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**Does Land Titling Promote
Women's Empowerment?
Evidence from Nepal.**

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Abstract

Women's land titling is recognized as an important tool to promote women's empowerment in agriculture, as well as a means to fight poverty. However, most rural women still have low access to land, despite their crucial role in the agricultural sector. This paper uses the National Demographic and Health Survey (2011) to investigate the role female land rights have in promoting their empowerment - expressed in terms of decision-making power - in Nepal. Our results demonstrate that women's final say within the household increases with land ownership.

Keywords: land property rights, Nepal, empowerment, gender

JEL code: D13, J16, Q15.

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1. INTRODUCTION

Despite the dominant and important role that women play in the agricultural sector, many are the constraints to their full involvement in the socio-economic scenario entrapping them in a vicious cycle of poverty. In fact, women face many forms of inequality, both in terms of access and control over productive resources, constructed by societal norms that rigidly embrace male dominance (Nkhonjera, 2011). Systematic differences in land tenure regimes between men and women contribute to the radicalization of inequality and poverty for women (Lastarria-Cornhiel, 2009). They are subjected to vulnerability: even if they are the main producers of food and responsible of the household management, at the same time they neither benefit of an actual decisional power within the household itself, nor of land rights. As FAO (2011) pointed out, in many countries of the Sub-Saharan Africa the agricultural production could increase if women would have the same possibilities of access to productive resources. Meanwhile, the 1979 FAO report of the World Conference on Agrarian Reform and Rural Development supported the idea of ensuring women's equitable access to land and other productive resources (FAO, 1979). This notwithstanding, a substantial assets gap between women and men persists. The Convention on the Elimination of all Forms of Discrimination against Women (1979) states in Article 14 that "State Parties shall take all the appropriate measures to eliminate

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discrimination against women in rural areas, [...], and to have access to [...] and equal treatment in land and agrarian reform” (CEDAW, 1979; Crowley, 1999). Similarly, the Strategic Objective A.2 of the Beijing Declaration (1995) reflects this concern: in particular, it defines the legislative and administrative framework aimed at guaranteeing and enshrining the ownership and inheritance rights to women. The United Nations Millennium Declaration, namely the Third Millennium Development Goal, as well as the World Bank (IBRD/World Bank, 2009), even recognize the achievement of gender equality and women’s empowerment as being essential.

A large and growing body of literature has investigated the role of land property rights in promoting women’s empowerment, emphasizing the central role that they would have to fight poverty. As Mutangadura (2006) states, “the traditional exclusion of women from property and land ownership is the most damaging global human rights violation experienced in many developing countries”. Also Kachika (2009) noted that poverty reduction and the achievement of Millennium Development Goals cannot take place without a whole access and control over land.

The aim of this paper is therefore to contribute to the analysis of empowerment of women working in agriculture. The specific question addressed in this study is whether land titling can enhance working women’s empowerment by increasing their decision-making power within the household. Previous studies have used the level of education as proxy of women’s degree of empowerment. We build, instead, an indicator of women’s decision power within the households as a proxy of empowerment, since we believe that empowerment is a multifaceted concept, that may be approximated by several types of measures. This topic has been previously explored by Allendorf (2007), whose results show a significant relationship between women’s land rights and their decisional power within the household. This study reinforces this evidence, showing that female land ownership is a necessary condition for ensuring women’s empowerment in agriculture, so that lack of ownership and access to land constitutes a fatal barrier to women’s empowerment.

As in the study by Allendorf, we focus on Nepal. Differently from the empowerment scale adopted by Allendorf, we introduce a new measure of empowerment that is more precise in accounting for the variability of female decision-making power within the household. We draw our sample from *Demographic and Health Survey* (2011), which contains information on both female decision-making power and asset ownership at the individual level. One limit of our analysis is represented by the potential endogeneity of land ownership, according to which more empowerment could increase the probability of owning land. This problem is not easy to overcome, due to the difficulty to identify a robust instrumental variable in the dataset we use, and to the absence of panel data that would allow us to take account of unobserved heterogeneity by means of fixed effects. It must be said, however, that the fact that women in developing countries become land owners mostly through inheritance (Deere and Doss, 2006; RDI, 2009; Kumar and Quisumbing, 2012), might support the hypothesis of exogeneity of land ownership.

