

Empowering Women through Land Tenure Regularization: Evidence from the Impact Evaluation of the National Program in Rwanda

Given that Rwanda is one of the most densely populated countries on the planet, pressure on land has long been considered as a serious hindrance to its development, and -by some scholars- even as one of the contributing factors to the 1994 genocide. Soon after peace was settled, Rwanda embarked on far-reaching legal and institutional changes to deal with land-related issues. In this context, the adoption of the 1999 inheritance law was a first act that aimed, among others, at eliminating traditional bias against female land ownership rights. It was followed by the 2004 land policy and its codification in the 2005 organic land law (OLL) as well as the establishment of national and local institutional structures for overall land management and administration in the country. In 2010 the Government of Rwanda (GoR) launched a nationwide land tenure regularization (LTR) program, a first time land adjudication and registration process that was imagery-based and low cost (US\$ 5 per parcel).

In a very short period of time, the Rwanda Natural Resource Authority (RNRA) registered more than 10.7 million parcels (of the estimated 11.5 million parcels of land in Rwanda) and delivered about 6.7 million titles (GoR, 2014). In light of these impressive achievements, Rwanda's LTR program has set a new standard and is now being widely adopted across sub-Saharan Africa. While some of the issues confronted are highly context specific, rigorous monitoring and evaluation of the process and impact of this program can inform the long-term sustainability of the system and provide lessons for other countries.

RNRA, DFID and the World Bank's Research Department and Africa Gender Innovation Lab have been collaborating on an initial evaluation of the pilots (using a geographic discontinuity approach) as well as the national roll-out (using a randomized evaluation strategy).

The results of the evaluation of the pilots pointed to three main effects of the program: (i) improved land access for legally married women and better recordation of inheritance rights, although women who were not legally married saw diminished property rights; (ii) significant investment impacts (i.e., doubling of the change in investment in soil conservation) that were particularly pronounced for women; and (iii) a reduction in land market activity rather than distress sales (Ali et al., 2014).

Building on these initial results, a rigorous randomized impact evaluation was designed for the roll-out of the LTR at the national level. 100 sectors nation-wide were randomly selected from all sectors eligible for 'regular' LTR implementation.¹ Half of the selected sectors were pre-assigned to an 'early' group that had adjudication and demarcation done immediately upon the completion of the baseline data collection. The other 50 randomly selected sectors were in a 'late' group where LTR implementation was set to start at the very end of the regularization exercise. 3,600 households drawn from 300 villages (half in the 'early' group, half in the 'late' group) were interviewed in early 2011, gathering information at household-, individual- and parcel-level before the start of the program in the treatment villages. The first round of re-interviews was carried out in early 2012. This note presents the main findings on program implementation, as well as the short-term impacts of the LTR program on perceived tenure security and women's access to land and land rights.

A relatively successful first phase of program implementation

High demand for titles and participative implementation recognized as fair and transparent

¹ Kigali and some atypical 'hotspots' had to be excluded as the program was implemented there in an accelerated manner.

Before the start of the LTR program in the cells, demand for legal certificates was already very high, including among the more vulnerable groups, i.e., women and bottom quartile in asset ownership (Table 1, column 4). About 96 percent of the sampled households would have liked to obtain a certificate; of these, more than 70 percent were willing to pay for it, despite variation across population groups, with female headed households and the poorest quartile in asset holdings reporting lower willingness to pay for the certificate (around 55 percent).

Program participation of landowners at the time of sensitization and information dissemination about the LTR program in the villages was found to be very high (Table 1). More than 90 percent attended meetings organized to discuss the implementation process and potential benefits of participating in the LTR program. During the sensitization meetings special emphasis was put on female and girls' land rights and on the implications of the 1999 Inheritance Law. Yet, attendance from female headed households was relatively lower than their male counterparts (86 vs. 93 percent). In addition, only 68 percent of women in male headed households attended these meetings. Overall, over 90 percent of respondents from the treatment areas reported that they considered the LTR process as generally fair and transparent.

