive	Satisfied with Quelimane	Satisfied with Gov. of Mozambique	Registered to Vote 2024
Treatment	0.0400 (0.0231)	0.162*** (0.0314)	-0.0117 (0.0334)	0.0429* (0.0169)
Control Mean	0.862	0.653	0.303	0.921
Observations	769	769	770	770

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

We begin by examining attitudes toward government performance, in Table 3. Treated households were 16.2 percentage points more likely to report satisfaction with the Municipality of Quelimane, a statistically significant and sizable effect. In contrast, there was no measurable change in satisfaction with the national government. This divergence is politically salient: the Municipality of Quelimane is governed by RENAMO, the national opposition party, while the central government is led by FRELIMO, the long-standing ruling party. The results suggest that citizens specifically credit local actors for the delivery of tangible public goods—in this case, property formalisation—rather than abstracting those benefits to the state as a whole.

This localized trust also translates into greater political participation. Treated households were significantly more likely to report being registered to vote in the 2024 election (+4.3pp, $p < 0.05$), and the intervention influenced voting behavior itself. Now looking into table 4. compared to control households, those in the treatment group were 8.1 percentage points less likely to vote for FRELIMO, and 19 percentage points more likely to vote for RENAMO. They were also less likely to vote for PODEMOS (−9.2pp), a smaller opposition party. These shifts suggest a clear partisan realignment in response to property rights delivery—one that favors the local provider of public goods and reduces alignment with the national ruling party.

Table 4: Political Attitudes and Electoral Behavior Outcomes (Panel B)

	Vote FRELIMO	Vote RENAMO	Vote PODEMOS
Treatment	-0.0808* (0.0313)	0.190*** (0.0381)	-0.0923* (0.0359)
Control Mean	0.259	0.417	0.305
Observations	681	681	681

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Interestingly, despite these strong partisan effects, the treatment had no significant impact on broader political optimism. Treated respondents were slightly more likely to say the country was heading in the right direction, but the difference was not statistically significant.

Taken together, these findings support a core proposition of social contract theory: when the state—or a visible arm of it—delivers concrete rights, citizens respond with trust, support, and cooperation. However, this reciprocity is not diffuse. It is directed specifically toward the actors seen as responsible for delivering value. In Quelimane, this means the opposition-led local government was rewarded at the polls, while the ruling party experienced a symbolic and electoral decline. These effects reveal how even modest state interventions, if visible and meaningful, can shape political behavior and shift allegiances—particularly in settings of contested authority.

Informal Civic Behavior and Cooperation

To assess whether property rights influence informal civic engagement and prosocial behavior, we examine a set of objective, non-self-reported outcomes that capture participation and cooperation beyond formal political acts.

Table 5: Objective Behavioral Outcomes and Public Goods Game

	Sticker	Ink Finger	Public Goods Game
Treatment	0.0032 (0.0231)	0.0274 (0.0211)	4.804** (1.656)
Control Mean	0.858	0.878	24.521
Observations	788	788	759

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The first two outcomes—displaying a political sticker of the Mayor and having an ink-stained finger after voting—show no statistically significant effect. Treated and control households were equally likely to publicly display political alignment and to vote in the national elections, as measured through direct observation. These null effects suggest that property formalisation did not substantially alter visible political participation or willingness to engage in the official electoral process in the short term.

In contrast, the intervention had a significant impact on cooperative behavior, as measured through a behavioral game. Treated households contributed MZN 4.80 more, on average, in the Public Goods Game (PGG), a statistically significant increase ($p < 0.01$). This game simulated the logic of taxation and redistribution by asking respondents to voluntarily contribute part of a private endowment to a collective pot, framed as supporting local public services. Contributions were doubled and evenly redistributed across group members.

This result provides compelling evidence that property rights increase willingness to engage in collective action, even when anonymity is preserved and individual contributions are not externally enforced. While sticker display and voting are observable acts that may involve reputational or partisan dynamics, contributing to a public good in a simulated tax environment reflects a more intrinsic shift in norms of cooperation and civic responsibility.