The paper is organized as follows: in Section 2 we lay out the theoretical dimension of land property rights by emphasizing the gender-bias in their assignment. In Section 3, we give a brief description of the Nepalese female farmers' property status. In Section 4 we present the data, focusing in particular on the two variables whose association we want to investigate (namely empowerment and land property rights). In Section 5 we describe our methodological approach. We present the findings of our research in Section 6 and in Section 7 we conclude.

2. WOMEN AND LAND PROPERTY RIGHTS

Land is an important asset that determines the economic well-being of peasants, and granting ownership rights is fundamental for the sustainable development of agriculture (Roy and Tisdell, 2002). Furthermore, it is considered a fundamental mean to escape poverty and to ensure the household's food security (Pena *et al.*, 2008), as well as a measure of social status. In many developing countries, land remains unequally distributed in favour of male heads of the

household, undermining women's opportunity to exert any form of control over it (Nightingale, 2006). Land could create a sense of self-worth and provide physical safety and psychological security (RDI, 2009). Ensuring land rights to women could thus reduce the gender inequalities and dependence on men for their survival, but formal discrimination still persist (Rao, 2005). As Jacobs (2004) pointed out, land is a symbol of patrilineage continuity and of male authority, so that women's land rights are still largely discriminated against (Mutangadura, 2004). Existing research evidences that strengthening women's economic and legal rights has a real and positive impact on women's labour force participation, investment and agricultural productivity (Hallward-Driemeier *et al.*, 2013; Pena *et al.*, 2008; Goldstein and Udry, 2005; Yngstrom, 2002). Kumar and Quisumbing (2012), for example, point out the positive implications of women assets in terms of increased investments in the next generation's health, nutrition and schooling, stressing the long term benefits in terms of women's well-being. In Zimbabwe, for example, only widowed and divorced women with custody of children could be granted land, even if the share is less than that one granted to men (Gaidzanwa, 1994). Instead Peterman *et al.* (2010) argues that women, particularly widows, in sub-Saharan Africa are victims of an asset disinheritance, which could be considered as a form of gender-based violence (Izumi, 2007). Contrariwise, in Malawi the inheritance land laws have been revised, recognizing equal opportunities to inherit land regardless the gender belonging (Nkhonjera, 2011), notwithstanding the reluctance of the customary land regulation. Also the World Development Report 2014 states that "laws in most of the world allow women to own assets, but several countries, particularly in South Asia and Sub-Saharan Africa, still have gender-specific ownership rights that limit women's ability to acquire, sell, transfer, or inherit property" (World Bank, 2014). Following Agarwal (2003) the three sources of arable land -namely the State, the family and the market - typically allocate land to male households' heads. In other words, the three forms of distribution are gender-biased. This is even confirmed by Kevane and Gray (1999) who, evoking the Sub-Saharan women's condition, report that they are "owners of crop" instead

of “owners of land”. A study about land management in China (Hare *et al.*, 2008) stated that recognizing land titling to women reduces the probability of the household to fall into poverty, and this is also validated by the purpose of the third Millennium Development Goal¹.

This property structure has implications for women’s decision making both intra-households and within the community. Control over land is a key domain for exercising choice, especially in agriculture where, as emphasized by a large part of the studies, men own most of the assets and exercise most of the decision power. In this vein, legal property rights could be positive for women, since they would change their bargaining power within their households. As noted by Duflo (2012), in fact, the decision-making sphere is still “monopolized” by men, due to the widespread cultural barriers that women face². Agarwal (1994) outlines how, in the rural context, the bargaining power has a bidirectional relationship with land entitlement: in fact, while the weakness of the bargaining power can reduce the access to production inputs, at the same time the lack of property rights can reduce the capability/possibility of bargaining, reinforcing their social and economic insecurity.