Field level participation by relevant stakeholders was high, though not as high as expected (Table 2). Physical presence of household members of landowners at the time of parcel demarcation was only observed in 80 percent of the cases (72 percent for female headed households), despite the fact that attendance was a strict requirement. On the other hand, almost all neighbors (89 percent) attended and in 96 percent of the cases the head of the village committee was present at the time of parcel demarcation. Only 38 percent of landowners paid the nominal fee (1000 Rwandan franc per parcel, equivalent to ??? USD), but the majority of those who did not reported to be willing to pay when picking up the certificates.²

Early impacts of LTR

In this note, we focus on the impact of the LTR program on perceived tenure security and female land rights. We use a standard difference-in-differences (DID) approach controlling for baseline covariates (land rights and mode of acquisition in the parcel level regressions; female headship in household level regression; and legal marriage certificate in female land rights regressions).³

LTR reduces conflict over land, but increase the perceived risks of disagreement over government allocated land.

The coefficient on the interaction between Treatment and Post in Table 4 shows that LTR households are 4 to 5 percentage points less likely to have had a disagreement over land, an effect that is robust across specifications. These effects are not small as only 6% had raised concerns about disputes at the baseline. Column 2 shows that the effect of LTR is the same on male and female owned parcels (where ownership is proxied by the right to bequeath). On the other hand, column 3 shows that the impact of LTR varies by mode of acquisition: the reform seems to increase the perceived risk of disagreement on government allocated land. However, this finding does not extend to the likelihood of expropriation (column 9), nor to the risk of losing land if left fallow (column 6). Still, the coefficient on the main term Treatment*Post indicates that there is a tendency for LTR to reduce the incidence of such perceived risks by landholders. The impacts of the program on perceived risks of losing fallow land and expropriation appear to be gender neutral (columns 5 and 8).

² The GoR later lifted the 1,000 RwF fee for the poorer rural households.

³ The DID approach is complemented by an Analysis of Covariance (ANCOVA) estimator, as DID tends to overcorrect for differences that have low predictive power if autocorrelation in outcome variables is low. Results of the ANCOVA estimator are available upon request from the authors.

A positive impact on women's land rights

Descriptive statistics (Table 5) show a large improvement in the perceived rights for female to be registered as a claimant (alone or jointly) on parcels owned by married couples, from only 33 percent in the baseline, to about 94 percent after the implementation of LTR in the 'early' program areas. Moreover, the increase in perceived rights for married women to be claimants on the household parcels is also observed in the 'late' intervention group but to a lower extent (only up to 67 percent), possibly a result of the national campaigns on female rights and empowerment.

Table 6 reports the DID results for the impact of the LTR on women's subjective land rights using a sample restricted to married couple households.⁴ The analysis confirms that women are more likely to be registered as owners alone or jointly with their spouses; the magnitude of the effect varies from 19 to 34 percentage points. In contrast to what was observed in the pilot study, women without legal marriage certificates also significantly benefit from the LTR program (albeit to a lesser extent than those with civil marriage certificates – column 2). A possible explanation is that GoR actions taken in response to the experience of the pilot program (e.g., intense sensitization campaigns on female rights) were effective to ensure that women not legally married were not left behind. Women's rights to mortgage or lease outland also increased substantially (between 9 and 13 percentage points for the former, and between 8 and 10 percentage points for the latter). The effect on women's rights to bequeath or sell land (alone or jointly with their spouses) are qualitatively similar, though not precisely estimated once we introduce further interaction terms.

Conclusion

The observed high demand for land certification in Rwanda has been met by a program that was perceived, among the interviewed households that received it, as fair and transparent; despite an observed lower attendance at sensitization meetings by women (whether head or spouse).

Overall, the LTR program rapidly improved perceived land tenure security on demarcated and adjudicated parcels for both male and female participants. This holds for different outcome variables, including the risk of disagreement over ownership (apart from government allocated land), the risk of losing the parcel if left fallow and the risk of government expropriation. Furthermore, LTR strengthened married women's subjective rights to be claimants on the land. While the results on the pilots raised some concerns about the fate of women who were not legally married, the effective measures taken in response by GoR translated into clear improvements in inclusion in the national roll-out. Indeed, non-legally married women in areas that received LTR are more likely to be registered as claimants on a parcel than similar women on control areas (though to a lesser extent than women with marriage certificates). This underlines the importance of piloting programs, and of their rigorous monitoring and evaluation, before national roll-out to ensure the inclusion of vulnerable groups.

