

Women's Land Rights and Empowerment: Impact of the Land Tenure
Regularization Reform (LTR) on Contraceptive Use and Domestic
Violence in Rwanda

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Abstract

The Rwandan Land Tenure Regularization reform (LTR) was implemented in 2007 to clarify land ownership in the country especially for women. Specifically, the reform enabled women in married unions to obtain joint titles with their partners as proof of land ownership. Using data from the 2010 Rwandan Demographic and Health Surveys (RDHS) and the LTR progress report, I investigate the potential effect the reform could have on women's level of empowerment within the household. The underlying assumption for this study is that joint land titling will increase the bargaining power of the woman and consequently enhance her empowerment status. I explore three forms of empowerment, all of which tell an inconsistent story. LTR does not seem to have an overall effect on women's use of modern contraceptives, perception and incidence of physical violence among them. However, LTR has a negative impact on incidence of sexual violence. In addition, LTR positively influences women landowners' chances of using modern methods of contraception.

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I. Introduction

The improvement of women's property rights has been proven to contribute to gender empowerment, poverty alleviation, environmental protection and economic development (Peterman, 2009; Allendorf, 2007). Specifically, women's land rights have been linked to increased productivity and empowerment in agriculture-based countries where land plays a critical role as the main factor of production. In the majority of Sub-Saharan African (SSA) countries whose economies greatly depend on agriculture, the inequitable ownership and control of land has contributed to creating and maintaining the differences between men and women with regards to economic well being, social status and levels of empowerment (Ik Dahl, Hellum, Kaarhus & Benjaminsen, 2005). While women contribute 60-80 percent of all the labor used to produce food on the continent, findings from twelve African countries show that women's access to land is on average less than half of that enjoyed by men (Ik Dahl et al., 2005)

From a gender and development standpoint, it is clear that improving the legal rights to women's ownership and access to land is a critical step forward. In my paper, I conduct a country case study of Rwanda to examine how a recent amendment on women's legal rights to land in that country has impacted women's level of empowerment¹. Specifically, I study the

¹ "Empowerment is defined as a process of enabling people to increase control over their lives, to gain control over

effects of land tenure reform on the use of contraceptives and the incidence and perception of domestic violence. The Rwandan Land Tenure Regularization reform (LTR) was launched in 2007 to clarify land tenure rights in the country. One of the main objectives of the LTR was to enhance women's land rights by ensuring that their legal rights to own land were documented.

For the longest time, the man has been traditionally the head of the household in most Rwandan societies and has control of all the assets of the family – including land – leaving women without any substantive rights to their own land (Gillingham & Buckle, 2014). To address this problem, the Rwandan government started introducing new laws in the late 1990s that enabled women and female children to inherit land alongside their male counterparts. However, while these laws were written on legal documents, implementation was informal, as landowners did not have land titles to prove ownership. The 2007 LTR was introduced to formalize land ownership and also define women's land rights. Specifically, the mandate required that both a man and a woman in a marriage union should have equitable ownership of family land and both their names should appear on plot titles (Santos, Fletschner & Daconto, 2014). The reform has been considered one of the most ambitious and successful land reforms in Africa. Ali et al., (2013), in their study, concluded that the reform increased tenure security for legally married women.

To start the implementation process, the Rwandan government conducted a pilot process in four study regions around the country between 2007 and 2008. By January 2012, the government had managed to demarcate and adjudicate 93 percent of all parcels of land and had

issued 1.7 million titles in the country (Santos et al., 2014). Data from the four pilot regions show that among married women whom their households owned land, 76 percent of them reported joint land ownership, a 7 percent increase than before the LTR process (Ali et al., 2013). In comparison to earlier reforms, the LTR has the capacity to increase women's sense of economic security. In addition, as married women received land titles for jointly owned family land, they could use it as collateral for credit with the possibility of expanding their future financial capabilities (Rwanda National Land Commission). Therefore, this reform has the potential of extending the effect of empowerment not just by increasing the household bargaining power of married women but also improving their economic and social status.

Drawing from literature that show the relationship between the improvement of women's land rights and increased bargaining power within the household, I want to test the hypothesis that modern contraceptive use increased among ever married fecund² women with the introduction of joint titling in Rwanda's land reform. In addition, I would like to examine the incidence and perception of domestic violence³ against women specifically from their partners with the formalization of land ownership after the introduction of the LTR.

As a method of family planning, modern contraception enables women, men and families to have control over when to have children and how many of them. For the most part of history,

² Fecund refers to the ability of a woman to become pregnant and give birth. In regards to the definition of the DHS dataset that I will be using, a woman is assumed to be fecund unless she declares that she is infecund. In addition, women are considered infecund if they are neither pregnant nor experiencing postpartum amenorrhea but have not menstruated for six or more months, or are married, have not practiced contraception during the previous five years, have not given birth and are not currently pregnant.

³ I consider both physical and sexual violence

women around the world depended on natural or traditional methods of preventing pregnancy. However, these methods are less effective and can lead to unintended pregnancy. Modern contraception enables women especially in low-income families to avoid getting pregnant when they think that they are not in a good position economically, psychologically or socially to raise an additional child. Beyond just preventing pregnancy, contraceptive use has also been linked to the empowerment of women, reduction in excessive fertility and improvement in overall health of populations.

Among married partners, the decision to use modern contraception could involve a single party (usually the woman) or both parties and can be affected by unequal power relations especially in patriarchal societies; a category Rwanda falls under (Bogale, Wondafrash, Tilahun & Girma, 2011). Therefore, studies that examine the dynamics that eliminates power imbalances among married couples will greatly contribute to policy-making efforts to not only increase women's level of empowerment in their societies, but also specifically increase modern contraceptive use and eliminating violence against women with the larger goal of promoting development. Using data on contraceptive use and incidence and perception of domestic violence from the 2010 Rwandan Demographic Health Survey (RDHS) collected after the start of the implementation of the LTR reform, I would like to examine the potential trends in contraceptive use, perception and prevalence of spousal violence among ever married women in households that underwent the LTR process in comparison to those who did not. I am hoping to contribute to existing literature on both women's property rights and gender and development by establishing

a relationship between women's land rights and a new metric of empowerment; contraceptive use. Furthermore, a similar analysis on the impact of the LTR on the occurrence and perception of domestic violence will enable me draw and compare conclusions from these two measures of the empowerment of women.