3. CASE STUDY

Nepal is an economy based on agriculture, with about 80 percent of the economically active labour force engaged in the agricultural activities (Bhandari, 2004). In this country farm and agricultural wage are the income sources

¹There are many studies (Udry *et al.*, 1995; Quisumbing, 1995; Edriss, 2005; Goldstein and Udry, 2005; Peterman *et al.*, 2010; Rahman, 2010; Kilic *et al.*, 2013) that stress on the positive role of female farmers for the agricultural productivity (e.g. groundnut in Malawi). Additionally, several studies have found that redistributing inputs between men and women in the household increases the allocation of resources to food (Hoddinot and Haddad, 1995; Duflo and Udry, 2004)

²She finds that these barriers are not a prerogative of developing countries, as they persist in the developed world: according to a series of experiments, women leaders are evaluated more negatively than male leaders.

for most of the population. Land represents a crucial source of economic livelihoods, with rural households more likely to own land than the urban ones (DHS, 2011). As Bhandari asserts, “Land is more than a physical entity; it has been, and continues to be, the economic backbone of the agrarian system and the rural power structure” (Allendorf, 2007). Women play an important role in farming activities. They participate to different agricultural activities, as plowing, irrigation, harvesting. Some studies about female farm workers in South Asia (Rahman, 2010; Hasnah *et al.*, 2004) show that female labour is as productive as the male one. Nonetheless, they are often discriminated with respect to men: as the World Bank (2014) argues, “women farmers frequently have lower access than men to agricultural extension and advisory services, often due in part to biased membership rules or requirements” and are treated as invisible farmers (Ovwigbo and Ifie, 2014). Despite their active role into the agricultural production, women do not fully share its benefits, as they are not recognized full property rights of land. As in other Southern Asian countries, inheritance is the most usual way to grant women’s property rights (RDI, 2009). The Muluki Ain (Eleventh Amendment) of the Country Code of Nepal (2002) introduced some progress in this field: daughters who have inherited ancestral property must return their share to their heirs (brothers) in case of marriage, but this restriction does not apply to land jointly purchased by the married couple. At the same time, widows inherit from deceased husbands. While generally land is owned by men, the Demographic and Health Survey (2011) highlights that almost the 10 percent of Nepalese women own land. As Allendorf (2007) points out, this could depend on more egalitarian inheritance practices that have taken place in the country: as the author suggests, some parents decide to give land to daughters because they have not sons, they have plenty of land or for other reasons. Additionally - she affirms - urban women who have other sources of income could decide to buy land. Moreover, even if the Interim Constitution (2007) provides equal access to land through inheritance, purchase, leaseholds and government land allocations, informally women are still discriminated from land titling. In 2013, the Second National Conference of Farmer Women em-

phasized the need to ensure equal land rights to female farmers, helping to increase the understanding on the importance of making land ownership less gender-biased.

4. DATA

The data used in the present study are drawn from the *2011 Demographic and Health Survey (DHS)*, a nationally representative cross-sectional household survey. It is structured in four core questionnaires (Household, Women, Men and Children), of which we use only the Women one, according to the aims of the paper previously mentioned. A total of 12,674 eligible women were surveyed (age between 15 and 49), from whom we draw our sample of 3600 women. As we are interested in women’s empowerment in agriculture, we have selected only women employed in the agricultural sector, who are currently married and reside with their husbands or partners. In this way, we have discarded female headed households where women would be the primary decision makers by default (mostly widowed women). In this section we describe the variables supposed to be related to the empowerment of Nepalese women in agriculture, with a special focus on land property rights. On this purpose we have built proxies for both empowerment and land ownership.

4.1. Empowerment

Empowerment is a multifunctional concept, which embraces different aspects of both individual and collective life. As it is a subjective notion, depending on own life experiences, personality and aspirations (Alkire *et al.*, 2012), a unique definition of empowerment cannot be provided. Kabeer (1999) defines empowerment as the process by which people acquire the ability to make choices. In other words, it is a dynamic process of change. Similarly, Alsop *et al.* (2006) argues for an explanation of empowerment as “the process of enhancing an individual’s or group’s capacity to make purposive choices and to transform those choices into desired actions and outcomes”. Instead Narayan (2002) proposes a definition of empowerment in terms of “expansion of assets and capabilities of poor