While the first two waves of data collection enabled us to identify immediate effects of the systematic land adjudication and demarcation program in Rwanda, a second follow up survey planned for 2015, will allow for the assessment of the medium- -term impacts of the project on a range of outcome variables that would take relatively long time to materialize (such as land related investment, agricultural productivity and other measures of female economic empowerment).

⁴ The same analysis was performed on male perceived subjective land rights. Results are not reported but available upon request from the authors. In contrast to female rights, LTR does not significantly change male land rights.

Table 1: Demand for and awareness of LTR by gender and asset quartile

	Total	Female	Male	Bottom	Top
Baseline					
Want to obtain a certificate	0.9605	0.9628	0.9595	0.9388	0.9752
Willing to pay for certificate	0.7096	0.5508	0.764	0.5501	0.8055
Follow-up					
Household member at LTR meetings		0.8565	0.9311	0.9241	0.9172
Women attended LTR meetings	0.7152	0.8049	0.675	0.7122	0.7162
LTR was transparent		0.9409	0.9495	0.9326	0.948
LTR was fair		0.9335	0.936	0.9045	0.9335

Table 2: Parcel level participation in LTR by gender and asset quartile

	Total	Female	Male	Bottom	Top
HH member at demarcation	0.7974	0.7244	0.8221	0.7816	0.7594
Share of neighbors at demarcation	0.8908	0.8764	0.8952	0.8748	0.903
Village committee head present at demarcation	0.9629	0.9601	0.9638	0.9465	0.9694
Received claims receipt	0.709	0.6939	0.714	0.6811	0.7529
Fee has been paid	0.3773	0.383	0.3754	0.2367	0.5181
If not, cannot afford	0.0562	0.1208	0.0348	0.0828	0.063
If not, will pay later	0.8269	0.7603	0.849	0.8089	0.7963
Omission and correction has taken place	0.1336	0.1339	0.1335	0.1205	0.1364
Number of parcels	13416	3470	9946	2275	4066

Table 3: Perceive tenure security

	T	ttest	C	T	ttest	C
Perceived tenure security						
Will not lose land if fallow?	0.892	***	0.941	0.927		0.910
No risk of disagreement over parcel rights/use	0.941		0.956	0.981	***	0.960
No risk of expropriation	0.713	**	0.795	0.666		0.656
Number of parcels	4788		5455	4788		5455

Note: Stars indicate significance mean differences between T (Treatment) & C (Control) groups adjusted for clustering at the sector level (the unit of randomization). *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Impact of LTR on Perceived Tenure Security

	No disagreement over ownership			Not loose land if left fallow			No expropriation risk		
DID Estimator									
Treatment * Post	0.040***	0.051**	0.045***	0.066***	0.055	0.081***	0.093**	0.103	0.093*
	(0.011)	(0.024)	(0.012)	(0.021)	(0.037)	(0.028)	(0.042)	(0.078)	(0.049)
Treatment * Post * Female right		-0.018			0.016			0.046	
		(0.031)			(0.049)			(0.084)	
Treatment * Post * Joint right		-0.015			0.013			-0.030	
		(0.024)			(0.041)			(0.075)	
Treatment * Post * Inherited/Gifted land			-0.007			-0.025			0.003
			(0.016)			(0.027)			(0.042)
Treatment * Post * Government allocated land			-0.073***			-0.041			0.077
			(0.027)			(0.061)			(0.112)
Treatment * Post * Acquired in other forms			0.002			-0.079			0.113
			(0.032)			(0.062)			(0.084)
Treatment * Post * Wetland			0.018			0.028			-0.066
			(0.018)			(0.033)			(0.054)
Constant	0.949***	0.949***	0.949***	0.918***	0.918***	0.918***	0.757***	0.757***	0.757***
	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.005)	(0.011)	(0.011)	(0.011)
Number of observations	20,411	20,411	20,397	20,404	20,404	20,390	20,361	20,361	20,347
R2	0.011	0.014	0.014	0.008	0.010	0.010	0.030	0.032	0.033

Robust standard errors adjusted for clustering at the sector level in parenthesis: *** significant at 1%; ** significant at 5%; * significant at 10%. Time dummy and its interaction with baseline correlates included but not reported. Male only inheritance rights and purchased land are the base categories for the rights and acquisition variables, respectively.