The divergence between formal political participation and behavioral cooperation aligns with the idea that tenure security may build latent civic trust and prosocial norms before these translate into overt political acts. It suggests that the TOMBO may function not only as a legal instrument but also as a social signal—strengthening the psychological contract between citizens and the local state.

Shifts in Economic Role and Resource Flows

Table 6: Remittance Outcomes and Treatment Effect

	Sent a Transfer	Received a Transfer	Net Sender
Treatment	-0.039 (0.034)	-0.058* (0.034)	0.131*** (0.043)
Control Mean	0.333	0.367	0.733
Observations	770	770	770

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In Table 6 we can examine whether the receipt of formal property rights influenced household economic positioning, both in terms of resource flows and income-generating activities.

The first set of results reveals a clear shift in remittance dynamics. While treated households were not significantly more likely to send remittances, they were 5.8 percentage points less likely to receive them and 13.1 percentage points more likely to send more money via remittances than they received. This pattern suggests a redefinition of economic identity: treated households may be perceived—by kin or community—as more stable or better off, potentially reducing inflows of support while increasing expectations of contribution.

Table 7: Work-related Outcomes and Treatment Effect

	Monthly Income (MZN)	Weekly Work Hours	Unemployed	Agriculture	Self-employed
Treatment	936.8 (1263.2)	91.25 (59.64)	-0.0153 (0.0095)	0.116*** (0.034)	-0.126*** (0.021)
Control Mean	7510	19.05	0.021	0.207	0.152
Observations	692	692	693	693	693

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Turning to the labor market, we observe structural shifts rather than income gains.

Households assigned to the treatment group were significantly more likely to report working

in agriculture (+11.6pp), and significantly less likely to be self-employed (−12.6pp). These effects point to a reallocation of labor from informal, possibly precarious self-employment toward land-based livelihoods. This supports the hypothesis that tenure security enables productive use of land and reduces the need for diversified survival strategies.

Take out loan amt

Table 8: Income, Wealth, and Financial Access Outcomes (Panel A)

	House Value	Income	Self Inc.
Treatment	470681.2* (203731.6)	-1586.9* (639.1)	-678.2 (691.0)
Control Mean	481,461	7,013	7,460
Observations	759	768	768

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9: Income, Wealth, and Financial Access Outcomes (Panel B)

	Bank Account	Has Loan	Savings (MZN)	Fin. Access	Occup. Risk	Credit Access	Plans Credit
Treatment	-0.0420 (0.0333)	-0.0909 (0.0654)	722.2 (622.6)	-0.113*** (0.0265)	0.0763** (0.0231)	-0.583*** (0.0777)	-0.0367* (0.0155)
Control Mean	0.385	0.213	3498	0.277	0.095	2.333	0.064
Observations	770	222	767	770	769	770	770

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Strikingly, these shifts do not translate into higher income. While treated households had slightly higher reported monthly job earnings, the effect was not statistically significant. In fact, total household income fell by MZN 1,586.9—a significant decline—despite a large increase in reported housing value (+MZN 470,681). This apparent paradox may reflect an intertemporal trade-off: households may have reallocated resources away from immediate consumption and earnings toward long-term investment and land consolidation.

Alternatively, it may reflect increased caution in self-reporting income due to fears of taxation following formalization.

Additional evidence supports this interpretation. Treated households were significantly less likely to report good financial access, less likely to believe that property rights increased their chances of accessing credit, and significantly less likely to plan to take out a loan. These effects may arise from a mismatch between the symbolic and practical utility of the TOMBO:

while the title enhances perceived security and household wealth, it does not automatically translate into collateralisable credit in a context where formal financial institutions are weak or absent. In fact, formalisation may increase perceived scrutiny, deterring financial risk-taking.

Together, these results suggest that property rights may not immediately increase economic output, but they do reshape household positioning and expectations—triggering behavioural shifts in resource allocation, labor supply, and financial behavior. The household is no longer only a recipient of support; it becomes a contributor, a landholder, and a visible node in the formal system.