people to participate in, negotiate with, influence, control, and hold accountable institutions that affect their lives”. Women’s empowerment and economic development are closely related: as Duflo (2012) highlights, a bidirectional relationship exists as, while on the one side some constituents of development, as health, education, political participation and rights, could bring down gender inequalities, on the other side the persistence of the mentioned inequalities delays development. Assets at which women have access have a paramount significance in terms of empowerment, and could increase their bargaining power. In this vein, Quisumbing and Maluccio (2003) argue that the bargaining power within a household is determined, among various factors, by control over resources. Particularly, female land ownership could influence the bargaining power within a household. Meanwhile, according to Datta (2008) ownership of resources (e.g. land) “does not automatically imply an increased ability to act according to one’s preferences”. Based on this way, the policy actions for land property rights represents a crucial step for their empowerment, by raising their decision- making and autonomy at household, community and national level. Finally, the Women’s Empowerment in Agriculture Index (WEAI), developed by IFPRI, gives an important and innovative contribution in this field: it is a multidimensional index, which measures the degree of women’s empowerment within five domains (1. decisions about agricultural production, 2. access to and decision making power over productive resources, 3. control over use of income, 4. leadership in the community, and 5. time allocation).

4.1.1. Empowerment Measures

The empowerment measures we have constructed are based on four decision domains available in the dataset we used. Respondents were asked who in their household decides (1) on how to spend money derived from husband’s earnings, (2) on respondent’s health care, (3) on major household purchases, and (4) on visits to family or relatives. Then we categorized the answers in four options: decisions taken alone by the women interviewed, decisions taken jointly with their husband/partner, decisions taken only by their husband/partner and

decisions taken by someone else. The vast majority of decisions were made jointly with their partners, even if few of them (particularly those concerning health, large purchases and visits), were taken by someone else³.

Hence we created three empowerment measures. Differently from Allendorf (2007) we have created a first measure of empowerment (*final say*) to compare women who have final say alone with those who made all the four decisions jointly with their partners or who have no decisional power on all domains. This is a binary variable that assumes the value of one if she has the final say on at least one of the four decisions, and zero otherwise. As reported in Table 2 below, we can observe that most of the women of our sample makes decisions jointly with their partners/husbands, or have not any decisional power (almost 69 percent). Subsequently, to better exploit the information on the variability of women's decision power available in the data, we have constructed a discrete measure of empowerment, *empscore*, summing up the score variables created for each decisional domain, each ranging from 1 to 4, where score 1 is attributed when decisions are taken by someone else, 2 when decisions are taken by the husband only, 3 when decisions are taken jointly with their partner and 4 if they decide alone. *Empscore* ranges from 4 to 16. Higher scores indicate a higher level of empowerment, and vice versa. Table 2 shows that only a little percentage of women are able to make decisions alone, while most of them have no decision power, or anyway decisions are taken jointly with their partners. The third measure of empowerment we have employed in our analysis, is derived by grouping the *empscore* values, so that 1 identifies the lowest, 2 a middle-low, 3 a middle-high and 4 the highest level of empowerment (in detail: 1 represents the values of *empscore* between 4 and 7; values among 8 and 10 are encoded in group 2; 3 groups values between 11 and 13, and finally 4 corresponds to values ranging between 14 and 16). The Cronbach's alpha of

³Actually, women were also asked who usually decided to spend the respondent's earnings, but we could not use it due to the low number of observations with respect to the other decisional domains (356).

0.84, measuring the internal reliability of this empowerment scale, demonstrates that the grouping of the four decisions into the empowerment scale is consistent. As Table 2 shows, again decisions are made mainly by other people (someone else or the husbands/partners), or at least by women together with their own husbands/partners, and only 8 percent of them has the power to make decisions alone.

Table 1: Descriptive statistics of the three empowerment measures.

<i>Variable</i>	<i>Nb of obs.</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Min.</i>	<i>Max.</i>
<i>Final say</i>	3600	0.31	0.46	0	1
<i>Empscore</i>	3600	8.98	3.57	4	16
<i>Empowerment scale</i>	3600	2.11	0.99	1	4

Source: Author's calculation using Nepal DHS (2011).

Table 2: Distribution of the three empowerment measures.

<i>Variable</i>	<i>Absolute Frequencies</i>	<i>Percentage Frequencies</i>
<i>Final Say</i>		
0	2477	68.81
1	1123	31.19
<i>Empscore</i>		
4	772	21.44
6	390	10.83
7	165	4.58
8	341	9.47
10	366	10.17
11	151	4.19
12	740	20.56
13	253	7.03
14	110	3.06
15	82	2.28
16	96	2.67
<i>Empowerment Scale</i>		
1	1327	36.86
2	841	23.36
3	1144	31.78
4	288	8.00

Source: Author's calculation using Nepal DHS (2011).