Table 5: Land rights: sample restricted to married couple households

	T	ttest	C	T	ttest	C
Female land rights (alone or jointly)						
To be registered as a claimant	0.328	*	0.396	0.937	***	0.666
To bequeath	0.827	***	0.897	0.906		0.892
To sell	0.819	***	0.900	0.931		0.912
To mortgage	0.824	***	0.891	0.930		0.902
To lease out	0.833	***	0.902	0.933		0.918
Number of parcels	3744		4118	3744		4118

Note: Stars indicate significance mean differences between T (Treatment) & C (Control) groups adjusted for clustering at the sector level (the unit of randomization). *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Impact of LTR on Female Land Rights

	Registered claimant			Bequeath rights			Sale rights		
DID Estimator									
Treatment * Post	0.337*** (0.040)	0.189*** (0.069)	0.210*** (0.077)	0.081*** (0.031)	0.078 (0.055)	0.061 (0.067)	0.086*** (0.027)	0.087 (0.062)	0.073 (0.071)
Treatment * Post * Legal marriage certificate		0.173** (0.067)	0.170*** (0.065)		0.005 (0.059)	0.006 (0.061)		-0.001 (0.068)	0.003 (0.069)
Treatment * Post * Inherited/Gifted land			-0.029 (0.046)			0.024 (0.033)			0.014 (0.033)
Treatment * Post * Government allocated land			-0.213 (0.150)			0.018 (0.088)			0.051 (0.108)
Treatment * Post * Acquired in other forms			0.065 (0.091)			0.066 (0.093)			0.056 (0.103)
Treatment * Post * Wetland			0.015 (0.053)			0.013 (0.039)			0.014 (0.040)
Constant	0.376*** (0.011)	0.376*** (0.011)	0.376*** (0.011)	0.865*** (0.007)	0.865*** (0.007)	0.865*** (0.007)	0.863*** (0.007)	0.863*** (0.007)	0.863*** (0.007)
Number of observations	13,926	13,920	13,906	15,365	15,362	15,348	14,623	14,620	14,610
R2	0.342	0.344	0.348	0.014	0.015	0.017	0.029	0.029	0.031

Robust standard errors adjusted for clustering at the sector level in parenthesis: *** significant at 1%; ** significant at 5%; * significant at 10%. Time dummy and its interaction with baseline correlates included but not reported. Male only inheritance rights and purchased land are the base categories for the rights and acquisition variables, respectively.

Table 6: Impact of LTR on Female Land Rights (Cont.)

	Mortgage rights			Lease rights		
DID Estimator						
Treatment * Post	0.090*** (0.024)	0.126** (0.057)	0.124* (0.064)	0.080*** (0.021)	0.096* (0.056)	0.097 (0.067)
Treatment * Post * Legal marriage certificate		-0.043 (0.061)	-0.042 (0.062)		-0.018 (0.060)	-0.019 (0.061)
Treatment * Post * Inherited/Gifted land			0.005 (0.031)			-0.005 (0.030)
Treatment * Post * Government allocated land			0.022 (0.103)			0.012 (0.102)
Treatment * Post * Acquired in other forms			0.004 (0.095)			0.026 (0.094)
Treatment * Post * Wetland			-0.007 (0.041)			0.017 (0.035)
Constant	0.857*** (0.006)	0.857*** (0.006)	0.857*** (0.006)	0.869*** (0.005)	0.869*** (0.005)	0.869*** (0.005)
Number of observations	14,798	14,792	14,784	14,373	14,367	14,359
R2	0.029	0.030	0.031	0.028	0.029	0.031

Robust standard errors adjusted for clustering at the sector level in parenthesis: *** significant at 1%; ** significant at 5%; * significant at 10%. Time dummy and its interaction with baseline correlates included but not reported. Male only inheritance rights and purchased land are the base categories for the rights and acquisition variables, respectively.