Domestic violence is a global concern as it has major public health effects and is a violation of human rights. 25-35 percent of women worldwide have experienced intimate partner violence leading to health consequences such as mental disorders, gynecological and obstetric disorders and infectious diseases such as HIV and sexually transmitted infections (Ntaganira et al., 2008). In a study by Rico et al. (2011), it is shown how intimate partner violence also impacts the well being of the rest of the household. They conclude that in Kenya, Honduras and Malawi, intimate partner violence played a role in high levels of malnutrition and under-2-years mortality. The study on the impact of improved property rights on domestic violence might shed some new light on this less studied topic and inform policy-making to address it.

II. Country Background

II.i. Land Rights in Rwanda

Rwanda is a landlocked country located in central and east Africa bordered by Uganda, Tanzania, Burundi and the Democratic Republic of the Congo. Agriculture represents the backbone of Rwanda's economy. It accounts for 39 percent of the country's gross domestic

product (GDP), 80 percent of employment, 63 percent of foreign exchange earnings and 90 percent of the country's food consumption (World Bank, 2013). The country's reliance on agriculture makes land an important resource for production and livelihoods. In the late 1990s, the government of Rwanda underwent a period of legal reforms to promote the process of recovery after the Rwandan genocide, one of the most brutal cases of instability in history. There was a need to promote laws that encouraged peace, economic development and gender equality (Crook, 2006).

Land reforms, especially, presented a mechanism to increase land productivity in a country with high population density and land scarcity. Additionally, land reforms promoted clarity on property rights. The existing land tenure system was based on the integration between diverse customary laws and a minority system of formal titles that had been issued by the Belgian and German colonial regimes (Santos et al., 2014). This tenure system proved to be a challenge after the genocide with the settlement of returning refugees and the existing property rights discrimination against women and female children.

The LTR reform comprises of three earlier reforms that were amended to include women's entitlement to equitable land ownership and property rights. Daley et al., (2010) summarize these reforms as follows:

- **Rwandan 2003 Constitution:** It states that “every person has a right to private property, whether personal or owned in association with others”. It also adds, “All human beings are equal before the law. They shall enjoy, without any

discrimination equal protection of the law”. The law also included clauses on gender dynamics and equality such as; “ women are granted at least thirty per cent of posts in decision-making organs” and that, “only civil monogamous marriage between a man and a woman is recognised”.

- **The 2004 National Land Policy:** This stipulates that “ all citizens should enjoy the same rights to land without any discrimination whatsoever”. Also that “ women, married or not, could not be excluded in the process of land access and land acquisition and land control, and the female child could not be excluded in the process of land property inheritance”
- **The 2005 Organic Land Law (OLL):** This states that “any person or association with legal personality has the right over land” and that “any discrimination either based on sex or origin in matters relating to ownership or possession of rights over the land is prohibited. The wife and the husband have equal rights over the land”

While the LTR reform was a combination of these three reforms, it was also informed by the earlier Matrimonial Regimes, Liberties and Succession Law (MRLSL) of 1999 which gave women who are legally married the rights to a share of family land (Santos et al., 2014). Specifically, it stipulated that spouses have joint ownership of all their property, movable and immovable, and their present and future charges. The MRLSL also provided daughters and sons with equal rights to the land their parents left when they died. This clause was specifically

powerful as it emphasized that daughters should not be discriminated against when parents are dividing their land amongst their children when they are still alive.

II.ii. Implementation of the LTR reform

The implementation process was preceded by a long period of research and public consultation among local, national and international stakeholders. Between 2007 and 2008, the Rwandan Government carried out a pilot implementation trial in four randomly selected areas (termed cells and equivalent to a cluster of villages) across the country. This was done to help develop and fine-tune the methodology for the regularization process (Ali et al., 2013). All of this suggests that there is a distinct possibility LTR was anticipated in most regions before it was actually implemented. The final administrative and legal process involved the following (Payne, 2011):

- Notifying areas for an LTR program
- Dissemination of local information through community public meetings, with an attention of informing women and other vulnerable groups about the process
- Appointing and training local people to act on land committees responsible for demarcating and adjudicating the land
- Demarcating land by marking boundaries on photographic images of the area
- Adjudicating: involves recording personal details of land claimants and issuing receipts
- Publication of adjudication records
- Addressing objections and making corrections where needed
- Mediating disputes

- Registering and titling when title documents are ready

In terms of the geographical spread of the LTR, the government of Rwanda required that the implementing entity work simultaneously in all the thirty districts in the country (Gillingham & Buckle, 2014). However, completion rates varied depending on the size of district and the level of cooperation between the lands and mapping department and local authorities (D.G Sagashya, Personal Communication, March 23, 2015). Between February 2010 and August 2013, all the land in the country was registered and land titles were provided for all rightful landowners. Table 1 shows the progress report since the start of the national roll out to June 2011. Completion rates were highest for districts within Kigali city compared to other provinces in the region.