4.2. Land Property Rights

In the Demographic and Health Survey - Women Questionnaire, women had to answer to the following question: “*Do you own any land alone or jointly?*”. From these data, we have found that the vast majority of them (more than 90% of the selected sample) did not have any land. Following Allendorf (2007), we created a measure of land ownership, which combines information about land ownership with information about women’s working condition (i.e working as contributing family members, as self-employed or as employees). In fact, taking into consideration only information about land ownership could lead to some bias: even if our aim is to understand the role of women’s land titling in enhancing their empowerment, in any case considering women who do not own land but work in the family land is different from treating women neither possess any land nor work on the family farm. Given these considerations, hence we created three categories of land titling:

- *lives in landless household*: women who do not own land and work for someone else;
- *lives in landed household*: women who have not any land titling, but work in the family land;
- *land owners*: women who own land themselves and are self-employed.

Below (Table 3) we have reported the cross-tabulation showing the percentage of women having the final say on household’s decisions, on the basis of the women’s land ownership.

Table 3: Percentage of women having the final say on household’s decisions, depending on land ownership.

	<i>Has final say on at least one decision alone or jointly (%)</i>	<i>Has final say on all the decisions alone or jointly (%)</i>	<i>Has final say on all decisions alone (%)</i>
<i>Lives in landed household</i>	76	19	28.8
<i>Owens land herself</i>	94	31.1	44.5
<i>Lives in landless household</i>	83.2	21.3	36.9

Source: Author’s calculation using Nepal DHS (2011).

It shows that, in general, women who own land themselves are those ones who have a higher decision-making power. In particular, as can be seen, there is a preponderance of female landowners who have final say in almost one decision alone or jointly (94%), even if it can be stated that also the share of female landowners who have final say alone is high enough (44.5)⁴. In general, looking for the data, it can be observed that the higher share of women take almost one decision alone or jointly (even in this case the percentage could be “biased’ by the fact that most of the decisions are taken jointly). Farther, we can observe that living in landless households seems to be related to a higher decisional power of women working in agriculture with respect to those who live in landed households. However, this statement is not supported by the regression results

⁴Percentages are computed as the ratio of women who take decisions divided by the total number of women for each land titling category, and then multiplied by 100: e.g. 299 is the total number of women who own land themselves, and of them 133 make all the decisions alone. Therefore we have: $133/299 = 0.445*100 = 44.5$. The same reasoning applies for the other land titling and decisional categories reported in the Table 3 above.

when controlling for the other explanatory variables taken into consideration within the analysis. In the following section we give a brief explanation of the methodology we adopted.

5. METHODOLOGY

As we have three different women's empowerment measures (see Table 1 above), we had to take on three approaches, one for each dependent variable. Thereafter, we first applied a *Logit Regression Model*, where the dependent variable is identified by the dummy *final say*:

$$Final\ Say = F(\beta_0 + \beta_1 FemaleLandTitling + \beta_k OtherIndVar) = \frac{1}{1 + e^{(\beta_0 + \beta_1 FemaleLandTitling + \beta_k OtherIndVar)}} \quad (1)$$

As in the other models, the independent variables chosen concerned both women's characteristics (age, level of education, caste ethnicity, religion, type of earnings) as well as their land entitlement. In this approach, as well as in the Ordered Logit model we will discuss on after, the independent variables are supposed to increase or decrease the probability of women to have final say within the household. Whereupon we adopted an *Ordered Logit Regression Model*, which is the most appropriate approach for ordinal dependent variables -in this case the scale of empowerment (defined *empowerment*):

$$Empowerment = F(\beta_0 + \beta_1 FemaleLandTitling + \beta_k OtherIndVar) = \frac{1}{1 + e^{(\beta_0 + \beta_1 FemaleLandTitling + \beta_k OtherIndVar)}} \quad (2)$$

Finally we used an *Ordinary Least Square (OLS)* approach, with the measure of empowerment variability used as dependent variable:

$$Empowerment\ Variability = F(\beta_0 + \beta_1 FemaleLandTitling + \beta_k OtherIndVar) + \varepsilon \quad (3)$$

In the results of both the ordered logit and logit models, we report the odds ratios (OR henceforth)⁵. Specifically, results can be explained in terms of percentage variation:

$$\Delta\% = 100 * [OR - 1] \tag{4}$$

After having given a brief explanation of the analytical procedures implemented and on the principal issues behind this choice, in the next section we will present some of the findings.