Investment and Future Orientation (with cohabitant labor)

A key hypothesis of this study is that secure property rights would promote forward-looking behaviors by reducing uncertainty and enabling households to plan for the future. We find supporting evidence in several domains, particularly in productive investments and education.

Households that were treated were significantly more likely to invest in a microenterprise (+6.5 percentage points, $p < 0.05$) and in education (+7.8pp, $p < 0.05$), suggesting a clear shift in long-term planning. These results indicate that property rights do not merely signal ownership, but create conditions conducive to household-level development strategies. With legal security, households appear more willing to allocate resources to human capital accumulation and small-scale productive activity—investments whose returns are typically delayed and require stability to be viable.

Table 10: Investment Outcomes and Treatment Effect

	Agriculture	Business	Education	Health
Treatment	0.0441 (0.0313)	0.0652* (0.0328)	0.0776* (0.0348)	0.0247 (0.0343)
Control Mean	0.713	0.479	0.426	0.423
Observations	770	770	770	770

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Agricultural investment also increased (+4.4pp), though the effect was not statistically significant. This finding may reflect variation in access to cultivable land, seasonality, or differences in perceived returns to agricultural inputs. Similarly, no significant treatment effect was found for investment in health, which may depend more on immediate household shocks or external service availability than on long-term expectations.

Importantly, these patterns are echoed in labor outcomes for both respondents and their cohabitants. Among primary respondents, we observe a statistically significant shift away from self-employment (−12.6pp) and into agricultural work (+11.6pp), suggesting that land formalisation encourages households to engage in land-based production rather than informal urban hustle. These labor reallocations are not accompanied by significant increases in income, reinforcing the idea that tenure security facilitates structural change rather than immediate returns.

Table 11: Cohabitant Work and Education Outcomes and Treatment Effect

	Completed Secondary Education	Unemployed	Works in Agriculture	Works in Production
Treatment	0.0188 (0.0482)	-0.2559*** (0.0314)	0.1144*** (0.0203)	0.1342*** (0.0304)
Control Mean	0.9243	0.0378	0.0096	0.0169
Observations	770	770	770	770

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Among cohabitants, the pattern is even starker. Cohabitant unemployment drops sharply (−25.6pp, $p < 0.001$), while employment in agriculture (+11.4pp) and production (+13.4pp) both rise significantly. These shifts suggest that property formalisation has a household-wide effect, enabling other working-age members to mobilise labor toward more stable or productive sectors. While cohabitants’ formal education completion does not increase, the employment transition hints at a broader reconfiguration of household economic roles—less informal job-seeking, more sectoral engagement tied to land and production.

Subjective Well-being and Mental Health

Table 12: Well-being and Mental Health Outcomes and Treatment Effect

	Material Deprivation Index	Work is Worse	Depression Index	Job is Secure	Mental Health is Good
Treatment	-0.325*** (0.0650)	-0.00422 (0.0108)	-0.0538** (0.0171)	0.0519 (0.0346)	0.0635 (0.0343)
Control Mean	3.046	0.026	0.838	0.464	0.564
Observations	770	770	770	769	770

Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In addition to economic and behavioral outcomes, the study also explored the psychological and subjective well-being effects of property rights formalisation. Here, we observe some of the most meaningful improvements in household welfare.

First, treated households experienced a significant reduction in material deprivation. On a composite index capturing satisfaction of basic needs (Material deprivation Index) (including food, shelter, and services), treated households scored 0.325 standard deviations lower—indicating substantially fewer unmet needs. This result is both statistically and substantively significant, pointing to real changes in lived conditions or perceptions of sufficiency.

Second, households in the treatment group reported significantly fewer symptoms of depression, with a 0.0538 point reduction on the depression index ($p < 0.01$). While the magnitude may appear small, the effect is notable given the short time frame and the modest nature of the intervention. This finding is consistent with a large literature linking tenure security to lower stress and anxiety, particularly in contexts of informality and risk.