Table 1: LTR Progress Report From 06-22-2009 to 06-30-2011

South		North		West		Kigali city		East	
District	Completion rate	District	Completion rate	District	Completion rate	District	Completion rate	District	Completion rate
Nyamagabe	58.7%	Musanze	75.0%	Nyabihu	62.5%	Gasabo	98.60%	Kirehe	100.0%
Kamonyi	62.7%	Gakenke	52.6%	Rubavu	46.6%	Nyarugenge	100.0%	Bugesera	76.4%
Huye	76.6%	Rulindo	64.8%	Ngororero	46.8%	Kicukiro	100.0%	Kayonza	62.0%
Nyanza	86.3%	Gicumbi	59.6%	Rutsiro	46.6%			Gatsibo	69.6%
Ruhango	61.0%	Burera	59.4%	Karongi	61.8%			Ngoma	70.3%
Muhanga	54.0%			Nyamasheke	62.8%			Nyagatare	50.9%
Nyaruguru	59.7%			Rusizi	62.5%			Rwamagana	52.4%
Gisagara	78.0%								
TOTAL	66.4%	TOTAL	61.4%	TOTAL	55%	TOTAL	99.4%	TOTAL	66.8%
Grand Total								65.1%	

II.iii. Gender Dynamics

Rwanda offers a very interesting case of a country with great progress in gender equality. It is the only country in the world with a female majority in parliament (Allan, 2006). The implementation of the LTR represented another step forward in the country's efforts towards achieving equality. However, most of these developments only started playing out after the 1994 genocide. Besides limited ownership and inheritance to land, women were also discouraged from voicing their opinions and had to defer to men (Debusscher & Ansoms, 2013). It's been argued that during the 1994 conflict, women had to step up their roles in the family when men became targets of the genocide. Despite the traumatic experiences these women underwent, the change in gender roles persisted even after the end of the conflict. In addition, the government has implemented various policies to aid in promoting gender equality in the country (Debusscher & Ansoms, 2013).

However, Burnet (2008) presents an interesting paradox of how although the political participation of women in the country has increased over the past few years, women's ability to influence policy making has decreased. She argues that the increase in inclusion of women in all levels of government led to a decrease in the number of vibrant women leaders who could participate in the country's civil society organizations. Nevertheless, the inclusion of women in governance has changed public perception of women and has opened doors to greater individual freedom for women in other aspects of their lives.

II.iv. *Population Growth and Contraceptive Use*

Rwanda has an estimated population of about 11 million and has the highest population density on the continent (415 persons per square kilometer). The first efforts to address this rapid population growth started in the 1980s with the creation of the National Office of Population. Years later, a formal policy to address the population growth problem was adopted in 1990 but was disrupted during the 1994 genocide. However, birth control use expanded starting at 10 percent in 2005 to 45 percent in 2010. This contraceptive use level and growth is one of the highest in SSA. This has led to a rapid decline in fertility rates from 17 percent in 2005 to 52 percent in 2010 (RDHS, 2010).

Some of the determinants that have been cited to contribute to this decline include improvement in education levels, wealth and increase in spread of radio messages on the benefits of family planning (Westoff, 2013) Religion, however has been shown to have varying effects on modern contraceptive use. Most Rwandans have a religious affiliation. In 2002, 50 percent of the population was Catholic, 27 percent Protestant and 13 percent Adventist. Ndaruhuye, Broekhuis & Hooimeijer (2009), in their analysis of the 2005 Rwanda DHS conclude that religion plays a double role in affecting fertility preferences and hence contraceptive use. One is that it shapes the attitudes of the population in regards to these two factors. Second, religious institutions have dominated the provision of social services such as education and health services. In 2003, 40 percent of the 406 public health facilities in the country had a religious affiliation. Out of this percentage, 60 percent of the facilities did not offer modern methods of contraception increasing

the difficulty to obtain such methods. Westoff (2013) however recorded contradictory findings. He concluded that religion has an insignificant effect on contraceptive use with Catholics actually having a higher contraceptive prevalence rate than Protestants (49 percent versus 41 percent respectively)

Among married women, there has been a general desire to decrease family size. Interestingly, this trend can also be seen among married men (Westoff, 2013). This phenomenon has led to a rise in the demand for modern contraception to avoid unwanted pregnancies.

An important policy that will definitely influence the significance of my study is the 2003 national population policy family planning program. The emphasis of this program was to increase education and wealth levels with the hope that these two variables would indirectly influence the desire to limit family size (Ndaruhuye et al, 2009). Therefore, including these two factors in my regression will hopefully control for the effect of this policy on contraceptive use and therefore aid in isolating the effect of the land reform. 91 percent of current contraceptive users obtain their supplies at government facilities (DHS 2010). Government facilities include referral hospitals, district hospitals, health centers, health posts, and outreach and community health workers.

II.v. Domestic Violence

In the 2010 RDHS, 2 in 5 women (41 percent) reported to have suffered from physical violence at least once since they were 15 years old. 1 in 5 women (22 percent) had suffered from sexual violence in the past. Most of the time, it was the husband or the partner who was responsible for the violence, whether physical or sexual (RDHS, 2010). Studies have cited that the incidence of such cases is correlated with the education level of both the woman and her partner and lifestyle factors such as alcohol consumption.

Ntaganira et al., (2008) found that 35.1 percent of 600 interviewed women in Rwanda reported intimate partner violence (IPV)⁴. They found that women with no formal education were more likely to have experienced IPV as well as women who reported that their male partners had other sexual partners. In addition, they cited some lifestyle characteristics such as alcohol consumption to positively influence the incidence of IPV. Compared to contraception, research on the root causes of domestic violence is still lacking both on a national and local context.

⁴ They define IPV as actual or threatened physical, sexual, psychological and emotional abuse by a current or former partner.

III. Theoretical Framework

In this section, I discuss broader literature that explores the connection between married women's property rights and their empowerment especially with regards to metrics that involve decision-making within the family unit. To begin with, Meinzen-Dick et al., (1997) provide the theoretical discussion, which supports my thesis. Their paper claim that the focus of property rights analysis has too often been on the rights of the household or the male household head and less of the female member of the household. They further argue that land titling in itself is a form of empowerment as it 'enhances the ability of disadvantaged individuals or groups to challenge and change existing power relationships that place them in subordinate economic, social and political decisions'. They note that in societies where women can inherit and own land, their position is stronger within the family. However, they caution that joint titling might not necessarily equate to increased level of authority over land resources or over decisions that required collective action such as use of contraception.