6. RESULTS

The descriptive statistics concerning the independent variables adopted in the analysis are set out in Table 4. It is apparent that most of the women of the sample are young wives, with an average age of 33 years. As many of them are unpaid - and this could be related to the lack or low bargaining power that, at the same time, could be due also to the fact they are mostly uneducated - the household's wealth is mainly middle/lowest.

⁵The OR is the ratio of the probability that an event takes place for individuals exposed to the event itself divided by the same probability for unexposed individuals.

Table 4: Descriptive statistics for all the variables used in the models.

<i>Variable</i>	<i>Nb of observations: 3600 women empowerment sample (%)</i>
<i>Land rights</i>	
Lives in landless household	9.8
Owns land herself	8.31
Lives in landed household (Ref.)	79.6
<i>Urban residence</i>	
	13.44
<i>Caste ethnicity</i>	
High Caste	41.6
Tibeto-Burman	38.2
Other (Ref.)	20.2
<i>Household wealth</i>	
Richest	6.5
Richer	14.5
Middle	21.7
Poorer	25.4
Poorest (Ref.)	32
<i>Wife of the household head</i>	74.4
<i>Age</i>	mn: 33.5 sd: 9
<i>Employment remuneration</i>	
Paid in cash	4.6
Paid in kind	7.58
Paid both in kind and in cash	5.31
Unpaid (Ref.)	82.5
<i>Education</i>	
<i>Women's education</i>	
Primary	17.2
Secondary or more	18.5
None (Ref.)	64.3
<i>Husband's education</i>	
None or unknown	26.56
Primary	28.8
Secondary	37.7
Higher	7

Source: Author's calculation using Nepal DHS (2011).

Table 5 presents the results of the three estimated models. Firstly, it presents the findings regarding the association between women's land ownership and their ability to make decisions alone or jointly with their partners/husbands. We have

used a Logit regression analysis to predict this relationship, and Table 5 shows the OR. First, land ownership increases the probability of having the final say alone on at least one decision by 52 %. At the same time being empowered seems to be less likely for women who live in landless household, but this association is not statistically significant. As regards the employment remuneration, being paid in cash or simultaneously in cash and in kind increases the probability of being more empowered, while payments in kind have not any statistical significance. Surprisingly, household wealth is not statistically significant. Caste is not associated to a higher decisional power, with the exception of the Tibeto-Burman women, who are more likely to take almost one decision alone. This finding is consistent with that one of Allendorf (2007), who explained it with the higher freedom of movement of this ethnic group. When comparing education levels, only the secondary one appears to affect the female farmers' possibility to make decisions alone: this is not unexpected, as higher education should be correlated to a higher consciousness of their rights and role within the society. Finally, considering the place of residence, urban location does not exert any statistically significant influence in enhancing women's empowerment.

Table 5: Regression results from Logit, Ordered Logit and OLS models.