The psychological effects, however, do not extend uniformly across all well-being domains. For instance, the intervention had no measurable impact on whether households perceived that their work situation had worsened, nor did it meaningfully affect perceived job security. While treated respondents were slightly more likely to report feeling that their mental health was “good,” this effect is only marginally significant ($p \approx 0.07$).

Conclusion

This study set out to test a central proposition of political economy: whether the formal recognition of property rights can reshape the relationship between citizens and the state.

Drawing on social contract theory, we examined the impact of land regularisation in the form of municipal titles (TOMBOS) across 792 households in Quelimane, Mozambique. Using a randomised controlled trial and multi-dimensional endline measurement, the findings provide compelling evidence that property rights can serve as a catalyst for economic repositioning, civic engagement, and political realignment.

Across economic domains, the intervention triggered significant behavioural change. Treated households experienced a shift in perceived economic identity—becoming net contributors rather than recipients of remittances—and reallocated labour from informal self-employment to agriculture. These shifts were accompanied by increased investments in education and microenterprises, though not by short-term income gains. Indeed, total income declined while perceived housing value rose, suggesting an intertemporal trade-off and possibly more cautious financial reporting. Financial access perceptions also deteriorated, highlighting a mismatch between the symbolic and functional dimensions of formalisation in low-capacity settings.

Civic behaviour also changed. Treated households demonstrated greater cooperation in a simulated taxation game, suggesting enhanced prosocial norms and willingness to contribute to collective resources. However, visible political participation (voting and public expression) did not increase, indicating that trust and reciprocity may first manifest in informal civic domains before translating into formal political acts.

In the political arena, effects were sharp and localised. Treated households expressed higher satisfaction with the RENAMO-led municipality and were significantly more likely to vote for RENAMO and less likely to vote for FRELIMO. This suggests that citizens credited the visible local actor responsible for delivering rights, aligning with social contract theory's emphasis on reciprocal legitimacy. Importantly, despite these partisan shifts, broader optimism about national governance did not change.

Finally, the intervention achieved its direct aim: formalisation. Once administrative barriers were removed, TOMBO uptake surged, revealing strong latent demand and confirming that low registration rates often reflect logistical constraints, not lack of interest.

Limitations of the study include its focus on a single urban setting, which may limit generalisability to rural or politically different contexts. In addition, the short time frame limits our ability to assess long-term impacts on income, credit access, or intergenerational outcomes. While the experiment was carefully stratified and measured, some outcomes—particularly symbolic or behavioural—may be influenced by unobserved community dynamics or seasonal variation.

Future research should build upon this work along three primary dimensions. First, longitudinal analysis is needed to assess whether the observed effects—particularly those related to labour allocation, investment behaviour, and political alignment—are sustained, attenuated, or amplified over time. Second, comparative studies across municipalities or national contexts could offer insights into how institutional and political environments condition the impact of property rights reform. Third, experimental extensions should test adapted versions of the intervention—such as the integration of land titling with credit facilitation mechanisms, targeted tax incentives, or community-based engagement initiatives—in order to better identify the causal pathways driving behavioural change and to maximise policy effectiveness.

In parallel, the forthcoming phase of this project will focus on applied implementation in close collaboration with the Municipality of Quelimane. Planned initiatives include:

- The development of an integrated property tax database to harmonise land cadastre and fiscal payment records;
- The training of municipal staff in digital mapping, registry upkeep, and evidence-informed policy use;
- The creation of user-friendly policy dashboards and operational toolkits to support revenue management and stakeholder communication;
- And the piloting of targeted tax mobilisation strategies directly informed by the study's findings.

These activities are intended not only to amplify the real-world benefits of the intervention but also to strengthen local institutional capacity and enhance municipal fiscal autonomy. More broadly, this research underscores that property rights are not merely legal designations—they are catalysts for economic, behavioural, and political transformation. In fragile, decentralising, or low-trust settings, even modest forms of formal recognition can reconfigure citizen-state dynamics and contribute to the emergence of a more inclusive and reciprocal social contract.

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