Land ownership is a measure of social status and wealth and its asset value in a market economy increases as its use becomes intense and its scarcity increases. It also provides collateral against loans if families want to borrow from credit institutions (Pena, Maiques & Castillo, 2008). Access or ownership of land can greatly increase women's bargaining position in the domestic sphere and can provide the opportunity to access other social and economic rights. Also, women landowners are much more likely to strike a stronger marriage bargain, with a

greater voice in both household and farm decisions (Palmer, 2003). However, formal land tenure might not necessarily guarantee anything or women may have joint ownership of land but may not necessarily make any decisions in regards to land (Pena et al., 2008)

According to Ali et al. (2013), the benefits of formalizing land ownership will depend on the security increment such a change can provide and is a function of the legality and legitimacy of existing arrangements and disputes. They argue that benefits are greater if such a formalization enjoys a wide legitimacy, increases level of tenure security, improves the recognition of rights of previously excluded groups such as migrants and in this case women.

Deininger and Gershon Feder (2009) add that ill-defined or incomplete property rights forces those who hold land to spend resources defending their rights. If property rights are secure, well defined and publicly enforced, owners need to spend less time and resources protecting their rights. Good governance that encourages consistent legal and institutional framework, wide access to information and competent and transparent institutions make property rights effective. Without good institutions, rights on paper might have little to no practical value to the people being protected.

Drawing from past literature, Gray and Kevane (1999) show how norms that govern rights to land in SSA are dynamic and changing. Women rights to land have most often come through their ties to kin or relatives and husbands and could end with divorce or widowhood. However, over time, changes have taken place to develop strategy for reshaping women's access to land. One of these strategies is among wealthier women. Using their economic power,

wealthier women have responded to tenure insecurity by purchasing land that is clearly in their name and they can use and transfer however they like. The authors give the example of Ghana and Tanzania. However, this is not unique to Rwanda. Therefore, I control for the fact that wealthier women have a higher likelihood of jointly owning land and at the same time use modern contraception. The second way is using political association and the state to assure tenure. In the wake of failing or discriminatory statutory and customary law, establishment of local or national establishment of legal system have proven to be effective. LTR falls into this latter approach.

However, land ownership is important because a right to land is something broader than formal land titling. Titling is a tool to place women on an equal footing with men and therefore enabling women to see themselves as rights-holders (Pena et al., 2008). And by no means is the idea that titling on its own leads to women's empowerment a firm one. My research takes into considerations these cautionary principles and further explores how effective the strategies to increase women's awareness of their land rights were.

Spousal differences in decision-making power and preferences influences the extent to which a woman can make reproductive choices. Although they belong to the same household, a reproductive couple have different costs and benefits, possess different budgets and resource and have different goals (Doodoo & Tempenis, 2002) Therefore, the ability of each party to implement their individual choices depends on the bargaining power they hold and can be influenced by level of empowerment, wealth and whether or not an individual lives in a rural

area with bigger adherence to traditional patriarchal values. While a direct link between land rights and contraceptive use does not exist, the different theoretical frameworks that exist on women's land rights and their bargaining power within the household combined with that between bargaining power and contraceptive use should inform the concept and understanding of this project.

On the other hand, increased autonomy due to improved land rights might not have as straightforward effects on the incidence of domestic violence against women. The introduction of joint land titling may come as a disturbance of the existing power dynamics in a household and may lead to more conflicts between couples (Anderson & Genicot, 2012). On the other hand, there's a potential of a lesser likelihood of partner violence if the woman's partner develops more respect towards her.

IV. Literature Review

Previous studies have examined the impact of land reform on different metrics of empowerment including incidence of domestic violence and contraceptive use. Wiig (2013) studied the influence of joint titling on women's participation in household decision-making in the highlands of Peru. The Special Land Titling policy implemented in the late 1990s required land to be jointly titled between a man and woman who were partners in a nuclear family. By 2013, 57 percent of the 1.5 million agricultural title plots of land were joint property between wives and husbands compared to 13 percent in 2000, where a man had sole ownership 75 percent

of the time and a woman only 12 percent of the time. Wiig (2013) analyzed data from interviews conducted in 1280 households in 69 communities in four Peruvian departments. The interviews were carried out among couples, both jointly and separately to examine the multi-dimensional nature of household decision making and land ownership. They found that legal documents such as land titles secured women's legal rights and increased female participation in household decision making in the study areas.

The study was conducted as a quasi-experiment where the researcher compared the difference in a woman's involvement in household decision-making between private communities eligible for titles (CP) and recognized communities that were not eligible for individual titling (CCR). The two groups were randomly selected by PETT, a governmental titling body in Peru. The study assumed that there was no difference in gender culture between CPs and CCRs before titling started in the late 1990s. Empowerment indicators were measured according to women's involvement on certain actions involving decisions in the home categorized into expenditures, investments, agriculture and labor. While this survey was conducted ten years after Peru enforced joint male and female ownership of household agricultural land and hence more possibility of capturing the change in gender dynamics over a longer period time, my time frame is much shorter.