	<i>Final say, OR</i>	<i>Empowerment Scale, OR</i>	<i>Empscore</i>
<i>constant</i>	0.12 (0.03)		4.74*** (0.32)
Place of residence			
<i>Urban</i>	1.20 (0.14)	1.02 (0.1)	0.03 (0.18)
Religion			
<i>Hindu</i>	1.00 (0.12)	0.82** (0.08)	-0.19 (0.18)
Caste ethnicity			
High Caste	0.97 (0.11)	0.97 (0.09)	0.02 (0.16)
Tibeto-Burman	1.26** (0.14)	1.15 (0.10)	0.37** (0.16)
Other (Ref.)	1.00	1.00	
Household wealth			
Richest	1.26 (0.22)	1.81*** (0.28)	0.97*** (0.27)
Richer	1.09 (0.14)	1.36*** (0.15)	0.54*** (0.19)
Middle	0.88 (0.1)	1.19** (0.11)	0.35*** (0.16)
Poorer	0.94 (0.09)	1.24*** (0.10)	0.38*** (0.15)
Poorest (Ref.)	1.00	1.00	
<i>Wife of the household head</i>	1.16 (0.12)	2.87*** (0.26)	1.89*** (0.15)
<i>Age</i>	1.02*** (0.01)	1.03*** (0.005)	0.06*** (0.008)
Employment remuneration			
Paid in cash	1.96*** (0.39)	2.23*** (0.40)	1.48*** (0.32)
Paid in kind	1.03 (0.16)	1.66*** (0.22)	0.99*** (0.24)
Paid both in kind and in cash	1.99*** (0.37)	1.80*** (0.30)	1.37*** (0.3)
Unpaid (Ref.)	1.00	1.00	
Education			
Primary	1.02 (0.11)	1.23** (0.11)	0.31** (0.16)
Secondary	1.44*** (0.17)	1.68*** (0.17)	0.92*** (0.18)
None (Ref.)	1.00	1.00	
Land rights			
Lives in landless household	0.94 (0.16)	0.72*** (0.11)	-0.63** (0.27)
Owens land herself	1.52*** (0.2)	1.70*** (0.2)	1.08*** (0.2)
Lives in landed household (Ref.)	1.00	1.00	
Nb. of observations		19	3600
R-squared	0.03	0.03	0.03

Source: Author's calculation using Nepal DHS (2011).

Turning to the results of the ordered logit analysis, a clear benefit of female land ownership in the empowerment of Nepalese women is evident: as data highlight, the odds that a woman is more empowered are 70% larger if they own land. By comparison, the odds of women who live in landless household reduces their probability of having a higher decisional power by 28%. As expected, the different types of remuneration are a source of empowerment. Specifically, receiving payment in cash increases the odds that a woman is empowered by 123%, while being paid in kind increases it by a half. As expected, on the other hand, the detention of a source of income acquired independently reduces the need to remain anchored to the male economic support. Likewise, primary education is associated to an increase of the odds by 23%, while the secondary more than doubles the odds. Alike, the household wealth has a crucial importance in promoting the decision-making power of the women: as expected the richest quintile, *inter alia*, improves the odds of a woman to a greater extent than the poorer one. Additionally, being wife of the household head considerably raises their possibility of being more empowered. As pointed out in the logit analysis, the fact that higher education qualification increases the decisional role of women within the household could be associated to the higher awareness of their role and importance within society. Caste belonging has been inserted in the specification model, but it appears to have not a significant influence on the women's empowerment. This is in contrast with the findings of Allendorf (2007), as well as with the Logit regression results we presented above (and with the OLS ones that we will show later in the section): in fact they found that Tibeto- Burman women were more likely to be more empowered, in part due to the more egalitarian gender norms that are common in this caste. Conversely, it can be observed that Hindu religion reduces the odds of being empowered by 18%. This can be attributed to the gender roles within Hindu society: in fact, as Dube (1988) and Banerjee (2003) state, the image of the male dominance is embedded within the societal structure. As repeatedly emphasized and hypothesized, female land titling is positively associated to the role women play in the decision making process within the household. However, as the gender studies

evidence, land does not represent the only source of empowerment. In fact access to other productive resources (e.g. fertilizer, machinery, etc.), as well as to technology and advisory services (Obayelu and Ogunlade, 2006), could further promote their active role in the agricultural sector. Besides, comparing the odds ratios for land ownership with those concerning employment remuneration - namely payment in cash - it can be observed that land ownership is relatively less beneficial than working with cash payments.

Finally, the OLS results confirm that land titling has a crucial role in determining the decisional power of female farmers. Contrariwise, women who live in landless household appear to have less decision power compared to those who work in landed households (the reference category) and, even more, those who own land. In part it can be considered as obvious, as they do not possess land and work outside the household. Clearly, all the three types of employment remuneration increase the autonomy of women, giving them less dependence from men: particularly being paid in cash improves the women's decisional power. Empowerment also depends on the level of education they have achieved: in fact, as the table shows, women who have a secondary or more qualification seem to have a higher decision-making power than those ones who have a primary education, probably because education gives them more awareness about their rights and duties. Also being wife of the household head is significant for enhancing women's empowerment. Even age has a positive impact on the women's final say: this could be explained in terms of "weakness" of young wives and "enforcement" of their role after a certain period they live in the household. Additionally, the household wealth, as well as the caste membership, seem to have a significant impact on women's agency within the household decisional domain: specifically, a highest level of wealth, as well as belonging to the Tibeto-Burman castes, have a positive association with the increase in empowerment. Finally, considering the place of residence, specifically the urban location, all the three regression models adopted in the present analysis agree on its statistical non significance. Overall, the results we obtained implementing three different models all confirm our hypothesis: recognizing land titling to female farmers

is an important source -even if not the only one- of empowerment, and could represent another step forward to increase women's empowerment in agriculture.