A past study by Datta et al. also shows similar findings on the relationship between property rights and empowerment. Datta et al., 2006 conducted a survey examining the impact of joint titling of houses on women's empowerment in urban informal settlements in Chandigarh,

India. The paper concluded that property rights increase women's participation in decision-making, access to knowledge and information about public matters, sense of security, self-esteem, and the respect that they receive from their spouses. Joint titles brought women information about the outside world through exposure to more public matters such as financing, banks and mortgage applications. They also found that joint house titles increased women's sense of security from abandonment, security in case of husband's alcoholism, security in old age, and security for children. In addition, 53 percent of the women interviewed expressed that they felt more respected by their spouses after joint titling in their marital relationships. This respect was either directly mentioned or implied by increased consultation during decision-making. Finally, the study conducted a simple logit regression to explore how much a joint title affected the chance that a woman asserted herself. Using "women's resistance" as the dependent binary variable, they discovered that after controlling for a woman's earnings, education level difference between husband and wife and tenure security, the study found that a joint title increased the probability that a woman asserted herself by 13 percent.

A lot of literature has also been published on the determinants of contraceptive use in developing countries. A review of this literature informs the variables that I use in my regressions. A study conducted by Schuler & Hashemi (1994) in rural Bangladesh revealed a positive association between empowerment and contraceptive use. By economically empowering women through involving them in credit programs, they received more independence and control over important decisions affecting them and their families. The study analyzed data from a

baseline and follow-up survey administered to 1305 women split into two groups: a treatment group which was participating in credit programs offered by the Grameen Bank and a control group that was eligible to participate in the credit programs but was not at the time. My research mirrors the underlying assumptions that this paper relies on. By increasing women's access to economic resources such as credit or land, women get more autonomy and control over important decisions affecting them and their families.

Bollen et al. (1995) explore the demand for contraceptive use in Tunisia. While they do not focus on land issues, they investigate the impact of additional children desired on contraceptive use. They utilize simultaneous equations to explore this variable that is a result of a choice made by the subject and influences contraceptive use. They found that number of additional children desired was positively correlated to contraceptive use after controlling for other factors such as age, level of education and distance to hospital. Similar to the Schuler & Hashemi study, this paper offers a regression framework to my research, since I include additional desire children in my regression and most of the variables they have on their paper.

Anderson & Genicot, 2012 develop a model of intra-household bargaining with asymmetric information and costly conflict to show that increased property rights for women after the passing of an Amendment Act which increased inheritance rights to women in certain states, increased the incidence of wife beating in India. They estimate the following equation:

$$Y_{is} = \psi_0 + \psi_1 X_{is} + \psi_2 A_{is} + \alpha_s + \varepsilon_{is}$$

Where Y_{is} is an outcome variable for a female i state s . They define two measures of violence against women to measure this outcome variable. The first takes the value 1 if a given female i (in state s) thinks that wife beating (by her husband) is justified under a number of circumstances⁵ and zero otherwise. The second takes on a value 1 if a given female i has been beaten by her husband and zero otherwise. X_{is} is a vector of individual and household control variables such as age, occupation of wives and husbands, household durable good ownership. A_{is} is the number of years a woman living in state s has been married with the Amendment Act in place. α_s represents the state fixed effects. I employ this regression model as well and only adjust for difference of circumstances reported in my RDHS data set.

V. Data

In order to answer my questions, I am using data from the 2010 RDHS. The survey conducted by the government of Rwanda gathered data on background characteristics of the respondents, demographic and health indicators and household and health expenditures. This is the best data for my project since it contains information on current and past use of contraception among women of age 15 to 49, factors that are thought to influence empowerment such as education levels, wealth indices, personal and partner characteristics, domestic violence and

⁵ These circumstances include going out without telling the husband, neglecting the house or children, arguing with or disrespecting her husband, refusing to have sex with him, is unfaithful, does not cook properly.

health facilities. In addition, it is latest DHS conducted in the country and information was gathered when the LTR process had been implemented.

Fieldwork was conducted between November 2010 and March 2011 in 30 districts⁶, 466 villages selected with probability proportional to village size and 12,540 households were surveyed. Sampling was done in two stages. In the first stage, villages were randomly selected. In the second stage, households were randomly selected from the list of all the households in the villages chosen from the first stage.

A total of 13, 671 women aged 15-49 from all the households, and men aged 15-59 from half of these households were interviewed. I am limiting my study to only ever-married women who represent 60.8 percent of all women interviewed.

During the interview, each woman was asked to recount her birth and contraceptive use history starting from the month of the interview and five years prior. Interviewers used memory events such as birth of a child to aid the women remember their calendar of events. The Rwandan 2010 DHS also had a survey question on land ownership, something that demographic and health surveys from most other countries do not have. 52 percent of women landowners used

⁶ Rwanda has 5 levels of administration. It is divided into 5 provinces- East, West, South and North and the city of Kigali. Provinces act as liaison for coordinating district development planning with the national policies and programs and supervise implementation at the district level. There are 30 districts (3 in Kigali), which are responsible for local economic development planning and coordinating delivery of public services. Under districts, there are 416 sectors, which assume a coordinating role in the delivery of public services and gather data and information. More locally, there are 2148 cells that prioritize needs and mobilize the community to help them. Finally, cells are divided into 14876 villages (*Umudugudu*) that have no specific administrative function

a modern method of contraception and 48 percent did not at the time of the interview. Among non-landowners, 58 percent did not use a modern method.

Data was also collected on the occurrence and frequency of different forms of domestic violence, both physical and sexual. Of all the households selected for the RDHS, half of them were randomly selected for surveys on domestic violence. Only one woman per household was selected out of a total of 5016 households. Specifically, selected sample of ever married women were asked to report incidence of spousal violence. These women were asked the following question:

(Does/did) your (last) husband/partner ever do any of the following things to you?

- a) Slap you?
- b) Twist your arm or pull your hair?
- c) Push you, shake you, or throw something at you?
- d) Punch you with his fist or with something that could hurt you?
- e) Kick you, drag you or beat you up?
- f) Try to choke you or burn you on purpose?
- g) Threaten or attack you with a knife, gun, or any other weapon?
- h) Physically force you to have sexual intercourse with him even when you did not want to?
- i) Force you to perform any sexual acts you did not want to?