7. CONCLUSIONS

This paper sets out to determine the role of land titling in promoting women's empowerment in agriculture in Nepal. Specifically, the purpose was to investigate whether female land ownership could increase their decision-making power within the household, which we use as a proxy of empowerment. In fact land represents the basic capital asset in agriculture, and its ownership is considered a means to get out of poverty. As the related literature emphasizes, despite their active role and their importance in the agricultural sector, the majority of women has not any property right. This fact has negative implications, as it increases the dependence and vulnerability to which women in general, and even more those ones from rural developing areas, are traditionally subjected. For this reason, even if we know that other productive assets (e.g. money, machinery, fertiliser, technology, etc.) all could positively affect women's role in the agricultural sector, in this study we focus on land, whose property could certainly be considered crucial for women's empowerment in agriculture. To this end, we have constructed three measures of empowerment, on the basis of women's ability to make decisions alone or jointly with their partners, as opposed to the case in which decisions are taken by their partners alone or by someone else. Following Allendorf (2007), we have first created a dummy variable, which differentiates between women who make at least one decision in one of the four decisional domains described in the data section with the other ones. Addind to Allendorf's model, we buid a second indicator, an ordinal empowerment scale that ranges between 1 and 4, dependending on the degree of women's involvement in the decision-making process within the household. Finally, we have introduced a new measure of empowerment on a continuous scale, ranging between 4 and 16, that measures the degree of women's decision-power and reflects more accurately its variability.

All the three ways to proxy empowerment confirm the hypothesis that recognizing land titling to women could effectively promote their empowerment, expressed in terms of decisional power, in the Nepali context. Obviously, as pointed out several times in this paper, land alone can effectively ensure a temporary empowerment of female farmers. In fact it must be associated to a change of both formal and informal rules within society, that could recognize the central role of women and their importance. At the same time, women should have access to other productive inputs (such as credit, machineries, extension services) that may have important effects in terms not only of productivity, but also of both women and household's health. Additionally, our findings show that employment remuneration, and more specifically being paid in cash, increases the odds ratio of being more empowered. As stated before, this could depend on the fact that earning money raises women's autonomy, permitting them to move out of the traditional male dependence. Hence, while land ownership does not appear to be superior to being paid in cash, it surely plays a crucial role in women's empowerment in agriculture. However, even if in the last decades the need of recognizing women as active members of the economy and not as invisible farmers has been emphasized, many barriers persist. Particularly in countries like Nepal, where informal rules determine the persistence of a male-dominated society, increasing the influence women can exert within the family is still difficult. At the same time, our findings reinforce the hypotheses of the benefits of land ownership, that Allendorf (2007) had already studied. At the same time our results reveal that Nepal has registered important progress in terms of women's empowerment: specifically, in 2011 the share of women who have final say alone has increased by almost 8 percent in each category of land titling, respecting to DHS 2001 (the dataset used by Allendorf). This is a successful achievement, particularly in a context where women are still discriminated. However, whilst this study offers some insight into the effects of land ownership on gender roles within the Nepalese agricultural sector, a number of weaknesses must be pointed out. First of all, the absence of other important variables, as the ownership of livestock (that is another relevant asset in agri-

cultural contexts), as well as other productive assets could not provide a wider understanding of the effective empowerment of women in agriculture: in fact, as previously specified, land ownership is not sufficient to raise women's decisional power. Secondly, the nature of data does not permit to do a longitudinal evaluation of women's empowerment. After all, empowerment is a process of change, that cross-sectional data (as those used in this study) cannot reflect. Therefore, more research is needed, possibly having at disposal panel data, in order to analyse the empowerment for what it truly is: a process of growth and change, that occurs not only at an individual, but mainly at a collective level.

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