An answer was recorded as a 'yes' if a woman affirmatively responded that any of the scenarios had happened and 'no' otherwise. If this is the case, any of a-d is classified as less

severe forms of physical violence while e-g is classified as severe forms. On the other hand, either incident h or i is classified as forms of sexual violence. If the answer was ‘yes’, the respondent was consequently asked about the frequency of the act in the last 12 months preceding the survey. I consider forms of violence that were reported to have happened within the past 12 months preceding the time of interview.

The wide range of questions accounted for the different perceptions of violence that existed among the women. In addition, by including this wide range of acts, this method of data collection provided the additional advantage of giving the respondent multiple opportunities to report any experience of violence. 1 percent of women who owned land reported at least one of the above forms of violence compared to 2 percent of non-landowners. To measure women’s perception about domestic violence, the women were asked if wife beating was justified in a set of given circumstances. 14 percent of women who owned land agreed that wife beating was justified compared to 18 percent of non-landowners. One potential limitation of my data set is underreporting by respondents. This specifically might be a problem for reporting sexual violence acts.

Since the RDHS did not contain information on the coverage of the LTR, I obtained the progress report of the LTR national roll from the Rwandan Department of Lands and Mapping. Specifically, I considered progress since the beginning of the rollout in June 2009 until June 2011. This data contained geographical information on the coverage of the LTR. I link this data to the geographic location of the women in the RDHS precisely to the village level. To control

for the possibility of an anticipation effect, I assumed a 3-month lag, which is roughly the amount of time it took to finish the titling process for any piece of land. This 3-month lag assumption was arrived at after considering the limitations of my dataset. The ideal way of controlling for a time effect of the LTR is to measure the time since implementation of reform to time of survey at any given village. However, none of my datasets contained this information. Further work on the impact of this reform should attempt to capture this time effect. About 40 percent of the women surveyed lived in villages where the land reform had been implemented. Summary statistics comparing variables in areas with LTR to those without is shown in Table 2. Interestingly, there seems to be a very small to no difference in the measures of my outcome variables between areas with LTR and those without.

Table 2: Comparison of variables in LTR and non-LTR areas

Variable	LTR areas	Non-LTR areas
Domestic violence measures:		
% of women reporting any form of violence	46	45
% of women reporting less severe forms	33	32
% of women reporting severe forms	53	51
% of women reporting sexual violence	18	18
% of women who reported that wife beating is justified	16	14
% of women currently using any modern method	47	48
% of women who won land	77	77
Woman's education:		
% of women with no education	21	21
% of women with incomplete primary education	53	55
% of women with complete primary education	14	14
% of women with incomplete secondary education	7	6
% of women with complete secondary education	2	2
% of women with higher education	2	2
Partner's education:		
% of women with no education	21	20
% of women with incomplete primary education	47	50
% of women with complete primary education	17	16
% of women with incomplete secondary education	8	8
% of women with complete secondary education	3	3
% of women with higher education	3	2
Wealth index:		
% of women in poorest quintile	21	22
% of women in poor quintile	20	20
% of women in middle quintile	19	20
% of women in richer quintile	19	19
% of women in richest quintile	21	19
Women's mean age	34	33
Partners' mean age	38	38
% of women living in a rural area	15	16

VI. Empirical Specification

VI.i. *LTR and Contraceptive Use*

I estimate the impact of the LTR on women's likelihood of using modern contraception. I begin my analysis by conducting a logit regression to isolate the effect of the LTR reform on women's level of contraceptive use for all the districts in the country. I estimate a logistic model with the following logit regression:

$$Y_i = \beta_0 + \beta_1 LTR_i + \beta_3 X_i + \beta_2 (LTR * X_i) + \varepsilon_i \quad (1)$$

Where Y is a binary variable that indicates a woman's⁷ current use of modern contraceptives and is equal to one if they are using any modern method and zero if not; LTR is the binary independent variable of interest that takes the value one if LTR had been implemented at a given cluster⁸ and zero otherwise; and X is a set of controls including: woman's land ownership status, age, education, wealth index, religion, whether a woman wants kids in the next two years and whether a woman lives in a rural or urban area.

To account for unobservable cultural and socio-economic differences in the 30 districts in the country, I introduce district fixed effects.

⁷ My sample is ever married women aged 15-49 years who are not infecund or pregnant

⁸ A cluster is either a village or the equivalent in urban areas

VI.ii. *LTR and Domestic Violence*

In this section, I examine the impact of LTR on the likelihood of domestic violence against women. To analyze the incidence of spousal violence among interviewed women⁹, I estimate a logit model with the following regression equation:

$$Y_{is} = \psi_0 + \psi_1 LTR + \psi_2 X_{is} + \psi_3 (LTR * X_{is}) + \varepsilon_{is} \quad (2)$$

Where Y_{is} is a binary variable for a female i in district s . It takes on a value 1 if a given female i reported that their (last) husband/partner ever did any of the following to them in the past twelve months: slap her, twist her arm or pull her hair, push her, shake her or throw something at her, punch her with his fist or with something that could hurt her, kick her, drag her, or beat her up, try to choke her or burn her on purpose, threaten or attack her with a knife, gun, or any other weapon, physically force her to have sexual intercourse with him even when she did not want to; force her to perform any sexual acts she did not want; and zero otherwise. LTR is the binary independent variable of interest that takes the value one if LTR had been implemented at a given cluster and zero otherwise. X_{is} is a vector of individual and household control variables such as age, wealth and education and land ownership status

⁹ My sample is ever married women aged 15-49 years

VI.iii. *LTR and perception on wife beating*

Next, I consider women's perception of one form of spousal violence: wife beating. Selected women were asked if they thought a husband is justified in hitting or beating his wife in the following situations: if she goes out without telling him, if she neglects the children, if she argues with him, if she refuses to have sex with him, if she has sex with someone else or if she burns the food. I estimate the following equation:

$$Y_{is} = \psi_0 + \psi_1 LTR + \psi_2 X_{is} + \psi_3 (LTR * X_{is}) + \varepsilon_{is} \quad (3)$$

Where Y_{is} is a binary variable for a female i in district s . It takes on a value 1 if a given female i responded yes to any of the above questions and 0 otherwise. LTR is the binary independent variable of interest that takes the value one if LTR had been implemented at a given cluster and zero otherwise. X_{is} is a vector of individual and household control variables such as age, occupation of the woman and her husband/partner, wealth index and education.

VII. Results and Discussion

I begin my analyses by estimating equation (1). I run a logit regression with district fixed effects. Including fixed effects enables me to make within-district analyses. The results are shown in column (1) of Table 3. These results suggest that implementation of LTR has no significant effect on women's use of modern contraceptives. Nevertheless, the association is negative. LTR implementation decreases the chances of a woman using modern contraception by

0.2-percentage point (p-value-0.874). However, an interesting result to note is that women who own land, whether alone, jointly, or both, have a significant 3.6 percent higher likelihood of modern methods of contraception (p-value- 0.022) compared to those who do not. This could suggest that though informal, the existing land ownership laws before the reform could be positively impacting women through empowerment reflected in their higher likelihood of using contraceptives. The formalization effect introduced by LTR does not seem to have any significant effect on women's level of empowerment, or at least not yet. Another possibility is that with the announcement of the plan to introduce formal land titling, women already started anticipating the reform's effect even in those areas where it had not yet been implemented. As a result, LTR does not seem to matter.

Since this reform is expected to impact landowners, I run a second regression, but now interacting LTR and land ownership. The results are shown in column (2) of Table 3. The interaction is significant at the 10 percent level (p-value of 0.093). These findings suggest that for women living in villages with LTR, the odds of a woman using contraception increases by 0.46 times if they do not own land and further increases to 0.53 times if they do, representing a 0.071 increase in odds. That means that if LTR had been rolled out in the entire country at the time of the survey and all sampled women owned land, contraceptive use would increase by 3.4 percent from the existing contraceptive prevalence rate of 47.8 percent. This is a very significant finding and suggests that even though LTR does not seem to have an overall effect countrywide, it is in fact impacting women that the reform is targeting.

Table 3: Estimates of the relationship between LTR and use of modern contraceptives.

	(1)	(2)
LTR	0.002 (0.062)	-0.192 (0.136)
Woman owns land	.036** (0.08)	0.084 (0.100)
LTR * land ownership	-	0.254* (0.151)
Woman's age in years	0.008*** (0.007)	-.040*** (0.007)
Woman's education in years	.010** (0.01)	0.025** (0.01)
Wealth index	.032*** (0.026)	0.163*** (0.026)
Partner's education in years	0.00 (0.003)	-0.003 (0.003)
Partner's age in years	-0.002*** (0.004)	-0.011*** (0.004)
Number of children	.012** (0.023)	0.060*** (0.023)
Wants children in 2 years	-.230** (0.13)	-1.684*** (0.131)
Catholic dummy	0.02 (0.169)	0.091 (0.170)
Protestant dummy	-0.046 (0.169)	-0.245 (0.170)
Adventist dummy	(0.017) (0.182)	-0.096 (0.183)
N	5204	5204
Pseudo R squared/Chi squared	0.000	0.080

Notes:

***p<0.01 **p<0.05 *p<0.10

Standard errors are in parentheses

Column (1) results are marginal effects

Column (2) are odd ratios

Also, most of the covariates that are significant seem to positively reflect other forms of empowerment. Wealth, education and land ownership all have positive associations with contraceptive use. One more year of education increases the likelihood of a woman using contraception by about 1 percent (p-value-0.012) while moving up one socioeconomic status level seems to increase the probability of using contraceptives by 3.2 percent (p-value-0.000). This is consistent to past research and suggests validity of my research.

To explore the potential impact of LTR on incidence of domestic violence, I estimate equation (2). I run four different logit regressions with district fixed effects. In the first regression, I consider the effect of LTR on the incidence of any form of spousal violence. The results are presented in column (1a) of Table 4. In the next three regressions, I specifically examine the effect of LTR on the incidence of severe, less severe and sexual forms of violence. The results are presented in column (1b), column (1c) and column (1d) of Table 4 respectively. Once again, the results suggest that implementation of LTR does not have a consistent statistically significant effect on the possibility of a woman experiencing violence from their spouses. The LTR variable is insignificant in all four cases except with sexual violence. The results suggest that a woman living in a village where LTR has been implemented has a 5.4 percent lower chance of experiencing any form of sexual violence compared to a woman living in a village where land reform has not been implemented, at a 10 percent significance level (p-value: 0.057). This indicates a possibility that LTR might be having at least some positive effect on women's lives and decreases the likelihood that they experience sexual violence. When I

introduce an interaction between LTR and landownership for further exploration as before, it is not significant in all the four cases. Nevertheless, I present the results in Table 5.

Table 4: Estimates of the relationship between LTR and incidence of violence and perception on wife beating

	Incidence of violence				Perception on wife beating
	(1a) Any form of violence with FE	(1b) Less severe forms of physical violence FE	(1c) Severe forms of physical violence FE	(1d) Sexual violence FE	(2) With FE
LTR	-0.002 (0.081)	-0.010 (0.088)	-0.003 (0.081)	-.054* (0.115)	-0.009 (0.079)
Owns land	0.012 (0.106)	-0.011 (0.117)	0.024 (0.106)	-0.014 (0.152)	-0.018 (0.096)
Rural	-0.043 (0.168)	-0.019 (0.187)	0.001 (0.168)	0.055 (0.257)	0.019 (-0.165)
Woman's education in single years	-.000 (0.014)	-0.006 (0.015)	0.000 (0.014)	0.003 (0.020)	-.016*** (0.014)
Woman's age in years	.007 (0.007)	.004** (0.007)	.004** (0.007)	.004* (0.009)	-0.001 (0.007)
Partner's education in single years	0.000 (0.003)	0.000 (0.004)	0.001 (0.003)	-0.001 (0.006)	-0.000 (0.004)
Partner's age in years	-0.000 (0.005)	0.001 (0.005)	0.000 (0.005)	0.00 (0.006)	-0.001 (0.005)
Wealth index	-0.029 (0.033)	-.037** (0.036)	-.017** (0.033)	-.047*** (0.046)	-.028*** (0.033)
N	2943	2938	2940	2939	6834
Pseudo R squared/Chi squared	0.0610	0.0000	0.0121	0.0005	0.0000

Notes: ***p<0.01 **p<0.05 *p<0.10:

Standard errors are in parentheses

Columns (1) are marginal effects, column (2) is odd ratios

Finally, I consider women's perception of one form of spousal violence: wife beating. The results are shown on column (2) of Table 3. The results presented suggest that living in a cluster where LTR has been implemented does not have any significant effect on women's perception on wife beating. Land ownership doesn't seem to have any significant association with perception either. However, the effects of education and wealth index also seem to be consistent to past research. Both variables indicate that wealthier and more educated women are less likely to report that they believe wife beating is justified. The results on wealth are specifically consistent and highly across all forms of violence. Another striking finding to note is that there is a match between what women perceive and their likelihood of experiencing violence. In other words, wealthier woman are less likely to think that wife beating is justified and in addition are less likely to report incidence of spousal violence.

It is difficult to explain the inconsistency in results between physical and sexual violence. However, it could be important to note that 18 percent of the women reported sexual violence compared to 33 and 53 percent for less and severe forms of violence respective. This variation requires deeper sociological and cultural understanding of both forms of violence and how they could be correlated and is beyond the scope of this study. On another note, as already mentioned before, my data on domestic violence is limited to women's accounts and does not take into consideration actual reports to the authorities such as police statements. Therefore, it is subject to bias and under reporting.

These results combined suggest that LTR does seem to have some effect on women's empowerment. However, these findings are inconsistent across my three metrics. The overall effect of LTR on use of modern contraception, incidence and perception of physical violence is statistically insignificant. The effect on incidence of sexual violence is negative and significant. A potential explanation of my results is that the LTR reform could be impacting women in other dimensions, but is not necessarily affecting family dynamics that much to be observed in a regression. In addition, the inconsistency in findings suggests that even though it helps to draw comparisons, each of these metrics of empowerment should be treated individually. Also, it could be that the existing informal land laws have impacted women positively as seen in the statistically significant relationship between land ownership and use of modern contraceptives. The implementation of LTR could just be a formality that may or may not reinforce women's land rights. Informal arrangements like land inheritance through kinships and marriage have been shown to thrive since the MRLSL law in late 1990s. Legally married women automatically acquired access rights to their partner's land after marriage and vice versa, even though informally. Daughters could also inherit land from their parents alongside their brothers and they could continue to own it when they get married.

Table 5: Estimates of the relationship between LTR and incidence of violence and perception on wife beating: With LTR and Land Ownership Interactions

	Incidence of violence				Perception on wife beating
	(1a)	(1b)	(1c)	(1d)	(2)
	Any form of violence	Less severe forms of physical violence	severe forms of physical violence	Sexual violence	Perception on wife beating
LTR	-0.207 (0.183)	-0.082 (0.204)	-0.117 (0.182)	-0.589 (0.283)	0.156 (0.159)
Woman owns land	-0.043 (0.133)	-0.065 (0.146)	0.053 (0.132)	-0.205 (0.181)	0.001 (0.124)
LTR* land ownership	0.243 (0.202)	0.050 (0.224)	0.127 (0.201)	0.442 (0.307)	-0.287 (0.182)
Rural	-0.178 (0.169)	-0.079 (0.188)	0.002 (0.169)	0.220 (0.259)	0.135 (0.166)
Woman's education in years	-0.000 (0.014)	-0.024 (0.015)	0.000 (0.014)	0.011 (0.020)	-0.108*** (0.014)
Woman's age in years	0.007 (0.007)	0.016** (0.008)	0.018** (0.007)	0.016* (0.009)	-0.006 (0.007)
Partner's education in years	0.000 (0.003)	0.001 (0.004)	0.004 (0.003)	-0.005 (0.006)	-0.005 (0.004)
Partners age	-0.002 (0.005)	0.006 (0.005)	0.000 (0.005)	0.002 (0.006)	-0.007 (0.005)
Wealth index	-0.121*** (0.033)	-0.150*** (0.036)	-0.074** (-0.033)	-0.191*** (0.046)	-0.191*** (0.033)

Notes:

***p<0.01 **p<0.05 *p<0.10

Standard errors are in parentheses

Results are in odd ratios

VIII. Concluding Remarks

This paper contributes to literature on women's empowerment and land rights by exploring the impact of the Rwandan land tenure regularization reform on three metrics of empowerment; use of modern contraceptives, incidence and perception of spousal violence. I use data from the 2010 RDHS and LTR progress report for the 30 districts in the country. Formalization of land ownership brought by LTR does seem to have a small and inconsistent effect on women's empowerment status. These results suggest that LTR could have been anticipated by women even before implementation or the impact is yet to happen. As a result, LTR does not seem to matter in my regression. They motivate further research if the latter is the case. My study was also limited to data collected at one time period. Further research should look at panel data before and after implementation to better capture the impact of the land reform. Finally, the effect of education and wealth is significant and consistent in all three analyses. These two factors are direct indicators of empowerment as shown by past research and my results reflect that.

Furthermore, the findings suggest that LTR could be influencing other metrics of women's empowerment and not necessarily the ones under study. Further research should therefore explore more measures of empowerment.

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